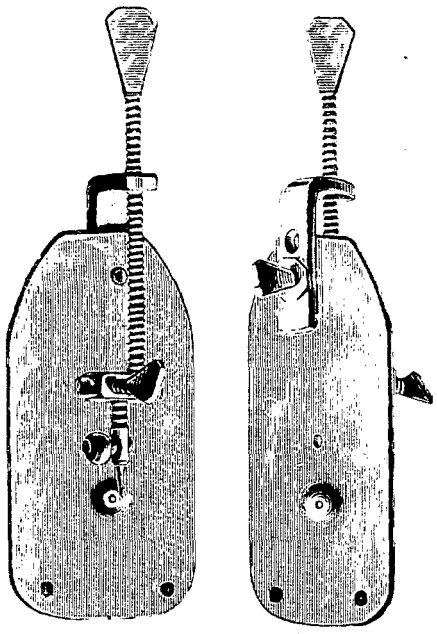
POWERING AHEAD

AFFYMETRIX 2004 ANNUAL REPORT

RECD S.E.C.
MAY 1 1 2005
1086

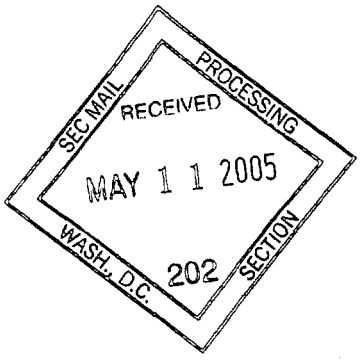


PROCESSED
MAY 1 8 2005
THOMSON
FINANCIAL

LEEUWENHOEK MICROSCOPE, 1674

MODERN TRANSMISSION ELECTRON MICROSCOPE, 2000

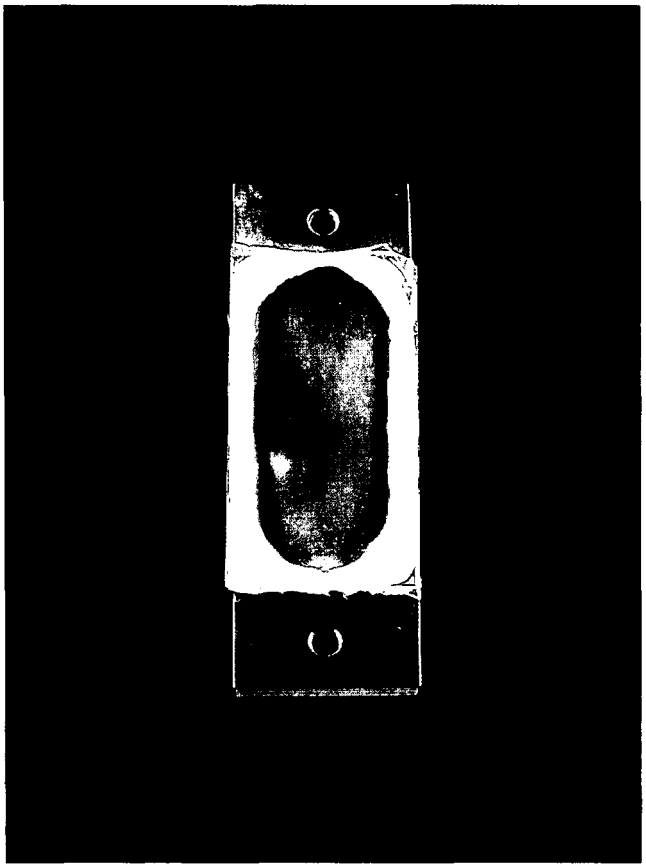
326 YEARS



FIRST X-RAY, 1895

MODERN MAGNETIC RESONANCE IMAGE, 1998

103 YEARS



FIRST MICROARRAY PROTOTYPE, 1989

FIRST HUMAN WHOLE-GENOME MICROARRAY, 2003

14 YEARS

Healthcare advanced dramatically during the past century, thanks to modern technology and breakthrough scientific discoveries. What once took years now takes only weeks or days. The next transformation in healthcare will be at the molecular level. Affymetrix is leading this revolution by providing researchers with the means to answer virtually any genomic question.

Tremendous scientific progress took place in the 20th Century, including the discovery of penicillin, breakthroughs in medical imaging, and the knowledge that DNA is the code of life. These and other discoveries have changed the way we understand and treat disease. However, many of the underlying mechanisms of disease are still unknown. In fact, most conditions—from arthritis to leukemia—are treated using a "one-size-fits-all" approach.

This is changing rapidly.

Affymetrix products and technologies are taking breakthrough discoveries from the benchtop to the bedside. Recent advances in genetics are enabling scientists to look beyond the symptoms and learn the true biology of disease at the molecular level. They are now beginning to answer what were once thought to be impossible questions. And what were once ideals, such as personalized medicine, are now becoming realities.

Affymetrix solutions are enabling researchers to unlock the mysteries of genetics. We are dedicated to creating new products that improve healthcare and the quality of life.

161 YEARS

Landmarks in Genetics Through 2004*

Gregor Mendel begins experiments leading to the theory of genetic inheritance	1843
Charles Darwin publishes *Origin of Species*	1859
J. Langdon Down discovers the genetic birth defect Down Syndrome	1866
Thomas Hunt Morgan begins using fruit flies to prove chromosomes and heredity are linked	1910
Oswald Avery, Colin MacLeod and Maclyn McCarty demonstrate DNA, not protein, is the hereditary material	1944
Barbara McClintock discovers "jumping genes," later termed transposons	1944
Maurice Wilkins and Rosalind Franklin take the first X-ray pictures of DNA	1952
James Watson and Francis Crick propose the double-helix model as the structure of DNA	1953
George Beadle and Edward Tatum share the Nobel Prize in Physiology or Medicine for proving that genes regulate chemical events	1958
François Jacob and Jacques Monod predict the existence of mRNA	1958
Paul Berg receives the Nobel Prize in Chemistry for his studies of the biochemistry of nucleic acids	1980
Eli Lilly introduces genetically engineered human insulin	1982
Kary Mullis invents DNA PCR method	1983
Human Genome Project launches	1990
First complete genome of multicellular organism, *C. elegans*, is published	1998
Completion of the first draft of the Human Genome Project	2003
Perlegen Sciences, Inc. announces it will complete Phase II of the International HapMap Project using Affymetrix technology	2004

* Data from the US Department of Energy Joint Genome Institute

15 YEARS

Affymetrix Powers the Genetic Revolution

1989	Stephen Fodor, Lubert Stryer, and colleagues develop a microarray prototype which becomes the forerunner to the modern microarray
1991	Fodor and colleagues publish the first article featuring microarray technology in *Science*, launching the microarray industry
1992	First microarray patent is issued and by early 1993, Affymetrix begins independent operations in Santa Clara, CA
1993	Manufacturing technology is developed to make 16 arrays simultaneously
1994	Affymetrix and the Genetics Institute launch a major gene expression program, resulting in the first commercial product
1994	Affymetrix sells a multi-pathogen detection array to Lawrence Livermore National Laboratory to identify 18 different pathogens
1996	Affymetrix begins commercial sales of the GeneChip® System and an HIV microarray for research use
1996	Affymetrix sequences the human mitochondrial genome on a single microarray
1997	Affymetrix introduces the GeneChip® CYP450 array and assay
1999	Affymetrix extends gene expression products to analyze 30,000 mouse genes and expressed sequence tags (ESTs) and over 40,000 human genes and ESTs
2000	Affymetrix forms Perlegen Sciences, Inc. to discover the genetic diversity of humankind
2002	Affymetrix and NCI researchers reveal hidden RNA transcription and publish their findings in *Science*
2003	Affymetrix becomes the first to commercialize the human genome on a single microarray
2004	Affymetrix launches the GeneChip® Mapping 100K Set, making large-scale, whole-genome association studies possible
2004	Affymetrix launches the ENCODE Array to uncover hidden functions of the genome
2004	Affymetrix receives FDA 510(k) clearance for the GeneChip® Scanner 3000Dx, enabling microarrays to be used as *in vitro* diagnostic tools

TO OUR SHAREHOLDERS

In July 2004, scientists at the Rockefeller University began using Affymetrix technology to genotype the entire population of 3,200 adults on the Micronesian island of Kosrae. The goal of this landmark study is to find genetic variations associated with obesity, high blood pressure, and diabetes. In a separate study, a coalition of Pan-Asian scientists is investigating genetic diversity in Asian populations. They are analyzing 50,000 genetic variations in thousands of people to create the most detailed and comprehensive genetic picture ever available for nearly half of the world's population.

These examples illustrate a quiet revolution that is transforming healthcare. Because all human beings have over 99 percent of their three billion base pairs of DNA in common, the challenge of personalized medicine—pharmacogenomics—is to decipher how the subtle differences in our genome change our predisposition to disease and response to therapy. Affymetrix technology is leading this revolution because of its unparalleled information content driven by the marriage of biology and semiconductor-based manufacturing.

Worldwide, scientists are already starting paradigm-shifting experiments with our next-generation genotyping products, while our own researchers extend these tools to new heights. At Perlegen Sciences, Inc., researchers are using Affymetrix technology to complete Phase II of the International HapMap Project. This project—surveying over one billion genotypes—will result in a better understanding of human genetics and aid in establishing Affymetrix technology as the industry standard in the emerging market for DNA analysis.

THE GENETIC AGE

Looking back at the 20th Century, few achievements rival the impact medical advances have had on our quality of life. In 1900, the best treatment for cancer patients was mustard gas, and children with leukemia were simply treated for pain. As the century progressed, miraculous discoveries occurred. For example, Fleming's discovery of penicillin in 1928 cured previously untreatable diseases like tuberculosis, syphilis, and diphtheria. Through the intersection of chemistry and biology, hundreds of new therapeutic compounds were developed to treat diabetes, heart disease, and cancer. And by 1953, Watson and Crick revealed the double-helix structure of DNA, beginning the quiet revolution of incredible discoveries now occurring through genetics.

Since our inception in 1992, our goal has been to unravel the mysteries of the human genome and enable science to understand the genetics of disease and health. Today's healthcare challenges make this goal more important than ever. In the United States alone, economists estimate that 16 percent of the Gross Domestic Product (GDP)—or more than one-and-a-half trillion dollars annually—is spent on healthcare, and the cost of healthcare

around the globe is escalating. At Affymetrix, we believe a more personalized approach to medicine will be essential to control these spiraling costs.

CLINICAL MILESTONES

Moving technology from the research lab into the clinic is an integral part of our promise to improve human health. In 2004, we received regulatory clearance in the United States and Europe for the world's first diagnostic microarray system, the GeneChip® System 3000Dx.

Also in 2004, the Roche Diagnostics AmpliChip™ CYP450 Test was cleared by the FDA. This Powered by Affymetrix™ (PbA) product analyzes genetic variations that impact metabolism rates for certain drugs, including anti-depressants, anti-psychotics, pain medication, and beta-blockers. In an FDA press release dated December 23, 2004, Dr. Lester M. Crawford, Acting FDA Commissioner said, "Physicians can use the genetic information from this test to prevent harmful drug interactions and to assure drugs are used optimally, which in some cases will enable patients to avoid less effective or potentially harmful treatment choices."

In parallel, the FDA developed "Guidance for Industry: Pharmacogenomic Data Submissions," released in March, 2005. This guidance explains how and when pharmaceutical companies should submit pharmacogenomic data to the FDA and encourages the development of drugs that are tailored to subtle differences, such as our susceptibility to a specific disease or response to a particular drug. The initial focus will include diseases like breast cancer, leukemia, and prostate cancer, in which similar tumor types have distinct genetic profiles. Affymetrix' December, 2004 PbA agreement with Veridex, LLC, a Johnson & Johnson company, will extend microarray-based diagnostics to a variety of cancers.

To expand this paradigm, we entered into a number of "translational medicine" agreements with academic health centers designed to advance the translation of basic research findings into new diagnostics and treatments. Our collaborators include world-class research institutions such as Erasmus University Medical Center in Rotterdam, the Broad Institute of MIT and Harvard, Institut Curie, and the Karolinska Institutet. We are also working closely with data management and analysis companies to help scientists process and manage large amounts of information. For example, we are partnering with IBM to provide researchers with data management solutions that integrate genetic information with patient records, and with SAS, to develop standardized analysis and FDA submission software solutions. During 2005, we will continue to extend the clinical applications of Affymetrix technology and initiate additional translational medicine agreements.

GROWTH AND PROFITABILITY

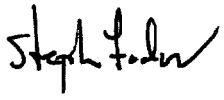
Affymetrix generated record sales in RNA, DNA, and diagnostic product lines in fiscal 2004, resulting in product and product-related revenues of more than $330 million. In the fourth quarter, product revenues exceeded $100 million—an Affymetrix milestone. Ambitious scientific projects such as the ENCODE Project (www.genome.gov/10005107) and Phase II of the International HapMap effort were initiated with Affymetrix products in the academic and government segments of our business. We forged new research collaborations to expand our customer base and build on our history of strong growth in both Europe and Japan. Affymetrix is also expanding into China, where we are laying the foundation for growth.

In 2004, we increased gross margins by 400 basis points over fiscal 2003. Earnings increased by more than 200 percent compared to the previous year to $0.74 per diluted share, and we strengthened our balance sheet by reducing our outstanding debt by nearly $250 million. Cash flow provided by operating activities was nearly $50 million. We also expanded technology programs directed at future revenue opportunities. Affymetrix Research Laboratories (AffyLabs) opened new avenues for growth by innovating next-generation RNA technology for the exploration of the entire human genome. In 2005, Affymetrix will introduce new genotyping products containing over 500,000 SNPs, expression products for examining genome-wide splice-variants, and new automation systems for high-throughput research and clinical medicine.

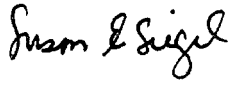
THE WAY AHEAD™

We believe that the century ahead will be defined by advances in our understanding of the genetics of life. Affymetrix products are applicable to many markets, including environmental science, agricultural research, biodefense, life sciences, diagnostics, and forensics. As we look to the future, it is likely that Affymetrix technology will open new markets and be used for applications beyond our imagination. We look forward to this future and appreciate the support you, our shareholders, have shown the Company.

Sincerely,

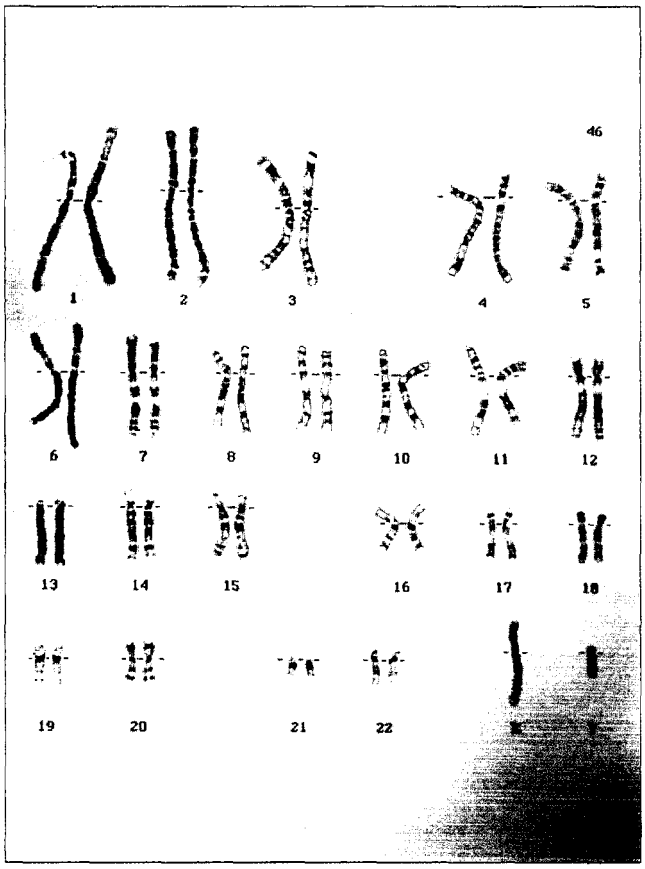


Stephen P. A. Fodor, PhD
Founder, Chairman and
Chief Executive Officer



Susan E. Siegel
President & Director

FORM 10-K



For over a decade, microarrays have revolutionized basic scientific research and have redefined our view of the genome and its function. Now, arrays are advancing to the clinic, where they herald a similar revolution in healthcare.

Visit www.affymetrix.com/corporate/annualreport to learn more about the future of personalized medicine.

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

FORM 10-K

(Mark One)

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

FOR THE FISCAL YEAR ENDED DECEMBER 31, 2004

OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934 (NO FEE REQUIRED)**

FOR THE TRANSITION PERIOD FROM _____ TO _____

COMMISSION FILE NUMBER 0-28218

AFFYMETRIX, INC.

(Exact name of registrant as specified in its charter)

DELAWARE	**77-0319159**
(State or other jurisdiction of incorporation or organization)	(IRS Employer Identification Number)
3380 CENTRAL EXPRESSWAY SANTA CLARA, CALIFORNIA	**95051**
(Address of principal executive offices)	(Zip Code)

(408) 731-5000

(Registrant's telephone number, including area code)

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

None

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

Common Stock, $0.01

Preferred Stock Purchase Rights

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 Rule 12b-2 of the Act). Yes ☒ No ☐

The aggregate market value of the registrant's common stock held by non-affiliates of the registrant at June 30, 2004, based on the closing price of such stock on the Nasdaq National Market on such date, was approximately $772.0 million. The number of shares of the registrant's Common Stock, $0.01 par value, outstanding on March 1, 2005, was 62,811,745.

DOCUMENTS INCORPORATED BY REFERENCE

Certain sections of the Proxy Statement to be filed in connection with the 2005 Annual Meeting of Stockholders are incorporated by reference into Part III of this Form 10-K Report where indicated.

AFFYMETRIX, INC.

FORM 10-K
DECEMBER 31, 2004

TABLE OF CONTENTS

PART I

ITEM 1. BUSINESS

Forward-Looking Statements

All statements in this Annual Report on Form 10-K that are not historical are "forward-looking statements" within the meaning of Section 21E of the Securities Exchange Act as amended, including statements regarding our "expectations," "beliefs," "hopes," "intentions," "strategies" or the like. Such statements are based on our current expectations and are subject to a number of factors and uncertainties that could cause actual results to differ materially from those described in the forward-looking statements. We caution investors that there can be no assurance that actual results or business conditions will not differ materially from those projected or suggested in such forward-looking statements as a result of various factors, including, but not limited to, the risk factors discussed in this Annual Report on Form 10-K on page 49. We expressly disclaim any obligation or undertaking to release publicly any updates or revisions to any forward-looking statements contained herein to reflect any change in our expectations with regard thereto or any change in events, conditions, or circumstances on which any such statements are based.

Narrative Description of Business

Overview

We are engaged in the development, manufacture, sale and service of systems for genetic analysis in the life sciences and clinical healthcare and are recognized as a market leader in creating breakthrough tools that are advancing our understanding of the molecular basis of life. The markets for our products currently include all aspects of molecular biology research in the life sciences, including basic human disease research, genetic analysis, pharmaceutical drug discovery and development, pharmacogenomics (research relating to how a person's genes affect the body's response to drug treatments), toxicogenomics (research relating to the measurement of gene expression as a predictor of toxicity) and molecular diagnostics. Additional markets are emerging in agricultural research, plant breeding, food testing, pathogen identification and consumer genetics. Our integrated GeneChip® microarray platform includes: disposable DNA probe arrays (chips) consisting of nucleic acid sequences set out in an ordered, high density pattern, certain reagents for use with the probe arrays, a scanner and other instruments used to process the probe arrays, and software to analyze and manage genomic or genetic information obtained from the probe arrays. Related microarray technology also offered by Affymetrix includes instrumentation, software and licenses for fabricating, scanning, collecting and analyzing results from complementary technologies.

Our business strategy is to capitalize on our leadership position in the DNA microarray field by marketing our GeneChip® technologies to customers based on two central applications: gene expression monitoring and DNA variation detection. Due to the novel, massively parallel approach to studying biological systems that GeneChip® technology enables, numerous discoveries across many disciplines have already been made, as evidenced by the over 3,000 peer-reviewed publications released, which cited GeneChip® technology. The molecular diagnostic of GeneChip® technologies for diagnosing and guiding treatment of disease is an emerging market opportunity in health management that seeks to improve the effectiveness of health care by collecting information about DNA variation and RNA expression in patients at various times from diagnosis through prognosis and throughout therapeutic monitoring. We currently sell our products directly to pharmaceutical, biotechnology, agrichemical, diagnostics and consumer products companies as well as academic research centers, government research laboratories, private foundation laboratories and clinical reference laboratories in North America and Europe. We also sell our products through life science supply specialists acting as authorized distributors in Mexico, India, the Middle East and Asia Pacific regions.

In March 1992, Affymetrix, Inc. was incorporated in California as a wholly-owned subsidiary of Affymax N.V. (Affymax) and we have continued our business and operations as Affymetrix. We completed our initial public offering in June 1996 and in September 1998 we reincorporated as a Delaware corporation. Our headquarters and principal research and development facilities are located in Santa Clara, California, and we maintain facilities in West Sacramento, California (probe array manufacturing), Sunnyvale, California (sales, marketing and administration, array research and development), Emeryville, California (bioinformatics and software development), Bedford, Massachusetts (instrument development and manufacturing), and additional sales offices in the United Kingdom, Singapore and Japan.

Scientific Background and Technology

Introduction to the Genome and its Opportunity

The genetic content of an organism is known as its "genome." All known genomes are composed of either deoxyribonucleic acid (DNA) or ribonucleic acid (RNA). The instructions required for every living cell to develop its characteristic form and function are believed to be represented within discrete regions of the DNA or RNA known as genes. The instructions contained within genes are embodied in the specific sequences of the four nucleotide bases—adenine-A, cytosine-C, guanine-G and thymine-T—(uracil-U replaces T in RNA) that are the chemical building blocks of DNA and RNA. In protein coding genes, the sequence of these building blocks forms a code which instructs the cell to build a protein, comprised of a string of amino acids, ordered in a way which matches the sequence code of the gene. These proteins are an example of a "hard copy" output of the genetic code and contribute to the structure, biochemical functions and communication mechanisms of the cell in which they are formed.

The DNA molecule possesses a chemical structure which consists of a combination of two DNA strands with hydrogen bonds between nucleotide bases on one strand to complementary nucleotide bases on the other strand. Only certain pairs of the bases can form these complementary bonds: C pairs with G, and A pairs with T. Therefore, a single DNA strand containing bases in the sequence CGTACGGAT can form a bond with a DNA strand containing bases in the sequence GCATGCCTA. Such paired DNA strands are said to be "complementary" and can form a double helix structure in a process called "hybridization." Our GeneChip®technology uses the principle of hybridization to recognize the presence of specific gene sequences and to analyze genetic information.

Genes are segments of DNA that serve as information packets of the genome. In general, a gene's functional information is made available to a cell through the process of transcription or "gene expression", whereby the sequence is copied into an RNA molecule. Protein coding genes may span thousands to hundreds of thousands, or even millions of nucleotide bases since the non-coding regions of a gene (called "introns") and the coding regions of a gene (called "exons") are usually distributed within neighboring genomic sequences that are not translated into proteins or used, or to the extent currently understood, as a functional part of the gene. The number of protein coding genes in the human genome is estimated to be between 35,000 and 40,000. The number of non-coding sequences is the focus of current research interest. Though currently unknown, the number of non-coding sequences is estimated to be significantly larger than the number of protein coding genes in the human genome.

A primary goal in life sciences research and modern molecular medicine is to unravel the complexities of the genome. This generated a worldwide effort to identify and sequence the genomes of many organisms. In the human genome, this effort includes more than three billion nucleotide pairs. In recent years, the effort led by the Human Genome Project and related academic, government and industry research projects resulted in a first near complete draft of the human genome sequence. It is anticipated that many years of research will be required to gain a better understanding of the complexities of the genome, and its characteristics in normal and diseased conditions. This should lead

to a new healthcare paradigm where disease is understood at the molecular level, allowing patients to be diagnosed according to genetic information and then treated with drugs designed to work on specific molecular targets. Ultimately, in addition to diagnosis and treatment, prevention and cure of disease might also be possible based on genetic information.

While scientists are learning more and more about the functions of genes and their variability, there is a great deal more to discover. We believe that the efforts of science to understand the complexities of gene expression, the interaction of genes with our environment and the role of genes in disease and health will continue to provide growth opportunities for our existing gene expression and DNA analysis products, and will continue to create new opportunities in clinical medicine. Toward this end we have partnered with the National Cancer Institute to assemble the first complete map of the human transcriptome (a catalog of all of the RNA transcripts made by the genome). This ongoing effort has already led to the discovery of many novel protein coding and non-protein coding sequences that we expect to include in future products. This effort is also prompting continued development of our sample preparation, array, instrumentation and data analysis technologies.

Genetic Variability and Disease

For the most part, each cell in a complex organism contains a complete copy of the genome. In a population of organisms, individuals vary from one another because of differences in gene sequences which are inherited from each parent and sometimes through the introduction of sequence changes due to environmental damage or biological errors in processes like gene replication. In some cases these variations, or polymorphisms, have little detectable effect on the biology of the organism, while in other cases they may result in an altered biological response to the environment which could thereby lead to disease. By screening for these polymorphisms, researchers seek to identify those that might be implicated in specific diseases. Sometimes it is not a single variation, but the combination of these sequence differences that leads to a diseased state. For this reason, researchers look at the patterns of these polymorphisms in a large number of healthy and affected organisms in order to correlate specific gene polymorphisms with specific diseases.

Another major mechanism by which the fate and function of cells is regulated is the timing and level of gene expression, which can reflect the interface between genes and the environment. Although most cells contain an organism's full set of genes, each cell expresses only a fraction of this set of genes in different quantities and at different times. The expression patterns of genes can be correlated with many human diseases such as cancer, as well as with the effectiveness of treatment in specific patient populations for which new therapies can be developed. By identifying genes that are differentially expressed in particular diseases or patient populations, novel molecular targets and treatments may be identified and validated. In addition, gene expression signatures may be identified that allow the selection of optimal treatment for a single individual.

In order to understand the impact of genomics on health, disease and other aspects of the human condition, scientists must compare both the sequence variation and the gene expression patterns of healthy and diseased individuals, tissues and cells. We believe that our GeneChip® platform not only enables scientists to attain ambitious goals, from identifying genetic variations associated with disease to discovering new drug targets, but also simplifies, accelerates and reduces the cost of understanding this genetic information.

GeneChip® Probe Array Technology

Our GeneChip® technology leverages semiconductor-based photolithographic fabrication techniques, which enables us to synthesize a large variety of predetermined DNA sequences simultaneously in predetermined locations on a small glass chip called a "probe array." Photolithography is a technique which uses light to create exposure patterns on the glass chip and

direct chemical reactions. The process begins by coating the chip with light-sensitive chemical compounds that prevent chemical coupling. These light-sensitive compounds are called "protecting groups." Lithographic masks, which consist of predetermined transparent patterns etched into a glass plate that either block or transmit light, are used to selectively illuminate the glass surface of the chip. Only those areas exposed to light are deprotected, and thus activated for chemical coupling through removal of the light-sensitive protecting groups. The entire surface is then flooded with a solution containing the first in a series of DNA building blocks (A, C, G or T). Coupling only occurs in those regions that have been deprotected through illumination. The new DNA building block also bears a light-sensitive protecting group so that the cycle can be repeated.

This process of exposure to light and subsequent chemical coupling can be repeated many times on the same chip in order to generate a complex array of DNA sequences of defined length. The intricate illumination patterns allow us to build high-density arrays of many diverse DNA sequences in a small area. Unlike conventional synthesis techniques, which generally use a linear process to create compounds, our synthesis technique is combinatorial, in that the number of different compounds synthesized grows exponentially with the number of cycles in the synthesis. Currently available commercial arrays contain over 1.3 million unique sequences. Each unique sequence is 25 nucleotides in length and is represented millions of times within a specified area of the probe array. Just as in the semiconductor industry, we manufacture probe arrays in a wafer format. Each wafer is approximately five inches square and can contain up to 60 million unique probe sequences based on current technology. These whole wafers have been used by an affiliate of Affymetrix, Perlegen Sciences, in its work to resequence multiple samples of the human genome. For our commercial array products, we can manufacture a large number of identical or different DNA probe arrays on a glass wafer, which is then diced into individual chips. Given the large amount of unique sequences represented in our probe arrays, our technology enables the efficient analysis of a multitude of DNA probes to analyze DNA or RNA sequences in a test sample.

In the semiconductor industry, the principle that the number of transistors in a semiconductor chip doubles every 18 months based on feature shrink, or increased resolution, is known as Moore's Law. Because we leverage photolithographic manufacturing processes adapted from the semiconductor industry, we have also been able to continually "shrink" the size of features, or oligonucleotide probes of a given sequence, on our GeneChip® arrays. For instance, our first commercial GeneChip® products, shipped in 1994, had a feature size of 100 microns and by 2003, we introduced our HG-U133 product with an 11 micron feature size. We have thus been able to continually package nearly 100 times more genetic information onto our GeneChip® arrays over the last decade.

Since we manufacture our chips in wafer format, we can vary the number of chips manufactured per wafer. Therefore we can manufacture thousands of chips per wafer with low information content and lower cost of goods sold or decrease the number of chips per wafer and increase the information content. We expect that we will continue to benefit from this manufacturing leverage as our technology development activities enable further feature shrink. We believe that our unique manufacturing process is a significant competitive advantage.

Products

Overview

Our products form an integral part of our GeneChip® system that is designed for use by pharmaceutical, biotechnology, agrichemical, diagnostics and consumer products companies, as well as academic research centers, private government research foundations and clinical reference laboratories. The GeneChip® system consists of several integrated components: disposable probe arrays containing genetic information on a chip, reagents for extracting, amplifying and labeling target nucleic acids, a fluidics station for introducing the test sample to the probe arrays, a hybridization oven for optimizing

the binding of samples to the probe arrays, a scanner to read the fluorescent image from the probe arrays, and software to analyze and manage the resulting genetic information. The function of each single-stranded sequence on the GeneChip® probe array is to bind to its complementary single strand of DNA or RNA from a biological sample. Each unique sequence feature on the GeneChip® probe array contains multiple copies of the same single strand of DNA. The nucleic acid (DNA or RNA) to be tested is isolated from a sample, such as blood or biopsy tissue, amplified and fluorescently labeled by one of several standard biochemical methods. The test sample is then washed over the probe array, where the now labeled individual nucleic acid sequences that represent the genetic content or expressed genes of the sample hybridize to their complementary sequences bound on the array. When scanned by a laser, which is part of the scanner instrument, the test sample generates a fluorescent signal. The locations where a fluorescent signal is detected by an optical detection system on the scanner instrument correspond to sequences complementary to the test sample. Sequence variation, or the quantification of specific sequences of nucleic acids in the sample, can be determined by detecting the relative strength of these signals since the sequence and position of each complementary DNA probe on the probe array is known. The combination of a particular GeneChip® probe array, together with an optimized set of reagents and a user protocol describing how to carry out the procedure, is referred to as an "assay."

We currently market products for two principal applications: monitoring of gene expression levels and investigation of genetic variation (DNA analysis including single nucleotide polymorphism (SNP) genotype analysis and resequencing). Our GeneChip® expression monitoring arrays enable our customers to qualitatively and quantitatively measure gene expression levels in a number of biologically relevant organisms. Our catalog GeneChip® expression arrays are available for the study of human, rat, mouse and a broad range of other mammalian and model organisms. Additionally, we market CustomExpress™, CustomSeq™ and NimbleExpress™ products which enable our customers to design their own custom GeneChip® expression arrays or sequence arrays for organisms of interest to them. Our GeneChip® DNA analysis arrays and variant detection systems are available to enable researchers to perform high throughput polymorphism analysis and to carry out large scale resequencing (comparing the DNA sequence of multiple samples against a known reference sequence, e.g. the published human genome sequence). With its unique, parallel analysis capability, GeneChip® technology enables our customers to perform accurate and cost-effective genetic analysis, using minute amounts of sample DNA, in their own laboratories on a scale that was previously only possible in specialist high throughput centers.

In addition, we believe that genetic analysis and testing products will be a core component in the area of clinical research and molecular diagnostic applications and we are developing our GeneChip® system for clinical research and diagnostic analysis of both gene expression and DNA analysis. Together with our collaborative partners, we are focusing on the development and commercialization of diagnostic products in cancer, osteoporosis, cardiovascular, inflammatory, metabolic, infectious and other diseases, and believe that our GeneChip® assays will facilitate more efficient and effective disease detection, prognosis and treatment selection, leading to overall improved patient management. To further our clinical research and molecular diagnostics strategy, we have established partnerships and customer relationships with leading academic researchers, pharmaceutical and biotechnology companies, including F. Hoffmann-La Roche Ltd. ("Roche"), bioMérieux, Inc. ("bioMérieux"), Beckman Coulter, Inc. ("Beckman Coulter"), Arcturus Bioscience, Inc. ("Arcturus"), Boston University Medical Center, Caliper Life Sciences ("Caliper"), the Whitehead Institute for Genome Research at the Massachusetts Institute of Technology (the "Whitehead Institute") and Veridex, LLC, a Johnson & Johnson company ("Veridex"). We believe that the rapid growth of the clinical research and the diagnostic devices markets holds the potential for GeneChip® technology applications ranging from basic research to clinical trials and, ultimately, diagnostic devices. As a result we are working with leaders in molecular diagnostics to provide custom made GeneChip® probe arrays to their specifications. Our partners subsequently package the chips into kits, seek regulatory approval for their

diagnostic use, and sell them into the diagnostic markets using their sales channels. We are leveraging our partners' strengths in research, development, regulatory practices and distribution while leveraging our strengths in array technology. These products are marketed as being "Powered by Affymetrix."

Gene Expression Monitoring Arrays

Gene expression monitoring is a valuable tool for identifying correlations between genes, determining their biological functions and identifying patterns that might be useful in classifying diseases. To facilitate gene expression monitoring, we design and manufacture probe arrays with single-stranded DNA molecules that are complementary to sequences within genes of interest. By synthesizing specific probes for multiple genes on a single probe array, we enable researchers to quickly, quantitatively and simultaneously monitor the expression of a large number of genes of interest. By monitoring the expression of such genes under different conditions and at different times, researchers can use the probe arrays to understand the dynamic relationship between gene expression and biological activity. We believe such information will be an important tool in understanding gene function and for the development of new drugs and diagnostic tools. Increasingly, clinical research is showing that gene expression patterns in tissue samples, particularly those from cancerous tissues, can be used to characterize disease sub-types and hopefully to predict therapeutic responses and likely outcomes.

The range of GeneChip® Expression products is described below:

- *Standard Expression Monitoring Arrays*. We are currently selling a portfolio of standard expression monitoring GeneChip® arrays. Our current offering of standard arrays includes products that monitor the expression of the majority of full-length and partial gene sequences contained in publicly available sequence databases, which correspond with human, mouse, rat, canine, Drosophila melanogaster (fruit fly), Caenorhabditis elegans (soil parasite), Xenopus laevis (frog), Danio rerio (zebrafish), Saccharomyces cerevisiae (yeast), Escherichia coli (bacteria), Pseudomonas aeruginosa (bacteria), Plasmodium falciparum (malarial parasite), Anopheles (mosquito vector of malaria) and Arabidopsis thaliana (plant) organisms.
- *Custom Express Arrays*. We have established a GeneChip® CustomExpress™ Array Program enabling customers to design affordable arrays tailored to their specific research needs. Our CustomExpress™ arrays allow customers to select probes from any of our probe sequences on our catalog arrays and/or to incorporate probes from their own proprietary gene sequences. These arrays are then produced utilizing the same manufacturing technologies as our other GeneChip® whole genome expression arrays.
- *Made-to-Order Arrays*. We offer the GeneChip® Made-to-Order Array Program to enable our customers to use arrays from selected custom designs and previous-generation GeneChip® arrays which are no longer available as catalog products.
- *GeneChip® Human Genome U133-X3P Array*. The Affymetrix GeneChip® U133-X3P Array, developed in collaboration with Arcturus Bioscience Inc., will offer researchers a new tool to study approximately 44,000 of the best-characterized human gene transcripts in using paraffin-embedded biopsy samples rather than fresh tissue. The U133-X3P Array is specifically designed to detect shorter RNAs, which are common in these types of samples. This array will be offered through the Affymetrix Made-to-Order Program to any researcher interested in examining paraffin-embedded samples for gene expression. Patient outcomes are frequently known for people whose biopsy samples have been archived and gene expression analysis of these samples could provide a wealth of additional information. Analyzing these samples could help scientists determine why patients did or did not respond to the treatments they were given and provide greater understanding of which genes are involved in disease mechanisms.

- *Whole Genome Tiling Arrays.* We offer tiling arrays for the genomes of a number of major organisms including human, mouse, drosophila, C.elegans and yeast. These designs use evenly spaced probes across the non-repetitive portion of the genome and rely only on genomic DNA sequence and not functional annotation for their design. The arrays are used for mapping the entire collection of transcribed elements (including non-coding RNA's that are used for structural and regulatory purposes), identifying protein binding and methylation sites and identification of genomic origins of replication. These products are currently available in either Early Access or Technology Access programs, which allow our customers to obtain pre-released versions of our products prior to full commercialization.

DNA Analysis Arrays

As genes and regulatory regions in the human genome are mapped, identified, and sequenced, the value of understanding the variability of sequences among individuals increases. Researchers seek to determine the normal sequence of the gene, which mutations or polymorphisms exist in a population, and whether these variations correlate with a disease or other aspect of the human condition. Studies of the genetics of complex diseases have historically been challenging due to high costs of sequencing or genotyping of large numbers of affected and unaffected individuals. Genetic variation also impacts how individuals respond to therapeutics. The study of these effects is known as pharmacogenetics. This is part of the broader field of pharmacogenomics, which seeks to understand how the overall composition and expression of the genome affects therapeutic response, drug efficacy and the incidence of adverse side effects to therapy. We believe pharmacogenomics will become increasingly important both in clinical drug trials and patient care. By using our resequencing and genotyping technologies, we believe that our GeneChip® probe arrays could significantly reduce the cost and time required for high-volume polymorphism analysis, which is currently performed through more labor-intensive techniques.

We have initiated product research and development efforts on several genetic analysis probe arrays and variant detection analysis systems and formed collaborations to accelerate the development of our genotyping products. For additional information concerning these efforts and collaborations see the sections of this Form 10-K entitled "Research and Development" and "Our Collaborative Partners." We currently market the following DNA analysis products:

- *GeneChip® Human Mapping 10K Array.* The Mapping 10K Array is our whole genome SNP analysis tool that enables scientists to simultaneously interrogate over 10,000 SNPs spaced relatively evenly across the human genome using a simple assay. This product is well-suited to the genetic analysis of samples collected from family members who share similar disease characteristics, an approach known as linkage analysis. The marker density provides information at approximately ten times the coverage previously available with the microsatellite methods that have until now been the preferred approach for such studies. As a result, researchers using the GeneChip® Human Mapping 10K Array have greater sensitivity to detect disease genes in a linkage study and can localize them to narrower regions of DNA than was previously possible. The package includes GeneChip® arrays, analysis software and reagents.
- *GeneChip® Human Mapping 100K Set.* In 2004, we launched our Mapping 100K Set for genome-wide analysis of over 100,000 SNPs on a two array set. This product uses assay methodology similar to that of the Mapping 10K Array but covers more genomic content. This higher density of marker information is enabling novel experiments called genome wide association studies. Researchers have for many years sought to study major diseases in unrelated populations, but the information density (hundreds of thousands of markers) and experiment size (hundreds or thousands of samples) made these experiments unaffordable. The Mapping 100K Set is the first in a family of products from Affymetrix that is now making large scale whole genome analysis cost effective. Affymetrix has announced plans to develop additional

products for these experiments and the next generation product available in 2005 is expected to cover 500,000 SNPs.

- *GeneChip® CustomSeq™ Resequencing Array.* The GeneChip® CustomSeq™ resequencing product line enables customers to order custom resequencing arrays that can currently sequence 60,000 bases (or 30,000 double-stranded bases) in just two days with high accuracy. As we shrink feature size, we expect to increase the sequence content dramatically. Next generation CustomSeq™ arrays currently available through Early Access programs cover 600,000 bases of sequence (or 300,000 bases double stranded), significantly increasing the amount of information generated while decreasing the cost and labor per experiment. CustomSeq™ arrays offer researchers a powerful complementary tool to our whole genome genotyping and whole genome expression products on the same industry-standard GeneChip® platform. The package includes GeneChip® arrays, analysis software and reagents.
- *GeneChip® Tag Array.* GeneChip® Tag arrays contain oligonucleotides designed for optimal hybridization properties that can be used with a variety of assays. In particular, partners such as ParAllele Biosciences have developed assays to work with these tag arrays. Affymetrix and ParAllele have entered into a joint development and commercialization agreement to co-develop products that combine ParAllele's MegAllele® assay technology and software with Affymetrix's tag arrays and instrument systems. Affymetrix has recently released these products to a limited set of early access customers and will launch the products broadly in 2005. The package will include GeneChip® arrays, MegAllele® reagents, and MegAllele® software for use on the industry-standard GeneChip® instrument system.

DNA Analysis Products Powered by Affymetrix

- *Roche AmpliChip™ CYP450.* The "Powered by Affymetrix" program and collaboration with Roche announced in January 2003 resulted in the June 2003 release of the Roche AmpliChip™ CYP450 microarray. The AmpliChip CYP450 microarray allows for complex sequence information to be analyzed for the purpose of genotyping the CYP2D6 and CYP2C19 genes. Sequence variation in these genes can result in marked differences in the way individuals metabolize, and hence respond to, an estimated 25% of all drugs. In late 2004, Roche obtained in-vitro diagnostic status for the product in the United States and Europe.
- *FoodExpert-ID assay.* bioMérieux has developed and is commercializing the GeneChip® based FoodExpert-ID assay under an industrial license and supply agreement with Affymetrix. The FoodExpert-ID assay detects and identifies, in parallel, DNA sequences from 40 different commercially relevant animal species (and the classes: mammal, fish, bird) in raw and processed food products and in animal feed samples. The FoodExpert-ID assay offers a reliable and sensitive method of authenticating food and animal feed that can be integrated into routine use. The final report of the FoodExpert-ID assay is a permanent record of the vertebrate animal species composition of a food or animal feed product verified by a DNA signature and can be considered as a "product identity card". We manufacture the GeneChip® array, the most critical component of the FoodExpert-ID assay, and it is marketed by bioMérieux as part of our "Powered by Affymetrix" business model.

Access Programs for Our GeneChip® Arrays

We offer a variety of sales programs for our gene expression monitoring and DNA analysis arrays, tailored to the needs of industrial, biotech and academic/government customers. These product related revenue programs are tied to volume usage and customers can select a program that best meets their needs to receive favorable pricing per array.

Reagents for Our GeneChip® Systems

We offer various reagents for use with our gene expression monitoring arrays and DNA analysis arrays. Reagents assist researchers at critical steps in the sample preparation process such as extracting, amplifying and labeling target nucleic acid. As an integral part of the GeneChip® system, standard reagents and associated protocols help minimize experimental variations. For our expression probe arrays, we offer the following reagents: One-Cycle cDNA Synthesis Kit, Two-Cycle cDNA Synthesis Kit, GeneChip® Expression 3'-Amplification Reagents for IVT Labeling, GeneChip® Sample Cleanup Module, T7-Oligo(dT) Promoter Primer Kit, Eukaryotic Poly-A RNA Control Kit and Eukaryotic Hybridization Control Kit. For our DNA analysis arrays, we offer reagent kits for use with all of the products mentioned above.

Instruments for Our GeneChip® Systems

Our GeneChip® instruments provide a fully integrated system for conducting research using GeneChip® probe arrays. The instrument system consists of four hardware devices, each providing for robust preparation and analysis of samples using GeneChip® arrays. The first device is a hybridization oven to control the timing and temperature required for hybridization of the test sample to the probe array. The second device is a fluidics station that controls exposure of the probe array to solutions containing prepared sample and labeled detection reagents across the probe array. The fluidics station can process four probe arrays simultaneously. The fluidics station protocols conclude with a reagent wash that leaves the labeled, hybridized test sample bound to the probe array.

The third device, a laser scanner, is used after completion of protocols on the fluidics and hybridization stations, at which time the cartridge containing the probe array is placed in the scanner and read. The scanner consists of a laser, high-resolution optics, robotics to position and scan the probe array, a fluorescence detector and an interface to a computer workstation. The labeled material that is bound to the hybridized test sample emits fluorescent signals when exposed to the light from the laser. The locations and intensities of the fluorescent signals are recorded by the scanner and stored in the computer for analysis. The fourth device is an autoloader, which is a 48-array carousel that interfaces with the scanner to allow walk-away automation of the scanning steps, while maintaining the loaded arrays at the optimum storage temperature.

The individual components of our GeneChip® instrument system are described in more detail below.

- *GeneChip® Hybridization Oven 640.* The GeneChip® Hybridization Oven 640 is used to control the timing and temperature required for hybridization of the test sample to the probe array. The GeneChip® Hybridization Oven 640 holds up to eight probe array cartridge carriers (each with eight cartridge slots) that rotate for controlled hybridization of up to 64 probe arrays. This unit delivers temperature control for consistent performance across all probe array applications.
- *Fluidics Station 450.* The Fluidics Station 450 is used to control exposure of the probe array to solutions containing prepared sample and labeled detection reagents across the probe array and can independently process four probe arrays simultaneously. The fluidics station protocols conclude with a reagent wash that leaves the labeled, hybridized test sample bound to the probe array. Multiple fluidics stations can be connected to the same computer workstation in order to expedite array processing in high throughput laboratories. This model of the Fluidics Station was launched in 2003 and replaced the earlier Fluidics Station 400 to provide users with a higher level of automation, and improved performance.
- *GeneChip® Scanner 3000.* The GeneChip® Scanner 3000, launched in January 2003, uses proprietary laser scanning technology and high resolution optics to read the fluorescent signal from GeneChip® arrays. The GeneChip® Scanner 3000, developed and manufactured by

Affymetrix, represents the next generation in scanner technology. The Flying Objective™ scanning technology incorporated into this scanner has been adapted to provide faster scanning of GeneChip® probe arrays with a high degree of image uniformity and accuracy. The current version of the GeneChip® Scanner 3000 has been validated to allow imaging of GeneChip®arrays with feature sizes as small as 8 microns and we believe the scanning technology can be used with further reductions of GeneChip® feature size. The GeneChip® Scanner 3000 may also be purchased with a computer workstation loaded with Affymetrix GeneChip® Operating Software ("GCOS") (discussed below under "Software for Our GeneChip® Systems and Analysis Tools").

- *GeneChip® AutoLoader.* The GeneChip® Autoloader, developed and manufactured by Affymetrix, was introduced in September 2003. The Autoloader is a 48-array carousel that automatically loads and unloads arrays from the scanner, helping researchers automate their array processing and providing walk-away use in the lab. The GeneChip® Scanner with AutoLoader can load and scan 48 current catalog arrays in 4.5 hours or less, depending on the array format that is scanned. Thermostatic control allows the stored arrays to be held in a cooled environment and then warmed to optimum temperature for scanning. The AutoLoader attaches to the top of the scanner, saving valuable bench space, and does not require any additional power source.
- *Workstations.* We offer workstations to accommodate varied research needs. The Type I GeneChip® Workstation (Windows NT) is configured with system software enabling it to operate the GeneChip® Scanner 3000 and multiple Fluidics Stations. Our Type II GeneChip® Workstation (Windows NT and Windows 2000) can operate independently of the scanner and fluidics station instruments.

In September 2003, we announced the introduction of a new High Throughput Array (HT) system designed to process and analyze GeneChip® arrays in a 96-well format suitable for industrializing genome research. This new format is designed to reduce experimental costs and help scientists produce results more rapidly and effectively. The GeneChip® Array Station will have the capacity to process hundreds of biological samples per day with minimal human supervision, reducing capital, labor, reagent and array expenses. The GeneChip® Array Station adapts the same industry-standard GeneChip® technology and content used in our cartridges to a standard 96-well microtiter plate, and runs on an automated system built with off-the-shelf robotic components. The GeneChip® Array Station automates the most labor intensive steps in GeneChip® probe array processing, dramatically reducing the cost per assay. The decrease in cost and increase in throughput makes the GeneChip® Array Station well suited for downstream development applications such as compound profiling, molecular toxicology and clinical trials.

Instruments for Use in Molecular Diagnostics

The GeneChip System 3000Dx (GCS 3000Dx) is configured especially for the molecular diagnostic market. In September 2004, the GCS3000Dx received Conformite Europeene (CE) certification, clearing it for use as an in-vitro diagnostic (IVD) product in the European Union. In December 2004, the GCS3000Dx was also cleared by the United States Food and Drug Administration (FDA) as an IVD to be used in conjunction with the Roche Diagnostics AmpliChip CYP450 Test. The AmpliChip CYP450 Test also received CE certification and FDA clearance in 2004 making it the first Powered by Affymetrix IVD test. This test, which utilizes an Affymetrix microarray produced specifically for Roche Diagnostics, analyzes a patient's Cytochrome P450 2D6 and 2C19 genotypes to look for variations that can influence drug metabolism. The GCS3000Dx will support all Powered by Affymetrix molecular diagnostic tests. The system includes the GCS3000Dx Scanner with Autoloader Dx, FS450Dx Fluidics Station, and Workstation with GCOS Dx.

Software for Our GeneChip® Systems and Analysis Tools

Our GeneChip® Operating Software ("GCOS") software is supplied as part of an integrated system and runs on an industry standard PC platform. The fluorescence intensity data captured from the scanner are used in conjunction with computer files containing the probe sequence and location of all the probes on the probe array to determine the expression level of a particular gene or to identify particular DNA sequence variations of the test sample.

Our Data Mining Tool® and GeneChip® Operating Software Server ("GCOS Server") software products allow for sophisticated analyses of gene expression results and provide a means of linking and integrating this information with other databases.

Customers may choose operating or other software products provided by third party vendors that have been developed through our OpenSystems™ program, which includes the provision of a Software Developer's Kit to interested commercial and academic parties. Through this program we intend to stimulate a wide range of independent groups to develop tools for use with our platform, further enhancing our customers' capability to generate unique biological insights from the high quality data provided by the GeneChip® platform.

Finally, our NetAffx™ Analysis Center (www.affymetrix.com/analysis/) is our exclusive online informatics resource for our customers and provides streamlined, open access to design information and biological annotations associated with our GeneChip® arrays. It was created to assist genomic researchers with the design and analysis of DNA array based experiments. NetAffx offers researchers a searchable catalog of Affymetrix GeneChip® probe array content, a range of publicly available and Affymetrix generated databases, and links to important third party resources.

Molecular Diagnostic Initiatives

We believe that our GeneChip® technology can be effectively applied to complex molecular diagnostic testing. We have formed collaborations and intend to further partner with, or license technology to, established diagnostic and medical device companies to develop, obtain regulatory approval for, and commercialize probe arrays and instrumentation. We anticipate broader use of probe arrays as components of diagnostic products and clinical research applications. We believe that to support large central laboratories, additional instrumentation and automation will need to be developed to allow for handling the large volume testing of the clinical diagnostic setting. To further our molecular diagnostics strategy, we have established a number of collaborations with leading academic researchers, diagnostic companies, pharmaceutical and biotechnology companies.

For example, we are non-exclusively collaborating with Roche to develop and commercialize GeneChip® diagnostic tests for DNA analysis, genotyping and resequencing applications, as well as for RNA expression analysis, in a broad range of human disease areas. Using our GeneChip®technologies, Roche intends to develop and market diagnostic tests for diseases such as cancer, osteoporosis, cardiovascular, metabolic, infectious and inflammatory diseases.

In oncology, we are non-exclusively collaborating with Veridex, a Johnson & Johnson company, to develop and commercialize GeneChip® diagnostic tests for oncology. Using our GeneChip® technologies, Veridex intends to develop and market tests for cancer.

In addition, we have collaborations with several academic research centers, including Boston University Medical Center and the Whitehead Institute for Biomedical Research, to discover and test molecular signatures for specific indications, as well as to develop and test new methods necessary to meet the requirements of molecular diagnostics.

In bacteriology, we have a non-exclusive collaborative development agreement and an associated supply agreement for probe arrays with bioMérieux, Inc. to identify the species and drug resistance

profiles of those bacteria causing human infection. The agreements also allow for non-exclusive development of DNA probe arrays for certain diagnostic viral tests and for the fields of food and industrial testing.

We and our "Powered by Affymetrix" partners believe that developing diagnostic products for cancer and other human diseases will establish new standards for molecular diagnostic testing. Ultimately, these products will allow physicians to better diagnose and treat human disease.

We have also entered into a series of agreements with Beckman Coulter that give them the right to develop probe array-based diagnostic products using some elements of our GeneChip® technology. Under these agreements, we have also agreed to grant Beckman Coulter licenses to commercialize probe arrays manufactured using certain of our technologies other than light-directed synthesis. Under the arrangement, Beckman Coulter would pay us transfer prices and royalties on sales of these products.

For additional information concerning our collaborations, see the section of this Form 10-K entitled "Our Collaborative Partners."

Our Collaborative Partners

Our strategy is to establish the GeneChip® system as the platform of choice for analyzing complex genetic information, to expand the applications of our technology, and to acquire access to complementary technologies and resources. Accordingly, we have entered into and intend to enter into additional collaborative agreements to further this strategy. The table below sets forth a selected list of collaborators with whom we have current agreements, together with the related products and programs and the commencement dates of the most recent agreement. The table is organized by reference to the product area that represents the most significant portion of the collaboration; however, the collaboration may also involve other areas of our business and product line.

SUMMARY OF SELECTED COLLABORATORS

Company	Type of Agreement	Date
Gene Expression Monitoring		
Millennium Pharmaceuticals, Inc.	Collaborative research and development agreement to develop gene expression array processes and applications.	October 2001
Qiagen, GmbH	Agreement for Qiagen to supply nucleic acid purification products for Affymetrix to resell for use with GeneChip® arrays in the target labeling process.	February 2002
	Collaborative research to optimize the use of GeneChip®expression arrays in gene modulation applications which use siRNA.	October 2003

Company	Type of Agreement	Date
PreAnalytiX GmbH	Collaborative development agreement to optimize the PreAnalytiX PAXgene(TM) Blood RNA System for use with Affymetrix GeneChip® technology to improve gene expression profile results on RNA extracted from whole blood.	October 2003
Strategene	Agreement to develop Array Assist Lite with Iobion which includes Affymetrix algorithms for analysis of Gene Expression arrays. Affymetrix will distribute Array Assist Lite.	January 2005
Arcturus Bioscience, Inc. (formerly Arcturus Engineering, Inc.)	Collaborative agreement to develop new tools that will enable researchers to conduct gene expression analysis on paraffin-embedded clinical biopsy samples using Arcturus reagents and a new Affymetrix custom human array.	November 2003
Invitrogen Corporation	Collaborative agreement to develop a new line of GeneChip® brand expression reagents including two new cDNA Synthesis Kits, optimized for use with Affymetrix GeneChip® technology, containing Invitrogen's industry-leading SuperScript™ reverse transcriptase (RT).	November 2003
DNA Analysis		
ParAllele BioScience, Inc.	Joint development and commercialization agreement to co-develop genotyping products to be sold by Affymetrix. These products will use GeneChip® arrays and systems and ParAllele assays and software.	April 2004
Perlegen Sciences, Inc.	Supply agreement for Perlegen's core SNP discovery and genotyping research. License to single nucleotide polymorphism content and other IP; discoveries are being commercialized in certain Affymetrix DNA analysis products.	March 2001 and January 2003

Company	Type of Agreement	Date
Molecular Diagnostics		
Arcturus Bioscience, Inc. (formerly Arcturus Engineering, Inc.)	Under a supply agreement, Arcturus has broad access to our standard and custom GeneChip® brand arrays, instrumentation and software to monitor gene expression aimed at developing novel microgenomics array-based diagnostic content.	December 2002
bioMérieux, Inc.	Collaborative agreements focused on bacteriology and virology molecular diagnostic products; industrial and food testing products.	September 1996, December 1997, January 1998, and March 2003
Boston University Medical Center	Collaborative agreement focused on developing tools for screening and early detection of lung cancer.	December 2002
F. Hoffmann-La Roche Ltd.	Collaborative agreements to develop and commercialize GeneChip® based diagnostic products in a range of human disease areas.	February 1998 and January 2003
Veridex, LLC	Collaborative agreements to develop and commercialize GeneChip® based diagnostic products for oncology.	December 2004
Other		
The Broad Institute	Collaborative agreement to develop applications of GeneChip®technology in the areas of genotyping, resequencing and high throughput expression analysis.	September 2004
Beckman Coulter, Inc.	Agreement to purchase Beckman Coulter's array business. We granted Beckman Coulter licenses to commercialize probe arrays manufactured using certain of our technologies other than light-directed synthesis.	July 1998
Array Automation, LLC (Joint venture with Beckman Coulter, Inc.)	Array Automation is a joint venture between Affymetrix and Beckman Coulter, Inc. The joint venture was incorporated in July 2003, with the primary purpose of product research and development in the field of non-photolithographic arrays of polynucleotide sequences and instruments.	July 2003

Company	Type of Agreement	Date
National Cancer Institute	Collaborative research relating to RNA transcription regulation and activity.	January 2001
Ingenuity Systems, Inc.	Agency agreement to make available Ingenuity's Pathways Analysis product to Affymetrix customers. Ingenuity Pathways Analysis is a web-based application that is designed to enable Affymetrix customers to more easily discover, visualize and explore therapeutically relevant networks in gene expression array data sets.	July 2003
Caliper Life Sciences, Inc.	Collaboration and supply agreement to develop and provide automated target preparation instruments for the GeneChip® Probe Array system.	January 2004

Gene Expression Monitoring Collaborations

Millennium Pharmaceuticals, Inc. In October 2001, we entered into a four-year supply and research and development agreement with Millennium Pharmaceuticals, Inc. ("Millennium") to co-develop GeneChip® technology applications for use in drug discovery and development. Under the agreement, we and Millennium are jointly developing gene expression array processes and applications to enhance the productivity of genome-based drug discovery and development. We have the right to commercialize certain technologies developed under this collaboration.

Qiagen, GmbH. In February 2002, we entered into a three-year supply agreement with Qiagen, GmbH ("Qiagen") for Qiagen to supply us with certain nucleic acid purification products for use with our GeneChip® arrays for target labeling in expression analysis.

PreAnalytiX GmbH. In October 2003, we entered into a collaborative agreement with PreAnalytiX, a joint venture between QIAGEN N.V. and Becton, Dickinson and Company. The goal of the collaboration will be to develop improved methods for the use of PreAnalytiX technology with GeneChip® expression analysis arrays. By combining PreAnalytiX and Affymetrix technologies, our goal is to develop a complete, standardized process for expression profiling starting from whole blood samples.

Strategene Corporation. In January 2005, we entered into a non-exclusive strategic alliance under which Strategene will provide Affymetrix customers with new software solutions for GeneChip® data analysis. As part of this agreement, Strategene will develop a new software package for Affymetrix, ArrayAssist® Lite, which will be offered as a standard statistical analysis solution of Affymetrix gene expression microarrays.

Arcturus Bioscience Inc. In November 2003, we entered into a collaboration to develop new tools that will enable researchers to conduct gene expression analysis on paraffin-embedded clinical biopsy samples using Arcturus reagents and a new Affymetrix custom human array. Paradise(TM) reagents, developed by Arcturus can extract and amplify RNA from paraffin-embedded tissues. These samples are suitable for use in gene expression analysis when used with a new custom microarray, the GeneChip® Human Genome X3P Array, which will be offered through the Affymetrix Made-to-Order Program to any researcher interested in examining paraffin-embedded samples for gene expression.

Invitrogen Corporation. In November 2003 we signed a collaboration and supply agreement to develop and market a new line of GeneChip® brand expression reagents including two new cDNA Synthesis Kits. Both of the new cDNA Synthesis Kits were developed in collaboration with Invitrogen and contain Invitrogen's industry-leading SuperScript™ reverse transcriptase (RT). These reagents have been optimized for use with Affymetrix GeneChip technology, offering a complete, standardized sample preparation system that is easier to use and will help customers produce more robust and consistent array results. The One-Cycle cDNA Synthesis Kit offers all necessary reagents for standard target labeling. This protocol has been used by the majority of Affymetrix customers already, but the new kit provides improved configuration and greater convenience. The new Two-Cycle cDNA Synthesis Kit offers customers a streamlined procedure for preparing samples using a small amount of material, such as biopsy or laser capture dissected samples.

DNA Analysis Collaborations

ParAllele BioScience, Inc. In April 2004, Affymetrix and ParAllele BioScience, Inc. ("ParAllele") entered into a joint development and commercialization agreement to co-develop genotyping products. These products will use GeneChip arrays and systems and ParAllele assays and software and will be sold by Affymetrix.

Perlegen Sciences, Inc. In March 2001, we contributed to Perlegen the rights to use certain intellectual property with no cost basis and we have rights to use and commercialize certain data generated by Perlegen in the array field. Using access to whole-wafer technology developed by Affymetrix, Perlegen focuses on identifying the millions of genetic variations (known as single nucleotide polymorphisms or "SNPs") among individuals, and finding patterns in those variations that might be predictive of disease susceptibility or drug response. In January 2003, we obtained accelerated access to Perlegen's SNP database which was used to help accelerate development of our Mapping 100K Set and will also be used in future products. In addition, our collaborative arrangement with Perlegen provides us with access and commercialization rights to certain whole genome technologies, including 248,000 chip-optimized assays covering the genome that we intend to make available to our customers for use in resequencing and genotyping. For additional information concerning our relationship with Perlegen, including our ownership interest in Perlegen, our collaborative relationship with Perlegen and existing relationships between certain of our directors and officers and Perlegen, see the section of this Form 10-K entitled "Management's Discussion and Analysis of Financial Condition and Results of Operations" and Note 11 of the Notes to the Consolidated Financial Statements.

Molecular Diagnostics Collaborations

Arcturus Bioscience, Inc. In December 2002, we entered into a strategic relationship with Arcturus Bioscience, Inc. (formerly Arcturus Engineering, Inc.) ("Arcturus"), a leader in laser capture microdissection. Through our collaboration, Arcturus has broad access to our standard and custom GeneChip® brand arrays, instrumentation and software to monitor gene expression for use in research and discovery efforts to develop novel microgenomics array-based diagnostic signatures. In addition, we made a $3.0 million equity investment in Arcturus. We see microgenomics as an important enabling technology for a broad set of applications in research and diagnostics.

bioMérieux, Inc. In September 1996, we entered into a collaborative development agreement and associated supply agreement for probe arrays with bioMérieux, Inc. ("bioMérieux") to identify the species and drug resistance profiles of bacteria causing human infection. As part of the collaboration, bioMérieux is developing instrumentation for the use of these probe arrays in a molecular diagnostic setting. Under the terms of the agreements, bioMérieux provides research and development support and makes payments to us upon achievement of certain milestones. In addition, bioMérieux pays specified prices for the supply of probe arrays and royalties on any resulting product sales. In December 1997 and January 1998, we expanded the collaboration with bioMérieux to include the

non-exclusive development of DNA probe arrays for molecular diagnostic tests in the fields of virology and food and industrial testing. In March 2003, the collaboration agreement was amended in order to reinstate bioMérieux's licenses. bioMérieux has launched the FoodExpertID array under this collaboration. (Please see the section of this 10-K entitled "DNA Analysis Products Powered by Affymetrix".)

Boston University Medical Center. In December 2002, we entered into a collaboration with Boston University Medical Center for the use by Boston University Medical Center of our GeneChip® technology to identify predictive molecular signatures that may enable the screening and early detection of lung cancer in "at risk" individuals, and to develop a less invasive sample acquisition method. Using GeneChip® probe arrays, researchers at Boston University Medical Center will study the use of airway tissue derived gene expression signatures for early detection, prognosis, therapy selection and monitoring of lung cancer.

F. Hoffmann-La Roche Ltd. In February 1998, we entered into a non-exclusive collaborative development agreement with F. Hoffmann-La Roche Ltd. ("Roche") to initially develop human probe array-based diagnostic products. Under the terms of the agreement the parties are collaborating to develop mutually agreed upon arrays, as well as associated instrumentation and reagents. In January 2003, we expanded our collaboration with Roche by granting Roche access to our GeneChip® technologies to develop and commercialize GeneChip® diagnostic laboratory tests for DNA analysis, genotyping and resequencing applications, as well as for RNA expression analysis, in a broad range of human disease areas. Using our GeneChip®technologies, Roche intends to develop and market diagnostic tests for diseases such as cancer, osteoporosis, cardiovascular, metabolic, infectious and inflammatory diseases. Affymetrix and Roche believe that developing targeted microarray expression profiles for cancer, plus genotyping and resequencing profiles for other diseases will enable the creation and commercialization of novel standardized diagnostic solutions. These solutions ultimately will allow physicians to better diagnose and treat human disease. Under the terms of the collaborative agreement, Roche paid us an access fee of $70 million relating to the first five years of the arrangement. The agreement, which is subject to Roche's option to terminate on December 31, 2007 or any time on or after June 2, 2013, with one year's prior notice, includes a broad range of other compensation payable by Roche to Affymetrix throughout the life of the agreement based on royalties on sales of diagnostic kits, milestone payments for technical and commercial achievements, a manufacturing and supply agreement, and related license installments. As part of the agreement, Affymetrix will manufacture and supply Roche with microarrays and related instrumentation based on Affymetrix' GeneChip® platform. In 2003 Roche launched the AmpliChip® CYP450 array product initially for research use only, but in late 2004 obtained CE marking and FDA regulatory approvals of the product for in-vitro diagnostic use.

Veridex, LLC. In December 2004, we entered into a non-exclusive collaboration agreement with Veridex LLC, a Johnson & Johnson company, to develop and commercialize GeneChip® based diagnostic products for use in the field of oncology. Veridex was granted long-term and comprehensive access to our GeneChip® technology to create and market in-vitro diagnostics for cancer. The agreement, made under the Powered by Affymetrix™ program, gives Veridex non-exclusive rights to Affymetrix' patented arrays, instrumentation systems and planned improvements to these technologies.

Other Collaborations

The Broad Institute. In September 2004, we entered into a supply and research collaboration agreement with the Broad Institute and Massachusetts Institute of Technology. The agreement provides Affymetrix technology on preferential terms to The Broad Institute for applications development in return for the option to make commercial products available from the resulting research. The

collaboration is focused on whole genome SNP analysis, resequencing and high throughput expression analysis..

Beckman Coulter, Inc. In July 1998, we entered into an arrangement with Beckman Coulter, Inc. ("Beckman Coulter") that involved the execution of a series of agreements including an asset purchase agreement. Pursuant to these agreements, which were implemented and became effective in June 1999, we purchased Beckman Coulter's array business. Under the agreements, we agreed to grant Beckman Coulter licenses to commercialize probe arrays manufactured using certain of our technologies other than light-directed synthesis, and the parties agreed to enter into an original equipment manufacturer supply agreement for products that use our GeneChip® array technology. Under the arrangement, Beckman Coulter agreed to pay us transfer prices and royalties on sales of these products.

Array Automation, LLC. The Company is currently a partner in Array Automation, LLC ("AAL"), a joint venture with Beckman Coulter, Inc. ("Beckman"). In July 1998, the Company entered into an asset purchase agreement with Beckman. As part of the asset purchase agreement, the Company agreed to establish a joint venture with Beckman. AAL was incorporated in July 2003, with the primary purpose of product research and development in the field of non-photolithographic arrays of polynucleotide sequences and instruments. (Please see Note 11 of the Notes to the Consolidated Financial Statements.)

National Cancer Institute. In January 2001, we entered into a collaboration agreement with the National Cancer Institute on a human transcriptome initiative which seeks to construct maps locating the sites of RNA transcription across the entire human genome using high-density whole-genome arrays interrogating at resolutions and throughput rates never before attempted. The transcriptome is defined as the complete collection of transcribed elements of the genome. In addition to mRNAs, it also represents non-coding RNAs that are used for structural and gene regulation purposes. Alterations in the structure or levels of expression of any one of these RNAs or their proteins could contribute to disease. An understanding of the transcriptome may provide valuable insights in the research for novel drugs. We have made the data from this initiative freely available to the public via the Web through a version of the data integration and analysis software platform developed by Biotique Systems, Inc., a company that provides decision support tools and services for the emerging field of pharmacogenomics. We are using the Biotique Local Integration System to house this transcriptome data and to provide an interface for researchers to access, query and use this information. This collaboration was extended during fiscal 2003 to address the identification of transcriptional binding sites, methylation sites, origins of replication and other genomic features.

Ingenuity Systems, Inc. In July 2003, we entered into an agency agreement with Ingenuity to deliver the Ingenuity Pathways Analysis product to our customers. Ingenuity Pathways Analysis is a web-based application that is designed to enable our customers to more easily discover, visualize and explore therapeutically relevant networks in gene expression array data sets. Pharmaceutical, biotech, and academic customers will be able to get access to the application through an annual subscription fee. As part of the agreement, we made a $5.0 million equity investment in Ingenuity.

Caliper Life Sciences, Inc. In January 2004, we signed a collaboration and supply agreement to develop and provide automated target preparation instruments for the GeneChip® Probe Array system. These new automation systems are expected to cut array processing, reduce variability and labor costs, and enable researchers to industrialize their genomic research. The two companies will develop products that leverage Caliper's expertise in high-throughput automation and microfluidics with Affymetrix' expertise in microarray technology and applications. The first products were launched in 2004 and automate GeneChip® microarray target preparation steps including hybridization, washing and staining for expression and DNA analysis. The automated system enables a single operator to run up to 96 RNA samples at a time, compared to the manual rate of 20 to 24 samples.

Marketing and Distribution

The markets for our products include all aspects of molecular biology research in the life sciences, including basic human disease research, genetic analysis, pharmaceutical drug discovery and development, pharmacogenomics, toxicogenomics and agricultural research, amongst others. Our customers include pharmaceutical, biotechnology, agrichemical, diagnostics, industrial and consumer products companies, as well as academic research centers, laboratories in government agencies, private government research foundations and clinical and industrial reference laboratories. The following factors, among others, influence the size and development of our markets:

- the availability of genomic sequence and sequence variation data for the human population and for other organisms;
- technological innovation that increases throughput and lowers the cost of genomic and genetic analysis;
- the development of new computational techniques to handle and analyze large amounts of genomic data;
- the availability of government funding for basic and disease-related research;
- the amount of capital and ongoing expenditures allocated to research and development spending by biotechnology, pharmaceutical and diagnostic companies;
- the application of genomics to new areas including molecular diagnostics, agriculture, human identity and consumer goods; and
- the availability of genetic markers and signatures of diagnostic value.

In North America and major European markets, our GeneChip® products are marketed principally through our own sales and distribution organizations. We own or lease sales and service offices in the United States, Europe, Japan and Singapore. In markets outside of North America and Europe, we sell our GeneChip® products principally through third party distributors, primarily in Mexico, India, the Middle East and Asia Pacific. These distributors are life science supply specialists within their own countries and operate as our sole distributors within a defined country or other geographic area.

For molecular diagnostic and industrial applications market opportunities, we supply our partners with arrays and instruments, which they incorporate into diagnostic products and take on the primary commercialization responsibilities. Current collaborative partners include Roche, bioMérieux, and Veridex, a Johnson & Johnson company. For additional information concerning our collaborative partners, see the section of this Form 10-K entitled "Our Collaborative Partners."

Manufacturing and Raw Materials

We manufacture our GeneChip® probe arrays, GCS 3000 scanner, fluidics stations, instrument control software and certain reagents in-house and contract with third-party suppliers to manufacture our hybridization oven and certain reagents for our GeneChip® system. Additionally, through our External Developers Network, a number of third-party software suppliers develop, market and sell genomic data analysis software that interfaces with data files generated by our GeneChip® system.

Our probe array manufacturing process involves wafer preparation, probe synthesis, dicing of synthesized wafers into chips, assembly of chips, and quality control. We have developed software programs that extensively automate the design of photolithographic masks used in probe array manufacturing and that control the probe array manufacturing lines. Glass wafers are prepared for synthesis through the application of chemical coatings. GeneChip® probe arrays are synthesized on the

wafers using our proprietary, combinatorial photolithographic process. The completed wafers can then be diced to yield individual probe arrays, which are assembled and packaged for shipment.

We are currently manufacturing GeneChip® probe arrays for sale to customers as well as for internal and collaborative purposes. Probe arrays are manufactured at our dedicated manufacturing facility located in West Sacramento, California. We also maintain manufacturing process engineering and a development facility in Santa Clara, California, and a manufacturing and development facility in Bedford, Massachusetts to support our instrumentation products. All of our instrument and array manufacturing facilities comply with Good Manufacturing Practices as a subset of the Quality System Regulation (21 CFR 820).

Currently, we have physical capacity under optimal conditions to produce more than 32,000 wafers annually. We will continue to invest in additional capital equipment for our West Sacramento facility to both increase production capacity and increase the flexibility of this capacity to produce a broader range of products. The actual number of probe arrays we are able to manufacture depends on the available equipment capacity, the yield of probe arrays that pass quality control testing and the number of probe arrays manufactured on each wafer.

We perform quality tests on selected probe arrays from each wafer and selected probes on such probe arrays. We largely rely on in-process and internal quality control procedures, including controls on the manufacturing process and sample testing, to verify the correct completion of the manufacturing process. In addition, we and our customers rely on the accuracy of genetic sequence information contained in the public databases upon which our products are based. Our probe array manufacturing process is designed to allow us to meet our performance specifications before arrays are shipped. We have a customer inquiry and complaint process in place and we rely on this process to identify and resolve product performance issues that may arise from time to time.

Key parts of the GeneChip® product line, such as hybridization ovens are available from single sources. We take such steps as we believe are appropriate to ensure that supplies from these vendors are not materially delayed or interrupted, since any such delays or interruptions could in turn delay our ability to deliver these products to our customers. Likewise, certain raw materials or components used in the synthesis of probe arrays or the assembly of instrumentation are currently available only from a single source or limited sources. We take such steps as we believe are appropriate to ensure that materials and components from these vendors are not materially delayed or interrupted, since any such delays or interruptions could in turn delay our ability to produce probe arrays or other components for our GeneChip® system in a timely fashion, in sufficient quantities or under acceptable terms. Alternative sources of supply may be time consuming and expensive to qualify. In addition, we are dependent on our vendors to provide components of appropriate quality and reliability, and to meet applicable regulatory requirements. Accordingly, we also take what we believe are appropriate measures to prevent the delay or interruption of supplies from these vendors and to ensure the appropriate quality for our customers.

Research and Development

We believe a substantial investment in research and development is essential to a long-term sustainable competitive advantage and critical to expansion into additional high throughput markets such as toxicogenomics, pharmacogenomics, and molecular diagnostic and applied testing applications. Our research and development effort is divided into the major areas of basic research, product research and development, and manufacturing process development. Our research and development expenses for the years ended December 31, 2004, 2003 and 2002, were $73.4 million, $65.9 million and $69.5 million, respectively.

Basic Research

Basic research efforts are carried out through our Affymetrix Research Laboratories to further advance our GeneChip® platform, develop new concepts that can be rapidly productized, and create innovations that will influence our business model in the future. Our initial focus is on basic technology research including high throughput systems, high resolution chip fabrication and detection, genotyping, and gene expression and analysis of the human transcriptome and of other model organism genomes. We are focusing our genotyping research efforts on the development of new assays principally designed to perform whole genome analysis at various resolutions. We believe that products based on this research will ultimately help researchers to develop more effective therapeutics and help identify the diagnostic markers and tests useful in molecular diagnostic applications.

Product Research and Development

Our product research and development efforts are focused primarily on expanding the applications of the GeneChip® technology including development of new probe array products, improving the overall performance of GeneChip® assays, increasing the information capacity per probe array and simplifying highly complex assays. Our research and development efforts are intended to continue to develop new products based on information from the human and other model organism genomes as well as new genotyping and DNA analysis products. In addition, we intend to continue developing custom product lines for both expression and DNA analysis so that customers can analyze gene expression or DNA variability for any organism. We plan continued software and instrumentation development efforts to enhance the performance and level of automation of our entire GeneChip® system solution.

Manufacturing Process and Development

We are conducting research aimed at enhancing the manufacturing process currently employed in the production of our GeneChip® probe arrays. This process, which leverages semiconductor photolithographic fabrication techniques, is combinatorial in that the number of different compounds synthesized grows exponentially with the number of cycles in the synthesis. The objective of this research is to allow us to produce arrays with higher information density in the same unit area, similar to advances achieved in the semiconductor industry, which has produced silicon chip capacity closely following Moore's Law. Moore's Law is the observation that the number of transistors per square inch on a silicon chip had doubled every 18 months since the silicon chip was invented. To date, we have also been able to achieve rapid advances in genetic information content, reducing commercial product feature size from 100 microns in 1994 to 11 microns in 2003. We are continuing research aimed at using smaller feature technology in commercial products and implementing novel, cost-effective packaging approaches for the small array formats including packaging these into the standard industry microtiter plate format.

Intellectual Property

We rely on a combination of patent, copyright, and trade secret laws, know-how and licensing opportunities to establish and protect our proprietary technologies and products. Our success depends in part on our ability to obtain patent protection for our products and processes, to preserve our copyrights and trade secrets, to operate without infringing the proprietary rights of third parties and to acquire licenses related to enabling technology or products used with our GeneChip® technology.

We are pursuing a patent strategy designed to facilitate our research and development projects and the commercialization of our current and future products. We have been issued 303 patents in the United States and we hold approximately 450 pending United States patent applications. Many of these patents and applications have been filed and/or issued in one or more foreign countries. While no one

patent is considered essential to our success, we aggressively seek to protect our patent rights as our patent portfolio as a whole is material to the success of the business.

There are a significant number of United States and foreign patents and patent applications in our areas of interest, and we believe that there will continue to be significant litigation in the industry regarding patent and other intellectual property rights. Others have filed, and in the future are likely to file, patent applications that are similar or identical to ours or those of our licensors. It may be necessary for us to enter into litigation to defend against or assert claims of infringement, to enforce patents issued to us, to protect trade secrets or know-how owned by us or to determine the scope and validity of the proprietary rights of others. To determine the priority of inventions, it may be necessary for us to participate in interference proceedings declared by the United States Patent and Trademark Office. Litigation or interference proceedings could result in substantial costs to and diversion of our effort and our efforts may not be successful. (See Item 3 Legal Proceedings)

We also rely upon copyright and trade secrets to protect our confidential and proprietary information. We seek to protect our proprietary technology and processes by confidentiality agreements with our employees and certain consultants and contractors. These agreements may be breached, we may not have adequate remedies for any breach and our trade secrets may otherwise become known or be independently discovered by competitors. To the extent that our employees or our consultants or contractors use intellectual property owned by others in their work for us, disputes may also arise as to the rights in related or resulting know-how and inventions.

We are party to various option, supply and license agreements with third parties which grant us rights to use certain aspects of our technologies. We take such measures as we believe are appropriate to maintain rights to such technology under these agreements. In addition, our academic collaborators have certain rights to publish data and information in which we have rights. There is considerable pressure on academic institutions to publish discoveries in the genetics and genomics fields. We take such steps as we believe are appropriate to ensure that such publication will not adversely affect our ability to obtain patent protection for information in which we may have a commercial interest.

Competition

Competition in gene expression monitoring, DNA analysis and molecular diagnostics is intense and is expected to increase. Further, the technologies for monitoring gene expression, discovering and analyzing polymorphisms associated with significant diseases, and approaches for commercializing those discoveries are new and rapidly evolving. Currently, our principal competition comes from existing technologies and other DNA array technologies that are used to perform many of the same functions for which we market our GeneChip® systems.

In the gene expression monitoring and DNA analysis fields, existing competitive technologies include gel-based sequencing using instruments provided by companies such as Applied Biosystems (an Applera company), Beckman Coulter and General Electric (GE) Healthcare. Other companies developing or marketing potentially competitive DNA array technology include: Agilent Technologies, Inc., GE Healthcare, Applied Biosystems, Inc., Molecular Devices, Inc. (formerly Axon Instruments, Inc.), BD Biosciences Clontech, CombiMatrix Corporation, Digital Gene Technologies, Inc., Illumina, Inc., Lynx Therapeutics, Inc., Nanogen, Inc., NimbleGen Systems, Inc., Sequenom, Inc., Xeotron, Inc., and Visible Genetics Inc. (recently acquired by Bayer). In order to compete against existing and emerging technologies, we will need to be successful in demonstrating to customers that the GeneChip®system provides a competitive advantage.

In Japan, the former Amersham Biosciences K.K. (recently acquired by GE Healthcare), from which we transitioned to our own sales operation during 2003, is a competitor, as well as a licensee of certain of our technology. In addition, we have several other third party licensees that could offer products that compete with our product offering.

The market for molecular diagnostic products derived from gene discovery is currently limited and highly competitive, with several large corporations already having significant market share. Established diagnostic companies could compete with us by developing new products. Companies such as Abbott Laboratories, Becton Dickinson, Bayer AG, Roche, Johnson & Johnson, bioMérieux and Beckman Coulter have the strategic commitment to diagnostics, the financial and other resources to invest in new technologies, substantial intellectual property portfolios, substantial experience in new product development, regulatory expertise, manufacturing capabilities and the distribution channels to deliver products to customers. Established diagnostic companies also have an installed base of instruments in several markets, including clinical and reference laboratories, which are not compatible with the GeneChip® system and could slow acceptance of our products. In addition, these companies have formed alliances with genomics companies which provide them access to genetic information that may be incorporated into their diagnostic tests.

Future competition in existing and potential markets will likely come from existing competitors as well as other companies seeking to develop new technologies for sequencing and analyzing genetic information. In addition, pharmaceutical and biotechnology companies have significant needs for genomic information and may choose to develop or acquire competing technologies to meet these needs. Through 2004 we have significantly expanded our network of approved service providers in America, Japan and Europe. While these companies expand the reach of Affymetrix technology and make its analytical power available to a wider base of users they may act as a substitute for outright purchase of instruments and arrays by those end users. In the molecular diagnostic field, competition will likely come from established diagnostic companies, companies developing and marketing DNA probe tests for genetic and other diseases, and other companies conducting research on new technologies to ascertain and analyze genetic information.

Government Regulation

Regulation by governmental authorities in the United States and other countries will likely be a significant factor in the manufacturing, labeling, distribution and marketing of certain products that may be developed by us or our collaborative partners. In particular, diagnostic products we are developing with our collaborative partners may require regulatory approval by governmental agencies when distributed outside of the research environment.

Commercially available diagnostic tests are regulated as medical devices and are generally subject to rigorous testing and other approval procedures by the United States Food and Drug Administration (FDA). The FDA's Quality System Regulations also apply in connection with our manufacture of arrays and systems as components for use in diagnostic products developed by our partners. Obtaining these clearances or approvals and the compliance with these regulations require the expenditure of substantial resources over a significant period of time, and there can be no assurance that any clearances or approvals will be granted on a timely basis, if at all. Once granted, a clearance or approval may place substantial restrictions on how the device is marketed or labeled or to whom it may be sold. In addition, various federal and state statutes and regulations govern or influence the manufacturing, safety, storage of our products and components of our products and our record keeping.

Medical device laws and regulations are also in effect in the European Union, where a directive became effective in December of 2003 covering in vitro diagnostic products, and many of the countries in which we may do business outside the United States. These range from comprehensive device approval requirements for some or all of our medical device products to requests for product data or self-certifications. We may not be able to obtain regulatory approvals in such countries or may incur significant costs in obtaining or maintaining our non-US regulatory approvals. In addition, the export by us of certain of our products which have not yet been cleared for domestic commercial distribution may be subject to FDA or other export restrictions.

Reimbursement

The design of our products and the potential market for their use may be directly or indirectly affected by U.S. and other government regulations governing reimbursement for clinical testing services. The availability of third-party reimbursement for our products and services may be limited or uncertain, particularly with respect to genetic tests and other clinical applications products.

Third-party payors may deny reimbursement if they determine that a prescribed health care product or service has not received appropriate FDA or other governmental regulatory clearances, is not used in accordance with cost-effective treatment methods as determined by the payor, or is deemed by the third-party payor as experimental, unnecessary or inappropriate. Furthermore, third-party payors are increasingly challenging the prices charged for health care products and services.

Currently, sales of our products and services are not subject to third-party reimbursement. However, we are currently developing diagnostic and therapeutic products with our collaborative partners which may be subject to reimbursement issues. The ability of our collaborators to commercialize such products may depend, in part, on the extent to which reimbursement for the cost of these products will be available under U.S. and foreign regulations governing reimbursement for clinical testing services by government authorities, private health insurers and other organizations.

In the United States, third-party payor price resistance, the trend towards managed health care and legislative proposals to reform health care or reduce government insurance programs could reduce prices for health care products and services, adversely affect the profits of our customers and collaborative partners and reduce our future royalties and product sales.

Environmental Matters

We are dedicated to compliance and protection of the environment and individuals. Our operations require the use of hazardous materials (including biological materials) which subject us to a variety of federal, state and local environmental and safety laws and regulations. We believe we are in material compliance with current and applicable laws and regulations. However, some of the regulations under the current regulatory structure allow for "strict liability," holding a party potentially liable without regard to fault or negligence. We could be held liable for damages and fines as a result of our, or others', business operations should contamination of the environment or individual exposure to hazardous substances occur. We cannot predict how changes in these laws or development of new regulations will affect our business operations or the cost of compliance.

Employees

As of March 1, 2005, we had 907 full-time employees. The employee group includes chemists, engineers, computer scientists, mathematicians and molecular biologists with experience in the diagnostic products, medical products, semiconductor, computer software and electronics industries. None of our employees are represented by a collective bargaining agreement, nor have we experienced work stoppages. We believe that we maintain good relationships with our employees. Our success depends in large part on our ability to attract and retain skilled and experienced employees.

Seasonality

Customer demand for probe arrays and instrumentation systems is typically highest in the fourth quarter of the calendar year as customers spend unused budget allocations before the end of the financial year.

Financial Information About Industry Segments

We operate in one business segment, for the development, manufacture, and commercialization of systems for genetic analysis in the life sciences and diagnostic industry. Our operations are treated as one segment as we only report operating information on a total enterprise level to our chief operating decision-makers. Further, resource allocations are also made at the enterprise level by our chief operating decision-makers.

Financial Information About Geographic Areas

Our consolidated product and product related revenue from customers outside of the United States for fiscal years 2004, 2003 and 2002 were $159.2 million, $127.8 million and $88.0 million, or 48.1%, 45.5% and 35.4%, respectively, of our consolidated product and product related revenue. A summary of revenues from external customers attributed to each of our geographic areas for the fiscal years ended December 31, 2004, 2003 and 2002, is included in Note 17 of the Notes to Consolidated Financial Statements included in this report.

Available Information

Our internet address is *www.affymetrix.com*. We make available free of charge on our website our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and all amendments to those reports as soon as reasonably practicable after such material is electronically filed with or furnished to the Securities and Exchange Commission (SEC). In addition, copies of the Annual Report will be made available free of charge upon written request. The SEC also maintains an Internet site that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC. The address of that site is *http://www.sec.gov*.

ITEM 2. PROPERTIES

The following chart indicates the facilities that we own or lease, the location and size of each such facility and their designated use. We expect our facilities needs to increase over the next several years as we continue to expand our worldwide commercial operations and our manufacturing capabilities.

Location	Approximate Square Feet	Operation	Own or Lease (Expiration)
Bedford	80,000 sq. ft.	R&D, manufacturing, administrative	Lease expires 2011
Emeryville	11,000 sq. ft.	Software development	Lease expires 2005
Osaka, Japan	710 sq. ft.	Administrative	Lease expires 2005
Santa Clara	200,000 sq. ft.	R&D, administrative	Lease expires 2013
Singapore	1,700 sq. ft.	Administrative	Lease expires 2005
Sunnyvale	31,000 sq. ft.	R&D	Lease expires 2008
	57,000 sq. ft.	Administrative	Lease expires 2010
Tokyo	11,000 sq. ft.	Administrative	Lease expires 2005
United Kingdom	10,000 sq. ft.	Administrative	Lease expires 2016
West Sacramento	52,000 sq. ft.	Manufacturing	Own (facility and land)

ITEM 3. LEGAL PROCEEDINGS

GENERAL

We have been in the past and continue to be a party to litigation which has consumed and may in the future continue to consume substantial financial and managerial resources and which could adversely affect our business, financial condition and results of operations. If in any pending or future intellectual property litigation involving us or our collaborative partners, we are found to have infringed the valid intellectual property rights of third parties, we, or our collaborative partners, could be subject

to significant liability for damages, could be required to obtain a license from a third party, which may not be available on reasonable terms or at all, or could be prevented from manufacturing and selling our products. In addition, if we are unable to enforce our patents and other intellectual property rights against others, or if our patents are found to be invalid or unenforceable, third parties may more easily be able to introduce and sell DNA array technologies that compete with our GeneChip® brand technology, and our competitive position could suffer. We expect to devote substantial financial and managerial resources to protect our intellectual property rights and to defend against the claims described below as well as any future claims asserted against us. Further, because of the substantial amount of discovery required in connection with any litigation, there is a risk that confidential information could be compromised by disclosure.

Multilyte Litigation

Multilyte Ltd., a British corporation, and Affymetrix are engaged in legal proceedings in the United States, United Kingdom and German courts to address allegations made by Multilyte that we infringe certain patents owned by Multilyte (the "Multilyte patents") by making and selling the GeneChip® DNA microarray products.

Germany

In the actions pending in Germany, on July 18, 2003, Multilyte filed proceedings in the state court of Dusseldorf, alleging infringement of the Multilyte patents. In a separate action in Germany, on October 15, 2003, we commenced nullity proceedings in German Federal Patent Court in Munich alleging that the German part of Multilyte's two European patents (EPs 0 134 215 and 0 304 202) are invalid. On June 29 and 30, 2004, the German Federal Patent Court in Munich held that both Multilyte's European patents are invalid in Germany. Following that ruling, on July 12, 2004, the Dusseldorf court stayed both sets of infringement proceedings before it, pending Multilyte's appeal of the decision of the German Federal Patent Court in Munich nullifying both Multilyte patents.

United Kingdom

On August 14, 2003, we commenced proceedings in the English High Court seeking a declaratory judgment that three Multilyte patents are not infringed and are invalid. On September 25, 2003, Multilyte filed a counterclaim in the U.K. proceedings, alleging that we infringed two Multilyte patents (EP "215 and EP "202) in the U.K. and claiming damages, an injunction and legal costs. Multilyte agreed that we did not infringe the third patent and it was dropped from the lawsuit. On March 3, 2004, Multilyte notified us that they would be surrendering EP "215 and that the counterclaim of infringement would necessarily be withdrawn as a result. On August 18, 2004, Multilyte informed us that they would no longer defend the invalidity proceedings in respect of EP "215 or EP "202. At a hearing on August 31, 2004, the English High Court ruled that the EP "215 and EP "202 were invalid in the United Kingdom. Multilyte consented to this final judgment, and it is not appealable. As a consequence of the judgment, Multilyte was required to repay a substantial portion of our costs of the U.K. actions.

United States

In the action pending in the U.S., on August 13, 2003, we commenced proceedings in the United States District Court for the Northern District of California seeking a declaratory judgment that eight Multilyte patents are not infringed and are invalid. Multilyte has agreed that we do not infringe five of the eight named patents. On October 24, 2003, we filed an amended complaint seeking a declaratory judgment as to three of the original eight named patents—U.S. Patents 5,432,099, 5,599,720 and 5,807,755. Multilyte answered our complaint for declaratory judgment and asserted counterclaims against us alleging infringement of the three patents named by us in our complaint. Multilyte has

submitted the three patents-in-suit to the United States Patent and Trademark Office for voluntary re-examination and on June 3, 2004, the Court stayed the case before it pending the outcome of these re-examination proceedings. On February 22, 2005, the Court issued a claim construction order that will govern subsequent proceedings in the case in connection with four disputed claim terms.

We believe that Multilyte's remaining claims against us are without merit and have filed the declaratory judgment and nullity actions to protect our interests. However, we cannot be sure that we will prevail in these matters. Our failure to successfully defend against these allegations could result in a material adverse effect on our business, financial condition and results of operations.

Enzo Litigation

On October 28, 2003, Enzo Life Sciences, Inc., a wholly-owned subsidiary of Enzo Biochem, Inc. (collectively "Enzo") filed a complaint against us that is now pending in the United States District Court for the Southern District of New York for breach of contract, injunctive relief and declaratory judgment. The Enzo complaint relates to a 1998 distributorship agreement with Enzo under which we served as a non-exclusive distributor of certain reagent labeling kits supplied by Enzo. In its complaint, Enzo seeks monetary damages and an injunction against us from using, manufacturing or selling Enzo products and from inducing collaborators and customers to use Enzo products in violation of the 1998 agreement. Enzo also seeks the transfer of certain Affymetrix patents to Enzo. In connection with its complaint, Enzo provided us with a notice of termination of the 1998 agreement effective on November 12, 2003.

On November 10, 2003, we filed a complaint against Enzo in the United States District Court for the Southern District of New York for declaratory judgment, breach of contract and injunctive relief relating to the 1998 agreement. In our complaint, we allege that Enzo has engaged in a pattern of wrongful conduct against us and other Enzo labeling reagent customers by, among other things, asserting improperly broad rights in its patent portfolio, improperly using the 1998 agreement and distributorship agreements with others in order to corner the market for non-radioactive labeling reagents, and improperly using the 1998 agreement to claim ownership rights to our proprietary technology. We seek declarations that we have not breached the 1998 agreement, that we are entitled to sell our remaining inventory of Enzo reagent labeling kits, and that nine Enzo patents that are identified in the 1998 agreement are invalid and/or not infringed by us. We also seek damages and injunctive relief to redress Enzo's alleged breaches of the 1998 agreement, its alleged tortious interference with the Company's business relationships and prospective economic advantage, and Enzo's alleged unfair competition. We filed a notice of related case stating that our complaint against Enzo is related to the complaints already pending in the Southern District of New York against eight other former Enzo distributors. The Southern District of New York has related our case. On April 9, 2004, we filed our answer to Enzo's complaint. Enzo filed an answer to our complaint on May 13, 2004. On September 14, 2004, the Southern District Court of New York conducted a consolidated status conference for the various Enzo litigations and scheduled a claim construction hearing for the Enzo patents on June 28, 2005. There is no trial date in the actions between Enzo and us.

We believe that the claims set forth in Enzo's complaint are without merit and have filed the action in the Southern District of New York to protect our interests. However, we cannot be sure that we will prevail in these matters. Our failure to successfully defend against these allegations could result in a material adverse effect on our business, financial condition and results of operation.

Administrative Litigation and Proceedings

Our intellectual property is expected to be subject to significant additional administrative and litigation actions. For example, in Europe and Japan, third parties are expected to oppose significant patents that we own or control. Currently, Multilyte Ltd. and ProtoGene Laboratories, Inc. are parties

that have filed oppositions against our EP 0 619 321 patent in the European Patent Office, and PamGene B.V. has filed an opposition against our EP 0 728 520. Also, Abbott Laboratories, Applera, Clondiag and CombiMatrix are parties in opposition against our EP 0 834 575 and CombiMatrix has filed an opposition against EP 0 695 941. Agilent, CombiMatrix, Clondiag and Applera have filed an opposition against EP 0 853 679 and Applera has opposed EP 0 972 564. Degussa AG has filed an opposition against EP 1 086 742. These procedures will result in the patents being either upheld in their entireties, allowed to issue in amended form in designated European countries, or revoked. In connection with an opposition proceeding against our EP 0 834 576 by Abbott Laboratories, CombiMatrix, PamGene B.V., Applera and Dr. Peter Schneider, the European Patent Office ruled on February 23, 2005 to revoke the patent.

Further, in the United States, we expect that third parties will continue to "copy" the claims of our patents in order to provoke interferences in the United States Patent & Trademark Office, and we may copy the claims of others. These proceedings could result in our patent protection being significantly modified or reduced, and could result in significant costs and consume substantial managerial resources.

At this time, we cannot determine the outcome of any of the matters described above.

ITEM 4. SUBMISSION OF MATTERS TO A VOTE OF SECURITY HOLDERS

No matters were submitted during the fourth quarter of the year ended December 31, 2004.

PART II

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER REPURCHASES OF EQUITY SECURITIES

Our common stock is traded on the Nasdaq National Market System under the symbol of AFFX. The following table sets forth, for the periods indicated, the low and high bid prices per share for our common stock as reported by the Nasdaq National Market.

	Low	High
2003		
First Quarter	$21.13	$29.93
Second Quarter	$16.25	$28.47
Third Quarter	$18.76	$26.45
Fourth Quarter	$20.45	$26.56
2004		
First Quarter	$23.18	$36.30
Second Quarter	$26.56	$38.20
Third Quarter	$24.48	$32.52
Fourth Quarter	$28.89	$37.48

As of March 1, 2005, there were approximately 387 holders of record of our common stock.

No dividends have been paid on our common stock. We currently intend to retain all future earnings, if any, for use in our business and do not anticipate paying any cash dividends on our common stock in the foreseeable future.

Recent Sales of Unregistered Securities.

Since January 1, 2002, the Company has sold the following securities without registration under the Securities Act of 1933:

(1) Pursuant to a stock restriction agreement dated December 18, 2003, the Company issued to a former distributor of Genetic MicroSystems, Inc., 126,582 shares of common stock in connection with the settlement of a $3,000,000 common stock purchase right.

(2) On December 11, 2003, the Company issued to J.P. Morgan Securities Inc. and UBS Securities LLC, as initial purchasers, $120,000,000 principal amount of its 0.75% Senior Convertible Notes due 2033 for a purchase price of $116,700,000. The proceeds from the issuance of the 0.75% Notes were used to redeem the Company's 5% Notes in January 2004 and the remaining proceeds, along with cash generated from operations were used to redeem the 4.75% Notes in February 2004.

The issuances of these securities were exempt from registration under the Securities Act pursuant to Section 4(2).

ITEM 6. SELECTED FINANCIAL DATA

The following selected historical consolidated financial information has been derived from our audited consolidated financial statements. The balance sheet data as of December 31, 2004 and 2003 and statements of operations data for each of the three years in the period ended December 31, 2004 are derived from audited consolidated financial statements included in this Form 10-K. You should read this table in conjunction with Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations," and Item 8, "Financial Statements and Supplementary Data."

	Year Ended December 31,				
	2004	2003	2002	2001	2000
	(In thousands, except per share amounts)				
Consolidated Statement of Operations Data:					
Revenue:					
Product sales	$ 277,256	$ 222,748	$ 201,594	$ 147,566	$ 128,144
Product related revenue	53,629	58,032	46,944	47,370	45,402
Total product and product related revenue	330,885	280,780	248,538	194,936	173,546
Royalties and other revenue	9,832	10,556	19,777	18,447	27,284
Revenue from Perlegen Sciences	5,245	9,460	21,559	11,491	—
Total revenue	345,962	300,796	289,874	224,874	200,830
Cost and expenses:					
Cost of product sales	81,700	80,158	82,597	69,321	68,688
Cost of product related revenue	9,634	9,657	5,718	3,201	2,196
Cost of revenue from Perlegen Sciences	3,611	9,460	21,000	11,491	—
Research and development	73,405	65,909	69,520	68,197	57,384
Selling, general and administrative(1)	116,973	104,797	96,260	94,374	113,429
Merger related costs(2)	—	—	—	—	2,395
Stock-based compensation(2)	920	2,238	8,388	12,663	2,118
Amortization of goodwill and purchased intangibles(3)	—	937	1,125	6,223	997
Acquired in-process technology(4)	—	10,096	—	—	14,989
Total costs and expenses	286,243	283,252	284,608	265,470	262,196
Income (loss) from operations	59,719	17,544	5,266	(40,596)	(61,366)
Interest income and other, net(5)	2,317	16,662	13,535	27,655	26,340
Interest expense(5)	(11,102)	(17,358)	(19,730)	(19,880)	(18,364)
Income (loss) before income taxes	50,934	16,848	(929)	(32,821)	(53,390)
Income tax provision	(3,326)	(2,563)	(701)	(300)	(600)
Net income (loss)	$ 47,608	$ 14,285	$ (1,630)	$ (33,121)	$ (53,990)
Basic net income (loss) per common share	$ 0.79	$ 0.24	$ (0.03)	$ (0.58)	$ (0.98)
Diluted net income (loss) per common share	$ 0.74	$ 0.24	$ (0.03)	$ (0.58)	$ (0.98)
Weighted-average shares used in computing basic net income (loss) per share	60,512	58,860	58,018	57,382	55,035
Weighted-average shares used in computing diluted net income (loss) per share	66,878	60,852	58,018	57,382	55,035
Consolidated Balance Sheet Data:					
Cash, cash equivalents, and available-for-sale securities	$ 205,715	$ 459,883	$ 361,458	$ 368,823	$ 436,030
Working capital	226,211	192,778	371,708	372,718	418,302
Total assets	499,771	700,164	601,403	580,015	620,780
Long-term obligations(5)	153,845	166,586	380,222	378,000	383,000
Accumulated deficit	(151,051)	(198,659)	(212,944)	(211,314)	(178,193)
Total stockholders' equity	249,187	165,055	134,936	129,010	147,130

(1) Selling, general and administrative expense in 2001 and 2000 include charges of approximately $6.4 million and $18.6 million, respectively, related to settlement of litigation.

(2) In February 2000, we completed our merger with Genetic MicroSystems, Inc. ("GMS"), a privately-held, Massachusetts instrumentation company specializing in DNA array technology. Under the terms of the merger, all outstanding shares of

GMS common stock and preferred stock were converted into 1,939,798 shares of Affymetrix common stock and we assumed all outstanding GMS options and warrants. In connection with the merger, we recorded $2.4 million in merger related costs. On October 30, 2000, we completed our acquisition of Neomorphic, a privately-held, computational genomics company. Neomorphic common and preferred stockholders received 1,285,636 shares of Affymetrix common stock in exchange for all of their outstanding shares and Neomorphic option holders received 122,797 options to purchase Affymetrix common stock in exchange for their Neomorphic stock options. In addition, the preferred stockholders of Neomorphic received cash of $2.4 million. In accordance with applicable accounting rules, the fair value of unvested common stock subject to restricted stock agreements and the intrinsic value of the unvested options held by employees was deducted from the purchase price and allocated to deferred stock compensation. The amortization of deferred stock-based compensation is principally attributable to research and development and selling, general and administrative employees. Through December 31, 2004, the deferred stock compensation was fully amortized on a straight-line basis to compensation expense over the remaining vesting term except for $4.3 million related to an executive level Neomorphic employee who commenced a leave of absence during the latter part of fiscal 2001. The remaining $4.3 million balance will be amortized if and when the employee resumes active status with us.

(3) Amortization of goodwill and purchased intangibles relates to goodwill, developed technology and assembled workforce acquired from Neomorphic. Developed technology ($3.4 million) is being amortized on a straight-line basis over three years. Goodwill ($23.1 million) and assembled workforce ($1.3 million) was amortized on a straight-line basis in fiscal 2000 and 2001 over five years and three years, respectively, until our adoption of SFAS 142 on January 1, 2002, at which time we ceased amortizing goodwill. Beginning in January 2003, amortization of purchased intangibles also includes amortization related to certain technologies licensed from Perlegen. A total of $4.9 million was recorded as intangible assets, which are being amortized over their useful lives of six to ten years.

(4) In connection with the acquisition of Neomorphic in October 2000 we recorded a charge of approximately $15.0 million related to in-process research and development valued using a discounted cash flow methodology. The in-process research and development consisted of software tools that had not yet reached technological feasibility and had no future alternative uses. On January 9, 2003, we entered into an agreement with Perlegen to license certain Perlegen technologies. Under the terms of the licensing agreement, we paid Perlegen a total of $15.0 million in cash. A charge of approximately $10.1 million related to acquired in-process technology valued using the Income Approach was recorded in the first quarter of 2003. The remaining $4.9 million was recorded as an intangible asset.

(5) In September 1999, we issued $150.0 million principal amount of 5% convertible subordinated notes. In February 2000, we issued $225.0 million principal amount of 4.75% convertible subordinated notes. In August 2001, we repurchased $5.0 million principal amount of the 4.75% notes for total consideration of $3.3 million. In connection with the transaction, we recorded an extraordinary gain of approximately $1.7 million in fiscal 2001 which was reclassified during fiscal 2002 to interest income and other, net in accordance with Financial Accounting Standard ("FAS") 145, "Rescission of FASB Statements No. 4, 44, and 64, Amendment of FASB Statement No. 13, and Technical Corrections." In December 2002, we repurchased $1.1 million principal amount of the 4.75% notes for total consideration of approximately $0.9 million. In connection with the transaction we recorded a gain of $0.2 million which is included in interest income and other, net. In the second quarter of 2003, we repurchased $53.4 million principal amount of our 4.75% convertible subordinated notes due in 2007 and $48.0 million principal amount of our 5.0% convertible subordinated notes due in 2006. In connection with these transactions, we recognized a net loss of approximately $1.0 million which is included in interest income and other, net. In December 2003, we issued $120.0 million principal amount of 0.75% senior convertible notes. In January 2004, we completed the redemption of our 5.0% notes ($102.0 million face value). In connection with the redemption, we recorded a charge of $3.2 million to interest expense in the first quarter of 2004, related to the unamortized issuance costs and redemption fee associated with the repurchased 5.0% notes. In February 2004, we also completed the redemption of our 4.75% notes ($165.5 million face value). In connection with the redemption, we recorded a charge of $4.9 million to interest expense related to the unamortized issuance costs and redemption fee associated with the repurchased 4.75% notes.

Included in long-term obligations in 2003 and 2004 is the long term portion of deferred revenue relating primarily to our collaboration agreement with Roche. In January 2003, we expanded our collaboration with Roche. Under the terms of the collaborative agreement, Roche paid us an up-front, nonrefundable license fee of $70.0 million. We are recognizing this amount as a component of product related revenue over the research and product development phase which is expected to approximate five years.

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following discussion should be read in conjunction with the consolidated financial statements and the related notes that appear elsewhere in this document.

This MD&A should be read in conjunction with the other sections of this Annual Report on Form 10-K, including "Item 1: Business"; "Item 6: Selected Financial Data"; and "Item 8: Financial Statements and Supplementary Data." The various sections of this MD&A contain a number of forward-looking statements, all of which are based on our current expectations and could be affected by the uncertainties and risk factors described throughout this filing. Our actual results may differ materially.

All statements in this Annual Report on Form 10-K that are not historical are "forward-looking statements" within the meaning of Section 21E of the Securities Exchange Act as amended, including statements regarding our "expectations," "beliefs," "hopes," "intentions," "strategies" or the like. Such statements are based on our current expectations and are subject to a number of factors and uncertainties that could cause actual results to differ materially from those described in the forward-looking statements. We caution investors that there can be no assurance that actual results or business conditions will not differ materially from those projected or suggested in such forward-looking statements as a result of various factors, including, but not limited to, the risk factors discussed in this Annual Report on Form 10-K on page 49. We expressly disclaim any obligation or undertaking to release publicly any updates or revisions to any forward-looking statements contained herein to reflect any change in our expectations with regard thereto or any change in events, conditions, or circumstances on which any such statements are based.

Overview

We are engaged in the development, manufacture, sale and service of systems for genetic analysis for use in the life sciences and in clinical diagnostics. Our industry is affected by a number of factors that influence its size and development. These factors include the availability of genomic sequence data for human and other organisms, technological innovation that increases throughput and lowers the cost of genomic and genetic analysis, the development of new computational techniques to handle and analyze large amounts of genomic data, the availability of government funding for basic and disease-related research, the amount of capital and ongoing expenditures allocated to research and development spending by biotechnology, pharmaceutical and diagnostic companies, the application of genomics to new areas including molecular diagnostics, agriculture, human identity and consumer goods, and the availability of genetic markers and signatures of diagnostic value.

We have established our GeneChip® system as the platform of choice for acquiring, analyzing and managing complex genetic information. Our integrated GeneChip® platform includes: disposable DNA probe arrays (chips) consisting of gene sequences set out in an ordered, high density pattern, certain reagents for use with the probe arrays, a scanner and other instruments used to process the probe arrays, and software to analyze and manage genomic information obtained from the probe arrays. We currently sell our products directly to pharmaceutical, biotechnology, agrichemical, diagnostics and consumer products companies as well as academic research centers, government research laboratories, private foundation laboratories and clinical reference laboratories in North America and Europe. We also sell our products through life science supply specialists acting as authorized distributors in Mexico, India, the Middle East and Asia Pacific regions. We have incurred net losses and negative cash flows

from operations in the past, but have now achieved profitability for two consecutive fiscal years. The following overview describes key elements of our business strategy and our goals for fiscal 2005:

Continue to develop and expand sales of our GeneChip® system. We intend to continue to enhance our GeneChip® technology through substantial investments in research and development and collaborations. As we continue to enhance the functionality and decrease the unit costs of our GeneChip® products, we aim to encourage our customers to expand their research uses for our GeneChip® system, which will create new market opportunities for us.

Our goal is to achieve solid growth in probe arrays and reagent sales as a result of expanding our product lines and adding new customers. While we anticipate instrument revenue to be up slightly as compared to 2004 due to continued revenue growth related to sales of new instruments and automation equipment, this growth will be partially offset by the eventual completion of our instrument upgrade cycle, and our largest opportunity for growth will likely be through sales of our GeneChip® products.

Leverage our technologies into new markets. A key driver will be increasing the breadth of scientific and diagnostic applications of our technology, while also industrializing, automating and standardizing our technology to open new markets and drive revenue growth. The aim of our automation efforts is to reduce the cost per experiment, minimize operator variability and dramatically improve experimental throughput. We believe that our high-throughput automation solutions will enjoy the same success as our bench-top systems have in the research markets. We have several active collaborations aimed at extending our existing technologies and products into diagnostic applications and we continue to look for new applications for our technology, new collaborative opportunities and new markets.

Maintain our operating margins. Management is focused on growing the business and increasing its operating profitability at the same time. In addition to the revenue growth opportunities described above, we seek to achieve continued leverage in our manufacturing costs and operating expenses. Our goal has been and continues to be to grow our operating expenses at about half the rate of our product and product related revenue growth. If we are able to contain the growth rate of our operating expenses, we should be able to continue our recent trend of profitability.

CRITICAL ACCOUNTING POLICIES & ESTIMATES

General

The following section of Management's Discussion and Analysis of Financial Condition and Results of Operations is based upon our consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States. The preparation of these financial statements requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenue and expenses, and related disclosure of contingent assets and liabilities. Management bases its estimates on historical experience and on various other assumptions that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

Our significant accounting policies are fully described in Note 2 to our consolidated financial statements. However, certain accounting policies are particularly important to the reporting of our financial position and results of operations and require the application of significant judgment by our management. An accounting policy is deemed to be critical if it requires an accounting estimate to be made based on assumptions about matters that are highly uncertain at the time the estimate is made, and if different estimates that reasonably could have been used, or changes in the accounting estimates

that are reasonably likely to occur periodically, could materially impact the financial statements. Management believes the following critical accounting policies reflect its more significant estimates and assumptions used in the preparation of the Consolidated Financial Statements.

REVENUE RECOGNITION

We enter into contracts to sell our products and, while the majority of our sales agreements contain standard terms and conditions, there are agreements that contain multiple elements or non-standard terms and conditions. As a result, significant contract interpretation is sometimes required to determine the appropriate accounting, including whether the deliverables specified in a multiple element arrangement should be treated as separate units of accounting for revenue recognition purposes, and if so, how the price should be allocated among the deliverable elements, when to recognize revenue for each element, and the period over which revenue should be recognized. We recognize revenue for delivered elements only when the fair values of undelivered elements are known and customer acceptance has occurred. Changes in the allocation of the sales price between delivered to undelivered elements might impact the timing of revenue recognition, but would not change the total revenue recognized on the contract.

ACCOUNTS RECEIVABLE

We evaluate the collectibility of our trade receivables based on a combination of factors. We regularly analyze our significant customer accounts, and, when we become aware of a specific customer's inability to meet its financial obligations to us, such as in the case of bankruptcy filings or deterioration in the customer's operating results or financial position, we record specific bad debt reserves to reduce the related receivable to the amount we reasonably believe is collectible. We also record reserves for bad debt on a small portion of all other customer balances based on a variety of factors including the length of time the receivables are past due, the financial health of the customer, macroeconomic considerations and historical experience. If circumstances related to specific customers change, our estimates of the recoverability of receivables could be further adjusted.

INVENTORIES

We enter into inventory purchases and commitments so that we can meet future shipment schedules based on forecasted demand for our products. The business environment in which we operate is subject to rapid changes in technology and customer demand. We perform a detailed assessment of inventory each period, which includes a review of, among other factors, demand requirements, product life cycle and development plans, component cost trends, product pricing, product expiration and quality issues. Based on this analysis, we record adjustments to inventory for potentially excess, obsolete or impaired goods, when appropriate, in order to report inventory at net realizable value. Revisions to our inventory adjustments may be required if actual demand, component costs, supplier arrangements, or product life cycles differ from our estimates.

NONMARKETABLE EQUITY SECURITIES

As part of our strategic efforts to gain access to potential new products and technologies, we invest in equity securities of certain private biotechnology companies. Our nonmarketable equity securities are carried at cost unless we determine that an impairment that is other than temporary has occurred, in which case we write the investment down to its impaired value. We periodically review our investments for impairment; however, the impairment analysis requires significant judgment in identifying events or circumstances that would likely have significant adverse effect on the fair value of the investment. The analysis may include assessment of the investee's (i) revenue and earnings trend, (ii) business outlook

for its products and technologies, (iii) liquidity position and the rate at which it is using its cash, and (iv) likelihood of obtaining subsequent rounds of financing. If an investee obtains additional funding at a valuation lower than our carrying value, we presume that the investment is other than temporarily impaired. We have experienced impairments in our portfolio due to the decline in equity markets over the past few years. However, we are not able to determine at the present time which specific investments are likely to be impaired in the future, or the extent or timing of the individual impairments.

DEFERRED TAXES

Income tax expense is based on pretax financial accounting income under the liability method. Deferred tax assets and liabilities are determined based on the difference between the financial statement and tax basis of assets and liabilities using enacted tax rates in effect for the year in which the differences are expected to reverse. We must then assess the likelihood that the resulting deferred tax assets will be realized. To the extent we believe that realization is not more likely than not, we establish a valuation allowance. Significant estimates are required in determining our provision for income taxes, our deferred tax assets and liabilities, and any valuation allowance to be recorded against our net deferred tax asset. Some of these estimates are based on interpretations of existing tax laws or regulations. We believe that our estimates are reasonable and that our reserves for income tax related uncertainties are adequate. Various internal and external factors may have favorable or unfavorable effects on our future effective tax rate. These factors include, but are not limited to, changes in tax laws, regulations and/or rates, changing interpretations of existing tax laws or regulations, changes in the valuation of our deferred tax assets or liabilities, future levels of research and development spending, and changes in overall levels and mix of pretax earnings.

CONTINGENCIES

We are subject to legal proceedings principally related to intellectual property matters. Based on the information available at the balance sheet dates, we assess the likelihood of any adverse judgments or outcomes to these matters, as well as potential ranges of probable losses. If losses are probable and reasonably estimable, we will record a reserve in accordance with SFAS 5, "Accounting for Contingencies." Any reserves recorded may change in the future due to new developments in each matter.

RECENT ACCOUNTING PRONOUNCEMENTS

On December 16, 2004, the Financial Accounting Standards Board (FASB) issued FASB Statement No. 123 (revised 2004), Share-Based Payment, which is a revision of FASB Statement No. 123, *Accounting for Stock-Based Compensation*. Statement 123(R) supersedes APB Opinion No. 25, *Accounting for Stock Issued to Employees*, and amends FASB Statement No. 95, *Statement of Cash Flows*. Generally, the approach in Statement 123(R) is similar to the approach described in Statement 123. However, Statement 123(R) *requires* all share-based payments to employees, including grants of employee stock options, to be recognized in the income statement based on their fair values. Pro forma disclosure is no longer an alternative. Statement 123(R) must be adopted no later than July 1, 2005. Statement 123(R) permits public companies to adopt its requirements using one of two methods: (1) a "modified prospective" method in which compensation cost is recognized beginning with the effective date (a) based on the requirements of Statement 123(R) for all share-based payments granted after the effective date and (b) based on the requirements of Statement 123 for all awards granted to employees prior to the effective date of Statement 123(R) that remain unvested on the effective date or (2) a "modified retrospective" method which includes the requirements of the modified prospective method described above, but also permits entities to restate based on the amounts previously recognized under

Statement 123 for purposes of pro forma disclosures either (a) all prior periods presented or (b) prior interim periods of the year of adoption.The Company expects to adopt Statement 123(R) effective July 1, 2005 under the modified-prospective method.

As permitted by Statement 123, the Company currently accounts for share-based payments to employees using Opinion 25's intrinsic value method and, as such, generally recognizes no compensation cost for employee stock options. Accordingly, the adoption of Statement 123(R)'s fair value method will have a significant impact on our result of operations, although it will have no impact on our overall financial position. The impact of adoption of Statement 123(R) cannot be predicted at this time because it will depend, in part, on the levels of share-based payments granted prior to the date of adoption. However, had we adopted Statement 123(R) in prior periods, the impact of that standard would have approximated the impact of Statement 123 as described in the disclosure of pro forma net income and earnings per share in Note 2 to our consolidated financial statements. Statement 123(R) also requires the benefits of tax deductions in excess of recognized compensation cost to be reported as a financing cash flow, rather than as an operating cash flow as required under current literature. This requirement will reduce net operating cash flows and increase net financing cash flows in periods after adoption. While we cannot estimate what those amounts will be in the future (because they depend on, among other things, when employees exercise stock options), the amount of operating cash flows recognized in 2004 for such excess tax deductions was $0.7 million in 2004.

RESULTS OF OPERATIONS

F. Hoffmann-La Roche Ltd.

In January 2003, we expanded our collaboration with Roche by granting Roche access to our GeneChip® technologies to develop and commercialize GeneChip® diagnostic laboratory tests for DNA analysis, genotyping and resequencing applications, as well as for RNA expression analysis, in a broad range of human disease areas. Using our GeneChip® technologies, Roche is seeking to develop and market diagnostic tests for diseases such as cancer, osteoporosis, cardiovascular, metabolic, infectious and inflammatory diseases. Under the terms of the collaborative agreement, Roche paid us an up-front, nonrefundable license fee of $70.0 million. We are recognizing this amount as a component of product related revenue over the research and product development phase which is expected to approximate five years. The agreement, which is subject to Roche's option to terminate on December 31, 2007 or any time on or after June 2, 2013, with one year's prior notice, includes a broad range of other compensation payable by Roche to us throughout the life of the agreement based on minimum annual royalties on sales of diagnostic kits, milestone payments for technical and commercial achievements, a manufacturing and supply agreement, and related license installments.

Perlegen Sciences, Inc.

On January 9, 2003, we entered into an agreement with Perlegen, a related party, to in-license certain intangible assets that are expected to accelerate our plans to design and commercialize Affymetrix microarrays for whole genome and candidate region DNA analysis. In addition to broadening our access to certain specific Perlegen technologies, this licensing agreement advanced by approximately three years our prior commercialization rights to the Perlegen single nucleotide polymorphism (SNP) database for the development of Affymetrix microarray DNA products that we already had under development prior to January 2003. This agreement also eliminated any future royalty obligations for array products that we commercialize based on information contained in Perlegen's SNP database. Under the terms of the licensing agreement, we paid Perlegen a total of $15.0 million in cash and granted Perlegen a $3.0 million credit to be applied against the margin on our

future sales of chips to Perlegen. The $15.0 million of cash consideration in this transaction was allocated to the following intangible asset categories based upon their relative estimated fair values:

- The advancement by three years of our access to the Perlegen single nucleotide polymorphism (SNP) database, which allowed us to substantially accelerate our ongoing development of a limited number of DNA analysis products;
- Various licenses or modification of existing licenses for several Perlegen technologies which provided us benefits across a larger number of our microarray products;

We engaged an independent third party valuation professional to assist us in determining the relative fair values of each intangible asset licensed and the allocation of the consideration paid. While we considered the work of the independent third party valuation professional, we took primary responsibility for allocating the consideration paid for the intangible assets acquired. In connection with the advanced access to the Perlegen SNP database, we recorded a charge of approximately $10.1 million related to the license in 2003. The remaining $4.9 million was recorded as intangible assets which are being amortized over their useful lives of six to ten years.

The following discussion compares the historical results of operations for the years ended December 31, 2004, 2003 and 2002.

PRODUCT SALES

The components of product sales are as follows (in thousands):

	Year ended December 31,			Dollar change from	
	2004	2003	2002	2003	2002
Probe arrays	$168,243	$139,591	$140,039	$28,652	$ (448)
Reagents	31,744	20,419	15,341	11,325	5,078
Instruments	77,269	62,738	46,214	14,531	16,524
Total product sales	$277,256	$222,748	$201,594	$54,508	$21,154

Total product sales increased 24% or $54.5 million in 2004 as compared to 2003. The increase in GeneChip® probe arrays was primarily due to growth of $32.4 million related to increased unit sales of our GeneChip® probe arrays which was partially offset by a decrease of $4.6 million related to a decline in the average selling price of our probe arrays due to a change in product mix. The increase in unit sales of our probe arrays is primarily the result of new product introductions. Reagent sales increased $11.3 million primarily due to increased probe array sales and continued market acceptance of our new internally manufactured reagents. The improvement in instrument sales is primarily due to growth of $2.5 million related to increased unit sales of our GeneChip® Scanner 3000 instruments and upgrades, growth of $6.9 million related to increased unit sales of full GeneChip® instrumentation systems including our new GCS 3000Dx system, and growth of $3.8 million related to an increase in the average selling price of our instruments due to a change in product mix.

Total product sales increased 10% or $21.2 million in 2003 as compared to 2002. The increase was primarily due to growth in instrument revenue. The new GeneChip® Scanner 3000 and GeneChip® Fluidics Station 450, which were launched in the first half of fiscal year 2003, contributed $24.4 million to the increase in instrument revenue. This increase was partially offset by a $5.1 million decrease related to a decline in unit sales of our full GeneChip® instrument systems. Reagents increased $5.0 million during the year as a result of growth in unit sales due to our expanded product offering and overall increased product acceptance. Overall, both the average selling price and the number of units of our GeneChip® probe arrays remained relatively consistent with those in 2002, with the inclusion of the transition of our flagship Human chip product from a two chip set to one chip.

PRODUCT RELATED REVENUE

The components of product related revenue are as follows (in thousands):

	Year ended December 31,			Dollar change from	
	2004	2003	2002	2003	2002
Subscription fees	$20,669	$26,208	$32,125	$(5,539)	$(5,917)
Service and other	15,526	18,451	14,819	(2,925)	3,632
License fees and milestone revenue	17,434	13,373	—	4,061	13,373
Total product related revenue	$53,629	$58,032	$46,944	$(4,403)	$11,088

Total product related revenue decreased 8% or $4.4 million in 2004 as compared to 2003. The decrease was primarily due to a $5.5 million decline in subscription fees earned under GeneChip® array access programs as we continue to transition customers to volume-based discounting on product sales. In addition, service and other revenue declined $2.9 million primarily due to a $1.8 million decline in service contract revenue due to a decrease in the number of contracts as pre-existing scanner customers upgraded to our GeneChip® Scanner 3000 which is covered by a one year warranty. These decreases were partially offset by an additional $1.1 million of license fees earned from a full year of amortization of the Roche agreement and the recognition of $2.2 million in milestone revenue due to the achievement of substantive at risk goals as defined by our collaborative agreements. License fees and milestone revenue earned in connection with the Roche agreement was $15.7 million for the year ended December 31, 2004 as compared to $13.1 million for the year ended December 31, 2003.

Total product related revenue increased 24% or $11.1 million in 2003 as compared to 2002. The increase in product related revenue for the year ended December 31, 2003 was primarily due to an increase in license fees of $13.1 million earned in connection with the Roche agreement signed in January 2003, an increase in service revenue of $2.8 million associated with the continued growth in our installed base of equipment and the inclusion of custom probe array design fees of $3.9 million in 2003 as a result of the full commercialization of our custom product offering. These increases were partially offset by a decrease of $2.7 million in software revenue and a decrease of $5.9 million in subscription fees earned under GeneChip® array access programs as we transition customers to volume-based discounting on product sales. Revenues from custom probe array design fees of $5.5 million are reported in royalties and other revenue in 2002.

ROYALTY AND OTHER REVENUE (in thousands)

	Year ended December 31,			Dollar change from	
	2004	2003	2002	2003	2002
Royalties and other revenue	$9,832	$10,556	$19,777	$(724)	$(9,221)

Royalties and other revenue decreased 7% or $0.7 million in 2004 as compared to 2003. The decrease was primarily due to a decline in the number and average value of our remaining non-core license agreements.

Royalty and other revenue decreased 47% or $9.2 million in 2003 as compared to 2002. The decline was primarily due to the reporting of $3.9 million of custom probe array design fees as product related revenue beginning in January 2003, as a result of the full commercialization of our custom product offering and due to the decline in new license agreements and royalties, as customers moved from licensing our non-core spotting technology to purchasing our GeneChip® probe arrays. In addition, in the second quarter of 2002, we recognized approximately $1.8 million of deferred revenue related to the early completion of a long-term contractual arrangement under which we had no further obligations. The decrease was partially offset by increased research activity of $1.4 million related to an existing grant.

REVENUE FROM PERLEGEN SCIENCES, INC. (in thousands)

	Year ended December 31,			Dollar change from	
	2004	2003	2002	2003	2002
Revenue from Perlegen Sciences	$5,245	$9,460	$21,559	$(4,215)	$(12,099)

Revenue from Perlegen Sciences, a related party, decreased 45% or $4.2 million in 2004 as compared to 2003. The decline was primarily due to decreased demand by Perlegen for our whole wafers. We sell whole wafers to Perlegen for use in Perlegen's research and development activities at our fully burdened cost of manufacturing. Starting in the second quarter of 2004, we began recognizing margin on the sale of probe arrays that were utilized by Perlegen for revenue generating activities. The margin earned on the sale of these probe arrays was $1.4 million in 2004.

Revenue from the sale of wafers to Perlegen, a related party, decreased 56% or $12.1 million in 2003 as compared to 2002. The decrease was consistent with the decrease in Perlegen's contractual obligations under their supply agreement with us as they completed their initial 50 genome scanning project. Pursuant to this supply agreement, we sell whole wafers to Perlegen for use in Perlegen's research and development activities at our fully burdened cost of manufacturing.

PRODUCT AND PRODUCT RELATED GROSS MARGINS (in thousands, except percentage amounts)

	Year ended December 31,			Dollar / Percentage change from	
	2004	2003	2002	2003	2002
Gross margin on product sales	$195,556	$142,590	$118,997	$52,966	$23,593
Gross margin on product related revenue	43,995	48,375	41,226	(4,380)	7,149
Gross margin on product and product related revenue	$239,551	$190,965	$160,223	$48,586	$30,742
Product gross margin as a percentage of product sales	70.5%	64.0%	59.0%	6.5%	5.0%
Product related gross margin as a percentage of product related revenue	82.0%	83.4%	87.8%	(1.4%)	(4.4%)

The gross margin percentage on product sales increased from 64.0% to 70.5% in 2004 as compared to 2003. Of the 6.5% increase in product gross margins, approximately 2.1% of the increase can be attributed to an increase in probe array gross margins due to the conversion of a royalty bearing

technology license from OGT to a fully paid-up non-royalty bearing license in the second half of 2004. The remainder of the gross margin increase can be attributed to increased utilization of our chip and instrument manufacturing facilities due to increased sales volume as well as a change in our overall product mix.

The gross margin percentage on product related revenue decreased from 83.4% to 82.0% in 2004 as compared to 2003. This 1.4% decrease was primarily due to a decline in sales of our access agreements as we continue to transition customers to volume-based discounting on product sales and due to an increase in expenses related to certain of our service agreements. These margin decreases were partially offset by the recognition of $2.2 million in milestone revenue due to the achievement of substantive at risk goals as defined by our collaborative agreements.

The gross margin percentage on product sales increased from 59.0% to 64.0% in 2003 as compared to 2002. This 5.0% increase was primarily due to higher gross margins on instruments resulting from higher average selling prices and a lower cost of production associated with the internal manufacturing of the GeneChip® scanner 3000, as the Company transitioned from the GeneArray® scanner 2500 which was manufactured for us under a supply agreement. The transition to internal manufacturing resulted in increased production volume in our Bedford facility. Gross margins on probe arrays were also slightly higher in fiscal 2003 compared to fiscal 2002 as a result of lower production costs per unit due to increased manufacturing efficiencies.

The gross margin percentage on product related revenue decreased from 87.8% to 83.4% in 2003 as compared to 2002. This 4.4% decrease was primarily due to the inclusion of $2.0 million in costs associated with our custom probe array design fees beginning in January 2003 as a result of the full commercialization of our custom product offering, as well as a decrease in software revenue and subscription fees earned under our access agreements. The impact on margins from the decrease in software revenue and subscription fees were partially offset by a $13.1 million increase in license revenue from the Roche agreement signed in January 2003.

COST OF PERLEGEN REVENUES (in thousands)

	Year ended December 31,			Dollar change from	
	2004	2003	2002	2003	2002
Cost of revenue from Perlegen Sciences	$3,611	$9,460	$21,000	$(5,849)	$(11,540)

Cost of Perlegen revenue decreased 62% or $5.8 million in 2004 as compared to 2003 primarily due to the reduction in wafer purchases made by Perlegen. This decrease was partially offset by costs associated with Perlegen's purchase of GeneChip® instruments in the first half of 2004.

Cost of Perlegen revenue decreased 55% or $11.5 million in 2003 as compared to 2002 due to the reduction in wafer purchases made by Perlegen, which is consistent with Perlegen's declining contractual purchase obligations as they completed their initial 50 genome scanning project.

RESEARCH AND DEVELOPMENT EXPENSES (in thousands)

	Year ended December 31,			Dollar change from	
	2004	2003	2002	2003	2002
Research and development	$73,405	$65,909	$69,520	$7,496	$(3,611)

Research and development expenses, which primarily consist of basic research, product research and development and manufacturing process and development increased 11% or $7.5 million in 2004 as compared to 2003. The growth was primarily due to $4.2 million in increased costs associated with the

expanded use of our pilot operations facility in Sunnyvale for new product development. We also increased our spending on basic research and product research and development.

Research and development expenses decreased 5% or $3.6 million in 2003 as compared to 2002. The decrease was primarily due to the reporting of $2.0 million in costs associated with custom probe array design fees as cost of product related revenue starting in January 2003 as a result of the full commercialization of our custom product offering as well as a $2.5 million decrease in consulting services. These decreases were partially offset by other miscellaneous research and development expenses.

We believe a substantial investment in research and development is essential to a long-term sustainable competitive advantage and critical to expansion into new markets.

SELLING, GENERAL AND ADMINISTRATIVE EXPENSES (in thousands)

	Year ended December 31,			Dollar change from	
	2004	2003	2002	2003	2002
Selling, general and administrative	$116,973	$104,797	$96,260	$12,176	$8,537

Selling, general and administrative expenses increased 12% or $12.2 million in 2004 as compared to 2003. The growth was partially due to an increase of $5.2 million in sales and marketing expenses which was comprised of $8.0 million related to new product introductions and increased sales volume in our American and European regions, partially offset by a decrease in sales and support costs of $2.8 million in Japan as our Japanese operations completed their obligations associated with a prior distribution agreement. In addition, general and administrative expenses increased by $7.0 million related to on-going regulatory compliance efforts and other general administrative costs. This increase is net of $3.7 million in lower legal expenses and the receipt of a cash settlement in 2004 of approximately $1.0 million in connection with the resolution of an intellectual property dispute.

Selling, general and administrative expenses increased 9% or $8.5 million in 2003 as compared to 2002. The increase in selling, general and administrative expenses in 2003 was primarily due to an increased investment of $13.0 million in our sales and support infrastructure in Japan and Europe, and an increase of $1.4 million in general legal expenses related to our current litigation. These increases were partially offset by the recovery of a previously reserved $1.3 million account receivable and $3.5 million in decreases in general administrative costs due to company wide cost controls.

Selling, general and administrative expenses are expected to continue to increase in absolute dollars but decrease as a percentage of revenue as we expand sales, marketing, and technical support functions, management and administrative functions, prosecute and defend our intellectual property position and defend against claims made by third parties in ongoing litigation. We expect legal costs to vary substantially as the intensity of legal activity changes. There can be no assurance that we have adequately estimated our exposure for potential damages associated with pending or future litigation.

STOCK-BASED COMPENSATION (in thousands)

	Year ended December 31,			Dollar change from	
	2004	2003	2002	2003	2002
Stock-based compensation	$920	$2,238	$8,388	$(1,318)	$(6,150)

Stock-based compensation, which primarily includes the amortization of deferred stock compensation, decreased 59% or $1.3 million in 2004 as compared to 2003 and decreased 73% or $6.2 million in 2003 as compared to 2002. Upon the acquisition of Neomorphic in October 2000, the fair value of unvested common stock subject to restricted stock agreements and the intrinsic value of

the unvested options held by employees were deducted from the purchase price and allocated to deferred stock compensation. The amortization of deferred stock-based compensation is principally attributable to research and development and selling, general and administrative employees. As of December 31, 2004, all of the remaining deferred stock compensation related to the Neomorphic acquisition has been amortized except for approximately $4.3 million of deferred stock compensation related to an executive level Neomorphic employee who commenced a leave of absence during the latter part of fiscal 2001. The remaining $4.3 million balance will be amortized if and when the employee resumes active status with us.

AMORTIZATION OF PURCHASED INTANGIBLES (in thousands)

	Year ended December 31,			Dollar change from	
	2004	2003	2002	2003	2002
Amortization of purchased intangibles	$—	$937	$1,125	$(937)	$(188)

We incurred no charges related to the amortization of purchased intangibles in 2004 as we fully amortized all of our purchased intangibles during the fiscal year ended 2003.

For fiscal 2003 and 2002, the amortization of purchased intangibles represents the amortization of intangibles related to the acquisition of Neomorphic, Inc. The Company adopted Statement of Financial Accounting Standards No. 142, "Goodwill and Other Intangible Assets" ("SFAS 142") on January 1, 2002. In accordance with SFAS 142, we reclassified $0.8 million of assembled workforce to goodwill and ceased the amortization of goodwill.

We completed our review for potential impairment of goodwill as of June 30, 2004, and concluded there was no impairment of goodwill. In addition, there have been no indicators of potential impairment through December 31, 2004.

ACQUIRED IN-PROCESS TECHNOLOGY (in thousands)

	Year ended December 31,			Dollar change from	
	2004	2003	2002	2003	2002
Acquired in-process technology	$—	$10,096	$—	$(10,096)	$10,096

During the year ended December 31, 2003, we recorded a charge of approximately $10.1 million to acquired in-process technology. The associated charge was for advanced access to the Perlegen SNP database and was recorded as the database has no alternative future use to us beyond our developing a limited number of closely related DNA analysis products. We did not acquire any in-process research projects from Perlegen. Therefore, as of the license date, we did not forecast any material changes from our historical gross margins for any of our DNA analysis products.

We engaged an independent third party valuation professional to assist us in determining the relative fair values of each intangible asset licensed and the allocation of the consideration paid. While we considered the work of the independent third party valuation professional, we took primary responsibility for allocating the consideration paid for the intangible assets acquired. We determined the value of the SNP database license by using the Income Approach. In applying this approach, we estimated the net present value of future cash flows expected from the sale of DNA analysis products to be developed in reliance on the content from the Perlegen SNP database. The analysis included forecasted future cash flows that were expected from the progress made on our DNA microarray development projects prior to the date of the Perlegen SNP database license. These cash flows were first estimated by forecasting total revenue associated with sales of certain of our future DNA analysis products. A portion of this revenue was then removed to account for the contribution provided by our

existing core technology that was considered to benefit the DNA products under development. Appropriate operating expenses, cash flow adjustments, and contributory asset returns were deducted from the estimated cash flows to establish a forecast of net cash flows. Finally, these net cash flows were converted to a present value using a discount rate of 30%, which was based on our weighted average cost of capital adjusted for the technical and market risks associated with our ongoing research project in which the SNP database content would be used. Significant cash inflows from the associated DNA products were forecasted to continue through 2008.

The estimates used by us in valuing the licensed technologies were based upon assumptions we believe to be reasonable but which are inherently uncertain and unpredictable. Our assumptions may be incomplete or inaccurate, and no assurance can be given that unanticipated events and circumstances will not occur. Accordingly, actual results may vary from the projected results.

INTEREST INCOME AND OTHER, NET (in thousands)

	Year ended December 31,			Dollar change from	
	2004	2003	2002	2003	2002
Interest income and other, net	$2,317	$16,662	$13,535	$(14,345)	$3,127

Interest income and other, net decreased 86% or $14.3 million in 2004 as compared to 2003. The decrease in interest income and other, net was primarily due to the recognition of a $4.4 million gain in 2003 on an equity investment in a privately-held biotechnology company following its acquisition by a publicly traded entity and a $1.4 million gain realized in 2003 on the sale of some of our Perlegen stock. In 2003, we also realized currency gains of $3.5 million prior to the date we began hedging a percentage of our assets in 2004 that are held in various foreign currencies of our subsidiaries with forward contracts, with the gains or losses on these contracts largely offsetting gains and losses on the change in value of the underlying assets. Interest income declined $3.2 million in 2004 due to lower cash and marketable securities balances following the $271.8 million of bond redemptions completed in the first quarter of 2004 and a $41.9 million license payment to OGT in the second quarter of 2004. Finally, we realized impairment charges of $2.3 million in 2004 due to other-than-temporary declines in the carrying values of certain non-marketable equity securities.

Interest income and other, net increased by 23% or $3.1 million in 2003 as compared to 2002. The increase in interest income and other, net was primarily due to the $1.4 million gain realized on the sale of some of our Perlegen stock, along with the acquisition by a publicly traded entity in April 2003 of a privately-held biotechnology company in which we owned an equity investment. Consistent with Emerging Issues Task Force 91-5, "Nonmonetary Exchange of Cost Method Investments", we realized a $2.6 million gain on the acquisition date and recognized an additional gain of $1.8 million upon the subsequent sale of a portion of these securities. This was partially offset by a decrease in interest income as a result of a lower average balance in our marketable securities account, lower returns on our cash and marketable securities portfolio and by a $0.9 million realized loss related to an other-than-temporary write down of our investment in a venture capital limited partnership. In 2002, we also recorded a $4.0 million write down related to an other-than-temporary decline in the value of our investment in Orchid Biosciences, Inc. and had a $0.8 million realized loss related to an other-than-temporary write down of our investment in a venture capital limited partnership.

INTEREST EXPENSE (in thousands)

	Year ended December 31,			Dollar change from	
	2004	2003	2002	2003	2002
Interest expense	$11,102	$17,358	$19,730	$(6,256)	$(2,372)

Interest expense decreased 36% or $6.3 million in 2004 as compared to 2003. The decrease was primarily due to lower interest charges following the $271.8 million of bond redemptions completed in the first quarter of 2004 of our 5% and 4.75% convertible subordinated notes. This decrease was primarily offset by $8.1 million of charges incurred in connection with the bond redemptions. In addition, the decrease was also offset by $1.7 million in interest expense and the amortization of debt issuance costs associated with the $120.0 million of 0.75% senior convertible notes issued in December 2003.

Interest expense decreased 12% or $2.4 million in 2003 as compared to 2002. The decrease occurred primarily because in the second quarter of fiscal 2003 we repurchased $53.4 million principal amount of our 4.75% convertible subordinated notes due in 2007, and $48.0 million principal amount of our 5.0% convertible subordinated notes due in 2006.

INCOME TAX PROVISION (in thousands)

	For the years ended December 31,			Dollar change from	
	2004	2003	2002	2003	2002
Income tax provision	$3,326	$2,563	$701	$763	$1,862

The provision for income tax was approximately $3.3 million in 2004, up from $2.6 million in 2003. In 2004, the provision principally consists of taxes currently payable on the taxable profits generated by our foreign operations, federal alternative minimum tax, and state taxes. The provision for income tax was approximately $2.6 million in 2003, up from $0.7 million in 2002. In 2003, the provision consists of current taxes accrued on the profits attributable to our foreign operations, state taxes and federal alternative minimum tax. In 2002, the provision consists of current taxes accrued on the profits attributable to our foreign operations and state taxes.

Statement of Financial Accounting Standards No. 109, "Accounting for Income Taxes" ("SFAS 109") provides for the recognition of deferred tax assets if realization of such assets is more likely than not. Based upon the weight of available evidence, which includes the historical operating performance and the reported net losses through December 31, 2002, at December 31, 2004, we provided a full valuation allowance against our net deferred tax assets.

As of December 31, 2004, we had tax-effected net operating loss carryforwards for federal and state income tax purposes of approximately $64.0 million, which will expire at various dates in 2018 through 2023, if not utilized. In addition, we have federal and state research and development credit carryforwards of approximately $16.2 million, which expire at various dates beginning in 2007 through 2024, if not utilized. Utilization of the net operating loss and tax credit carryforwards may be subject to substantial annual limitation due to the ownership change limitations provided by the Internal Revenue Code. We believe the effect of such limitations will not result in the expiration of the net operating loss and tax credit carryforwards before utilization. We anticipate our effective tax rate will increase in future years as we continue to generate profits.

LIQUIDITY AND CAPITAL RESOURCES

Cash and Cashflow (in thousands)

	Year ended December 31,		
	2004	2003	2002
Net cash provided by operating activities	$ 48,932	$ 89,858	$31,066
Net cash (used in) provided by investing activities	(46,785)	86,396	(24,934)
Net cash (used in) provided by financing activities	(235,083)	32,140	3,605
Effect of foreign currency translation on cash and cash equivalents	(397)	(354)	(644)
Net (decrease) increase in cash and cash equivalents	$(233,333)	$208,040	$ 9,093

Net Cash Provided by Operating Activities

Cash provided by operating activities is primarily driven by increases in our net income. However, operating cash flows differ from net income as a result of non-cash charges or differences in the timing of cash flows and earnings recognition. Significant components of the change in cash provided by operating activities are as follows:

Deferred revenues declined $10.1 million during 2004 compared to an increase of $54.0 million in 2003. Deferred revenues increased $54.0 million during 2003 compared to a decrease of $0.2 million in 2002. The increase in 2003 was primarily due to the $70.0 million Roche collaboration agreement up-front, nonrefundable license fee received in January 2003. Up-front payments from collaborators are recognized in earnings over various numbers of years depending on the contractual arrangement. Refer to our "Revenue Recognition" policy above for further information.

Our accounts receivable, including amounts owed from Perlegen, were $93.4 million at December 31, 2004, an increase of $22.1 million from December 31, 2003. The increase in our accounts receivable was primarily due to the timing of our sales and higher sales of our new and existing products. Our accounts receivables was $71.3 million at December 31, 2003, an increase of $5.4 million from December 31, 2002. The increase was primarily due to the timing of our sales.

Net Cash Used in or Provided by Investing Activities

Our investing activities, other than purchases, sales and maturities of available-for-sale securities, primarily consist of capital expenditures, strategic investments and purchased technology rights. Cash used for capital expenditures was $21.9 million, $12.4 million and $24.4 million for the years ended 2004, 2003 and 2002, respectively. Capital expenditures in 2002 through 2004 related to continued expansion in our operating facilities, investments in information management systems, and purchases of production and lab equipment. Cash used for the purchase of technology rights was $43.1 million, $3.3 million and $7.3 million in the years ended 2004, 2003 and 2002, respectively. In 2004, the primary component of purchased technology rights related to a $41.9 million license payment to OGT in the second quarter of 2004.

Net Cash Used in or Provided by Financing Activities

Our financing activities primarily consist of funds used in the redemption of or provided by the issuance of our convertible notes and activity under our employee stock plan. In 2004, we used $271.8 million in cash for the redemption of our remaining 5% and 4.75% convertible notes. In 2003, we repurchased $53.4 million principal amount of our 4.75% convertible subordinated notes due in 2007 and $48.0 million principal amount of our 5.0% convertible subordinated notes due in 2006. Additionally, in December 2003 we raised $120.0 million from the sale of 0.75% senior convertible

notes due 2033. In 2002, we repurchased $1.1 million face value amount of our 4.75% convertible subordinated notes due in 2007 for cash consideration of $0.9 million. As a result of the redemptions, we expect our cash from operating activities to increase in years subsequent to 2004 given that we will now be paying a lower interest rate on a lower outstanding debt balance. Cash provided by the issuance of stock under our employee stock plans was $36.2 million, $12.5 million and $4.5 million for the years ended 2004, 2003 and 2002, respectively.

Off-Balance Sheet Arrangements and Aggregate Contractual Obligations

As part of our ongoing business, we do not participate in transactions that generate relationships with unconsolidated entities or financial partnerships, such as entities often referred to as structured finance or special purpose entities ("SPEs"), which would have been established for the purpose of facilitating off-balance sheet arrangements or other contractually narrow or limited purposes. As of December 31, 2004, we are not involved in any SPE transactions.

The impact that our contractual obligations as of December 31, 2004 are expected to have on our liquidity and cash flow in future periods is as follows (in thousands):

	Total	2005	2006-2007	2008-2009	After 2009
Senior convertible notes (1)	$120,000	$ —	$ —	$120,000	$ —
Interest on senior convertible notes (1)	3,600	900	1,800	900	—
Operating leases	55,792	7,366	13,987	14,336	20,103
Purchase commitments (2)	18,230	17,230	1,000	—	—
Other commitments (3)	5,310	3,010	1,300	1,000	—
Total contractual obligations	$202,932	$28,506	$18,087	$136,236	$20,103

(1) Our 0.75% senior convertible notes are due in 2033, however holders may require us to repurchase all or a portion of their notes on December 31, 2008, 2013, 2018, 2023, and 2028.

(2) Purchase commitments include agreements to purchase goods or services that are enforceable and legally binding on Affymetrix and that specify all significant terms, including: fixed or minimum quantities to be purchased; fixed, minimum or variable price provisions; and the approximate timing of the transaction. Purchase obligations exclude agreements that are cancelable without penalty.

(3) Other commitments relate to an ongoing obligation held by the Company to contribute $2.5 million in a venture capital limited partnership. The venture capital limited partnership may call in this amount, in part or in full at any time according to the contract terms. Other commitments also include a funding obligation related to a research and development agreement which expires in 2005 and funding to support two fellowships under the Bio-X Program at Stanford.

We have financed our operations primarily through product sales, sales of equity and debt securities, collaborative agreements, interest income, and licensing of our technology. As of December 31, 2004, we had cash, cash equivalents, and available-for-sale securities of approximately $205.7 million. We anticipate that our existing capital resources along with the cash to be generated from operations will enable us to maintain currently planned operations and planned capital expenditures (estimated to be approximately $25.0 million for the year ending December 31, 2005), for the foreseeable future. However, this expectation is based on our current operating, financing and capital expenditure plans, which are subject to change, and therefore we could require additional funding. We also expect that our capital requirements will increase over the next several years as we expand our worldwide commercial operations, expand our manufacturing capabilities, increase our investments in third parties and expand our research and development efforts. Our long-term capital

expenditure requirements will depend on numerous factors, including: the expansion of commercial scale manufacturing capabilities; our ability to maintain existing collaborative and customer arrangements and establish and maintain new collaborative and customer arrangements; the progress of our research and development programs; initiation or expansion of research programs and collaborations; the costs involved in preparing, filing, prosecuting, defending and enforcing intellectual property rights; the effectiveness of product commercialization activities and arrangements; the purchase of patent licenses; and other factors.

As of December 31, 2004, we have no credit facility or other committed sources of capital. To the extent capital resources are insufficient to meet future capital requirements, we will have to raise additional funds to continue the development of our technologies. There can be no assurance that such funds will be available on favorable terms, or at all. To the extent that additional capital is raised through the sale of equity or convertible debt securities, the issuance of such securities could result in dilution to our stockholders. If adequate funds are not available, we may be required to curtail operations significantly or to obtain funds by entering into collaboration agreements on unattractive terms. Our inability to raise capital would have a material adverse effect on our business, financial condition and results of operations.

RISK FACTORS

This Form 10-K contains forward-looking information based on our current expectations. Because our actual results may differ materially from any forward-looking statements made by or on behalf of Affymetrix, this section includes a discussion of important risk factors that could affect our actual future results.

We have only recently achieved profitability.

For the year ended December 31, 2004, we had net income of $47.6 million. Prior to the year ended December 31, 2003, we incurred losses each year since our inception, and as a result have an accumulated deficit of approximately $151.1 million at December 31, 2004. We expect to continue experiencing fluctuations in our operating results and cannot assure sustained profitability. Our losses have resulted principally from costs incurred in research and development, manufacturing and from selling, general and administrative costs associated with our operations, including the costs of patent related litigation.

Our ability to generate significant revenues and maintain profitability is dependent in large part on our ability to expand our customer base, increase sales of our current products to existing customers, manage our expense growth, and enter into additional supply, license and collaborative arrangements as well as on our ability and that of our collaborative partners to successfully manufacture and commercialize products incorporating our technologies in new applications and in new markets.

Our quarterly results have historically fluctuated significantly and may continue to fluctuate unpredictably, which could cause our stock price to decrease.

Our revenues and operating results may fluctuate significantly due in part to factors that are beyond our control and which we cannot predict. The timing of our customers' orders may fluctuate from quarter to quarter. However, we have historically experienced customer ordering patterns for GeneChip® instrumentation and GeneChip® arrays where the majority of the shipments occur in the last month of the quarter. These ordering patterns may limit management's ability to accurately forecast our future revenues. Because our expenses are largely fixed in the short to medium term, any material shortfall in revenues will materially reduce our profitability and may cause us to experience losses. In particular, our revenue growth and profitability depend on sales of our GeneChip® products. Factors that could cause sales for these products to fluctuate include:

- our inability to produce products in sufficient quantities and with appropriate quality;
- the loss of or reduction in orders from key customers;

- the frequency of experiments conducted by our customers;
- our customers' inventory of GeneChip® products;
- the receipt of relatively large orders with short lead times; and
- our customers' expectations as to how long it takes us to fill future orders.

Some additional factors that could cause our operating results to fluctuate include:

- weakness in the global economy and changing market conditions;
- general economic conditions affecting our target customers;
- changes in the amounts or timing of government funding to companies and research institutions;
- changes in the attitude of the pharmaceutical industry towards the use of genetic information and genetic testing as a methodology for drug discovery and development; and
- changes in the competitive landscape.

Our business depends on research and development spending levels for pharmaceutical and biotechnology companies and academic and governmental research institutions.

We expect that our revenues in the foreseeable future will be derived primarily from products and services provided to a relatively small number of pharmaceutical and biotechnology companies and academic, governmental and other research institutions. Our success will depend upon their demand for and use of our products and services. Our operating results may fluctuate substantially due to reductions and delays in research and development expenditures by these customers. For example, reductions in capital expenditures by these customers may result in lower than expected instrumentation sales and similarly, reductions in operating expenditures by these customers could result in lower than expected GeneChip® array sales. These reductions and delays may result from factors that are not within our control, such as:

- changes in economic conditions;
- changes in government programs that provide funding to companies and research institutions;
- changes in the regulatory environment affecting life sciences companies and life sciences research;
- market-driven pressures on companies to consolidate and reduce costs; and
- other factors affecting research and development spending.

We may lose customers if we are unable to manufacture our products and ensure their proper performance and quality.

We produce our GeneChip® products in an innovative and complicated manufacturing process which has the potential for significant variability in manufacturing yields. We have encountered and may in the future encounter difficulties in manufacturing our products and, due to the complexity of our products and our manufacturing process, we cannot be sure we fully understand all of the factors that affect our manufacturing processes or product performance. Manufacturing and product quality issues may arise as we increase production rates at our manufacturing facility and launch new products. As a result, we may experience difficulties in meeting customer, collaborator and internal demand, in which case we could lose customers or be required to delay new product introductions, and demand for our products could decline. Although we rely on internal quality control procedures to verify our manufacturing process, due to the complexity of our products and manufacturing process, it is possible that probe arrays that do not meet all of our performance specifications may not be identified before

they are shipped. If our products do not consistently meet our customers' performance expectations, demand for our products will decline. In addition, we do not maintain any backup manufacturing capabilities for the production of our GeneChip® instruments. Any interruption in our ability to continue operations at our existing manufacturing facilities could delay our ability to develop or sell our products, which could result in lost revenue and seriously harm our business, financial condition and results of operations.

We may not be able to deliver acceptable products to our customers due to the rapidly evolving nature of genetic sequence information upon which our products are based.

The genetic sequence information upon which we rely to develop and manufacture our products is contained in a variety of public databases throughout the world. These genetic sequence databases are rapidly expanding and evolving. In addition, the accuracy of such databases and resulting genetic research is dependent on various scientific interpretations and it is not expected that global genetic research efforts will result in standardized genetic sequence databases for particular genomes in the near future. Although we have implemented ongoing internal quality control efforts to help ensure the quality and accuracy of our products, the fundamental nature of our products requires us to rely on genetic sequence databases and scientific interpretations which are continuously evolving. As a result, these variables may cause us to develop and manufacture products that incorporate sequence errors or ambiguities. The magnitude and importance of these errors depends on multiple and complex factors that would be considered in determining the appropriate actions required to remedy any inaccuracies. Our inability to timely deliver acceptable products as a result of these factors would likely adversely affect our relationship with customers, and could have a material adverse effect on our business, financial condition and results of operations.

Our success in penetrating emerging market opportunities in molecular diagnostics depends on the ability of our GeneChip® technologies to be used in clinical applications for diagnosing and informing the treatment of disease.

The clinical applications of GeneChip® technologies for diagnosing and informing the treatment of disease is an emerging market opportunity in molecular diagnostics that seeks to improve the effectiveness of health care by collecting information about DNA variation and RNA expression in patients at various times from diagnosis through prognosis and on to the end of therapy. However, there can be no assurances that molecular diagnostic markets will develop as quickly as we expect or reach what we believe is their full potential. Although we believe that there will be clinical applications of our GeneChip® technologies that will be utilized for diagnosing and informing the treatment of disease, there can be no certainty of the technical or commercial success our technologies will achieve in such markets.

The molecular diagnostic market is relatively new for us and presents us with new risks and uncertainties. Our success in this area depends to a large extent on our collaborative relationships and the ability of our collaborative partners to successfully market and sell products using our GeneChip® technologies. As a result, we are also dependent on the ability of our collaborative partners to achieve regulatory approval for such products in the United States and in overseas markets. Although Roche received FDA approval of the first diagnostic genotyping test for use with our GeneChip® System 3000Dx in late 2004, there can be no assurance that other products using our GeneChip® technologies will achieve needed approvals.

We may not successfully obtain regulatory approval of any diagnostic or other product which we or our collaborative partners develop.

The United States Food and Drug Administration must approve certain in-vitro diagnostic products before they can be marketed in the U.S. Certain in-vitro diagnostic products must also be

approved by the regulatory agencies of foreign governments or jurisdictions before the product can be sold outside the U.S. Commercialization of in-vitro diagnostic products outside of the research environment that we or our collaborators may develop, may depend upon successful completion of clinical trials. Clinical development is a long, expensive and an uncertain process and we do not know whether we, or any of our collaborative partners, will be permitted to undertake clinical trials of any potential in-vitro diagnostic products. It may take us or our collaborative partners many years to complete any such testing, and failure can occur at any stage of testing. Delays or rejections of potential products may be encountered based on changes in regulatory policy for product approval during the period of product development and regulatory agency review. Moreover, if and when our projects reach clinical trials, we or our collaborative partners may decide to discontinue development of any or all of these projects at any time for commercial, scientific or other reasons. Any of the foregoing matters could have a material adverse effect on our business, financial condition and results of operations.

Even where a product is exempted from FDA clearance or approval, the FDA may impose restrictions as to the types of customers to which we can market and sell our products. Such restrictions may materially and adversely affect our business, financial condition and results of operations.

Medical device laws and regulations are also in effect in many countries, ranging from comprehensive device approval requirements to requests for product data or certifications. The number and scope of these requirements are increasing. We may not be able to obtain regulatory approvals in such countries or may incur significant costs in obtaining or maintaining our foreign regulatory approvals. In addition, the export by us of certain of our products which have not yet been cleared for domestic commercial distribution may be subject to FDA or other export restrictions.

Healthcare reform and restrictions on reimbursements may limit our returns on molecular diagnostic products that we may develop with our collaborators.

We are currently developing diagnostic and therapeutic products with our collaborators. The ability of our collaborators to commercialize such products may depend, in part, on the extent to which reimbursement for the cost of these products will be available under U.S. and foreign regulations governing reimbursement for clinical testing services by government authorities, private health insurers and other organizations. In the U.S., third-party payor price resistance, the trend towards managed health care and legislative proposals to reform health care or reduce government insurance programs could reduce prices for health care products and services, adversely affect the profits of our customers and collaborative partners and reduce our future royalties.

We depend on a limited number of suppliers and we will be unable to manufacture our products if shipments from these suppliers are delayed or interrupted.

We depend on our vendors to provide components of our products in required volumes, at appropriate quality and reliability levels, and in compliance with regulatory requirements. Key parts of the GeneChip® product line, such as the hybridization oven, certain reagent kits and lithographic masks as well as certain raw materials used in the synthesis of probe arrays, are currently available only from a single source or limited sources. In addition, components of our manufacturing equipment and certain raw materials used in the synthesis of probe arrays are available from one of only a few suppliers. If supplies from these vendors were delayed or interrupted for any reason, we would not be able to get manufacturing equipment, produce probe arrays, or sell scanners or other components for our GeneChip® products in a timely fashion or in sufficient quantities or under acceptable terms.

Our success will require that we establish a strong intellectual property position and that we can defend ourselves against intellectual property claims from others.

Maintaining a strong patent position is critical to our competitive advantage. Litigation on these matters has been prevalent in our industry and we expect that this will continue. Patent law relating to the scope of claims in the technology fields in which we operate is still evolving and the extent of future protection is highly uncertain, so there can be no assurance that the patent rights that we have or may obtain will be valuable. Others have filed, and in the future are likely to file, patent applications that are similar or identical to ours or those of our licensors. To determine the priority of inventions, we will have to participate in interference proceedings declared by the United States Patent and Trademark Office that could result in substantial costs in legal fees and could substantially affect the scope of our patent protection. We cannot assure investors that any such patent applications will not have priority over our patent applications. Also, our intellectual property may be subject to significant administrative and litigation proceedings such as opposition proceedings against our patents in Europe, Japan and other jurisdictions. In addition, we have incurred and may in future periods incur substantial costs in litigation to defend against patent suits brought by third parties and when we initiate such suits. For example, we currently are engaged in litigation regarding intellectual property rights with Multilyte Ltd and Enzo Life Sciences, Inc. For additional information concerning intellectual property litigation and administrative proceedings, see Part I, Item 3, Legal Proceedings, of this Form 10-K.

In addition to patent protection, we also rely upon copyright and trade secret protection for our confidential and proprietary information. There can be no assurance, however, that such measures will provide adequate protection for our copyrights, trade secrets or other proprietary information. In addition, there can be no assurance that trade secrets and other proprietary information will not be disclosed, that others will not independently develop substantially equivalent proprietary information and techniques or otherwise gain access to or disclose our trade secrets and other proprietary information. There can be no assurance that we can effectively protect our copyrights, trade secrets or other proprietary information. If we cannot obtain, maintain or enforce intellectual property rights, competitors can design probe array systems similar to our GeneChip® technology.

Our success depends in part on us neither infringing patents or other proprietary rights of third parties nor breaching any licenses that may relate to our technologies and products. We are aware of third-party patents that may relate to our technology, including reagents used in probe array synthesis and in probe array assays, probe array scanners, synthesis techniques, polynucleotide amplification techniques, assays, and probe arrays. We routinely receive notices claiming infringement from third parties as well as invitations to take licenses under third party patents. There can be no assurance that we will not infringe on these patents or other patents or proprietary rights or that we would be able to obtain a license to such patents or proprietary rights on commercially acceptable terms, if at all.

We expect to face increasing competition.

The market for molecular diagnostics products is currently limited and highly competitive, with several large companies already having significant market share. Companies such as Abbott Laboratories, Becton Dickinson, Bayer AG, Celera Diagnostics, Roche Diagnostics, Johnson & Johnson, bioMérieux and Beckman Coulter have the strategic commitment to diagnostics, the financial and other resources to invest in new technologies, substantial intellectual property portfolios, substantial experience in new product development, regulatory expertise, manufacturing capabilities and the distribution channels to deliver products to customers. Established diagnostic companies also have an installed base of instruments in several markets, including clinical and reference laboratories, which are not compatible with the GeneChip® system and could deter acceptance of our products. In addition, these companies have formed alliances with genomics companies which provide them access to genetic information that may be incorporated into their diagnostic tests.

Future competition will likely come from existing competitors as well as other companies seeking to develop new technologies for analyzing genetic information. For example companies such as Applied Biosystems, Illumina, GE Healthcare (through its acquisition of Amersham Biosciences) and Agilent Technologies have introduced new products for gene expression research and analysis. In addition, pharmaceutical and biotechnology companies have significant needs for genomic information and may choose to develop or acquire competing technologies to meet these needs. In the molecular diagnostics field, competition will likely come from established diagnostic companies, companies developing and marketing DNA probe tests for genetic and other diseases and other companies conducting research on new technologies to ascertain and analyze genetic information. Further, in the event that we develop new technology and products that compete with existing technology and products of well established companies, there can be no guarantee that the marketplace will readily adopt any such new technology and products that we may introduce in the future.

If we are unable to maintain our relationships with collaborative partners, we may have difficulty developing and selling our products and services.

We believe that our success in penetrating our target markets depends in part on our ability to develop and maintain collaborative relationships with key companies as well as with key academic researchers. Currently, our significant collaborative partners include Qiagen GmBH for the sample preparation and purification systems, Invitrogen Corporation for reagents, ParAllele BioScience, Inc. for assays and Ingenuity Systems, Inc. for analytical software. We collaborate with both Beckman Coulter Inc. and Caliper Life Sciences in the development of automation for GeneChip® technology applications for use in drug discovery, drug development and clinical research. Roche, bioMérieux and Veridex are collaborative partners in the development of chip products for medical diagnostic and applied testing markets. Relying on these or other collaborative relationships is risky to our future success because:

- our partners may develop technologies or components competitive with our GeneChip® products;
- our existing collaborations may preclude us from entering into additional future arrangements;
- our partners may not obtain regulatory approvals necessary to continue the collaborations in a timely manner;
- some of our agreements may terminate prematurely due to disagreements between us and our partners;
- our partners may not devote sufficient resources to the development and sale of our products;
- our partners may be unable to provide the resources required for us to progress in the collaboration on a timely basis;
- our collaborations may be unsuccessful; or
- we may not be able to negotiate future collaborative arrangements on acceptable terms.

Our success depends on the continuous development of new products.

We compete in markets that are new, intensely competitive, highly fragmented and rapidly changing, and many of our current and potential competitors have significantly greater financial, technical, marketing and other resources. In addition, many current and potential competitors have greater name recognition, more extensive customer bases and access to proprietary genetic content. The continued success of our GeneChip® products will depend on our ability to produce products with smaller feature sizes, our ability to dice the wafer, and create greater information capacity at our

current or lower costs. If we fail to keep pace with emerging technologies our products will become uncompetitive, our pricing and margins will decline and our business will suffer.

We face risks associated with technological obsolescence and emergence of standardized systems for genetic analysis.

The RNA/DNA probe array field is undergoing rapid technological changes. New technologies, techniques or products could emerge which might allow the packaging and analysis of genomic information at a similar or higher density to our microarray technology. Other companies may begin to offer products that are directly competitive with, or are technologically superior to our products. Although we know of no such technology at the present time, there can be no guarantee that we will be able to maintain our technological advantages over emerging technologies in the future. Over time, we will need to respond to technological innovation in a rapidly changing industry. In addition, although we believe that we are recognized as a market leader in creating systems for genetic analysis in the life sciences, standardization of tools and systems for genetic research is still ongoing and there can be no assurance that our products will emerge as the standard for genetic research. The emergence of competing technologies and systems as market standards for genetic research may result in our products becoming uncompetitive and could cause our business to suffer.

The size and structure of our current sales, marketing and technical support organization may limit our ability to sell our products.

Although we have invested significant other resources to expand our direct sales force and our technical and support staff, we may not be able to establish a sufficiently sized global sales, marketing or technical support organization to sell, market or support our products globally. To assist our sales and support activities, we have entered into distribution agreements through certain distributors, principally in markets outside of North America and Europe. These and other third parties on whom we rely for sales, marketing and technical support in these geographic areas may decide to develop and sell competitive products or otherwise become our competitors, which could harm our business.

Due to the international nature of our business, political or economic changes or other factors could harm our business.

A significant amount of our revenue is currently generated from sales outside the United States. Though such transactions are denominated in both U.S. dollars and foreign currencies, our future revenue, gross margin, expenses and financial condition are still affected by such factors as changes in foreign currency exchange rates, unexpected changes in, or impositions of, legislative or regulatory requirements, including export and trade barriers and taxes; longer payment cycles and greater difficulty in accounts receivable collection. We are also subject to general geopolitical risks in connection with international operations, such as political, social and economic instability, potential hostilities and changes in diplomatic and trade relationships. We cannot assure investors that one or more of the foregoing factors will not have a material adverse effect on our business, financial condition and operating results or require us to modify our current business practices.

We may be exposed to liability due to product defects.

The risk of product liability claims is inherent in the testing, manufacturing, marketing and sale of human diagnostic and therapeutic products. We may seek to acquire additional insurance for clinical liability risks. We may not be able to obtain such insurance or general product liability insurance on acceptable terms or in sufficient amounts. A product liability claim or recall could have a serious adverse effect on our business, financial condition and results of operations.

Ethical, legal and social concerns surrounding the use of genetic information could reduce demand for our products.

Genetic testing has raised ethical issues regarding privacy and the appropriate uses of the resulting information. For these reasons, governmental authorities may call for limits on or regulation of the use of genetic testing or prohibit testing for genetic predisposition to certain conditions, particularly for those that have no known cure. Similarly, such concerns may lead individuals to refuse to use genetics tests even if permissible. Any of these scenarios could reduce the potential markets for our molecular diagnostic products, which could have a material adverse effect on our business, financial condition and results of operations.

Because our business depends on key executives and scientists, our inability to recruit and retain these people could hinder our business expansion plans.

We are highly dependent on our officers and our senior scientists and engineers, including scientific advisors. Our product development and marketing efforts could be delayed or curtailed if we are unable to attract or retain key talent.

We rely on our scientific advisors and consultants to assist us in formulating our research, development and commercialization strategy. All of these individuals are engaged by other employers and have commitments to other entities that may limit their availability to us. A scientific advisor's other obligations may prevent him or her from assisting us in developing our technical and business strategies.

To expand our research, product development and sales efforts we need additional people skilled in areas such as bioinformatics, organic chemistry, information services, regulatory affairs, manufacturing, sales, marketing and technical support. Competition for these people is intense. We will not be able to expand our business if we are unable to hire, train and retain a sufficient number of qualified employees. There can be no assurance that we will be successful in hiring or retaining qualified personnel and our failure to do so could have a material adverse impact on our business, financial condition and results of operations.

Our effective tax rate may vary significantly.

Our future effective tax rates could be adversely affected by various internal and external factors. These factors include but are not limited to: earnings being lower than anticipated in countries where we have lower statutory rates and higher than anticipated in countries where we have higher statutory rates, by changes in the valuation of our deferred tax assets and liabilities, or by changes in tax laws or interpretations thereof.

Recent accounting pronouncements may impact our future financial position and results of operations.

There may be potential new accounting pronouncements or regulatory rulings, which may have an impact on our future financial position and results of operations. On December 16, 2004, the Financial Accounting Standards Board (FASB) issued FASB Statement No. 123 (revised 2004), Share-Based Payment, which is a revision of FASB Statement No. 123, *Accounting for Stock-Based Compensation*. Statement 123(R) supersedes APB Opinion No. 25, *Accounting for Stock Issued to Employees*, and amends FASB Statement No. 95, *Statement of Cash Flows*. Generally, the approach in Statement 123(R) is similar to the approach described in Statement 123. However, Statement 123(R) *requires* all share-based payments to employees, including grants of employee stock options, to be recognized in the income statement based on their fair values. Pro forma disclosure is no longer an alternative. The Company expects to adopt Statement 123(R) effective July 1, 2005 under the modified-prospective method. The adoption of Statement 123(R)'s fair value method will have a significant impact on our result of operations, although it will have no impact on our overall financial position. The impact of

adoption of Statement 123(R) cannot be predicted at this time because it will depend, in part, on levels of share-based payments granted prior to the date of adoption.

Our strategic equity investments may result in losses.

We periodically make strategic equity investments in various publicly traded and non-publicly traded companies with businesses or technologies that may complement our business. The market values of these strategic equity investments may fluctuate due to market conditions and other conditions over which we have no control. Other than temporary declines in the market price and valuations of the securities that we hold in other companies will require us to record losses relative to our ownership interest. This could result in future charges on our earnings and as a result, it is uncertain whether or not we will realize any long term benefits associated with these strategic investments.

Future acquisitions may disrupt our business and distract our management.

We have previously engaged in acquisitions and may do so in the future in order to exploit technology or market opportunities. If we acquire another company, we may not be able to successfully integrate the acquired business into our existing business in a timely and non-disruptive manner or at all. Furthermore, an acquisition may not produce the revenues, earnings or business synergies that we anticipate. If we fail to integrate the acquired business effectively or if key employees of that business leave, the anticipated benefits of the acquisition would be jeopardized. The time, capital management and other resources spent on an acquisition that fails to meet our expectations could cause our business and financial condition to be materially and adversely affected. In addition, acquisitions can involve substantial charges and amortization of significant amounts of deferred stock compensation that could adversely affect our results of operations.

The market price of our common stock has been extremely volatile.

The market price of our common stock is extremely volatile. To demonstrate the volatility of our stock price, during the twelve-month period ending on December 31, 2004, the volume of our common stock traded on any given day has ranged from 279,000 to 8,633,200 shares. Moreover, during that period, our common stock has traded as low as $23.18 per share and as high as $38.20 per share.

Furthermore, volatility in the stock price of other companies has often led to securities class action litigation against those companies. For example, purported securities class action lawsuits were filed against us in the United States District Court for the Northern District of California after a drop in our stock price following our April 3, 2003 announcement updating our financial guidance for the first quarter of 2003. These proceedings have been dismissed by the Court with prejudice. Future securities litigation against us could result in substantial costs and divert management's attention and resources, which could seriously harm our business, financial condition and results of operations.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURE ABOUT MARKET RISK

Interest Rate Risk

Our exposure to interest rate risk relates primarily to our investment portfolio. Fixed rate securities may have their fair market value adversely impacted due to fluctuations in interest rates, while floating rate securities may produce less income than expected if interest rates fall. Due in part to these factors, our future investment income may fall short of expectations due to changes in interest rates or we may suffer losses in principal if forced to sell securities which have declined in market value due to changes in interest rates.

The primary objective of our investment activities is to preserve principal while at the same time maximize yields without significantly increasing risk. To achieve this objective, we invest our excess cash in debt instruments of the U.S. Government and its agencies and high-quality corporate issuers, and, by policy, restrict our exposure to any single corporate issuer by imposing concentration limits. To minimize the exposure due to adverse shifts in interest rates, we maintain investments at an average maturity of less than three years.

The table below presents principal amounts and related weighted interest rates by year of maturity for our available-for-sale securities and debt obligations, all of which are denominated in United States dollars, and the fair value of each as of December 31, 2004 and 2003.

	Periods of Maturity					Fair Value at December 31,
	2005	2006	2007	Thereafter	Total	2004
ASSETS:						
Available-for-sale securities	$145,126	$34,552	$ 106	$ —	$179,784	$180,608
Average interest rate	2.4%	3.0%	3.3%			
LIABILITIES:						
0.75% senior convertible notes due 2033	$ —	$ —	$ —	$120,000	$120,000	$162,300
Average interest rate				0.75%		

	Periods of Maturity					Fair Value at December 31,
	2004	2005	2006	Thereafter	Total	2003
ASSETS:						
Available-for-sale securities	$336,121	$ 57,087	$ 10,151	$ —	$403,359	$404,294
Average interest rate	1.3%	3.1%	4.2%			
LIABILITIES:						
5% convertible subordinated notes due 2006	$102,000	$ —	$ —	$ —	$102,000	$104,068
Average interest rate	5.00%					
4.75% convertible subordinated notes due 2007	$165,460	$ —	$ —	$ —	$165,460	$160,645
Average interest rate	4.75%					
0.75% senior convertible notes due 2033	$ —	$ —	$ —	$120,000	$120,000	$120,000
Average interest rate				0.75%		

Foreign Currency Exchange Rate Risk

We derive a portion of our revenues in foreign currencies, predominantly in Europe and Japan. In addition, a portion of our assets are held in nonfunctional currencies of our subsidiaries. In early 2003, we began hedging activities by using currency forward contracts to manage a portion of the currency exposures created from our activities denominated in foreign currencies. (See Note 1 of the notes to the Consolidated Financial Statements included in this report.) Our hedging program reduces, but does not entirely eliminate, the impact of currency exchange rate movements.

We hedge a percentage of forecasted international revenue with forward contracts and the gains and losses on these contracts largely offset gains and losses on the transactions being hedged. Our revenue hedging policy is designed to reduce the negative impact on our forecasted revenue due to foreign currency exchange rate movements. We also hedge a percentage of our assets that are held in nonfunctional currencies of our subsidiaries with forward contracts and the gains or losses on these contracts largely offset gains and losses on the change in value of the underlying asset. Our balance

sheet hedging policy is designed to reduce the fluctuations in earnings due to changes in foreign currency exchange rates. We do not use derivative contracts for speculative purposes. At December 31, 2004, total outstanding contracts included the notional equivalent of $62.6 million in foreign currency forward exchange contracts with a fair market value of $(1.7) million. As of December 31, 2004, all contracts were set to expire at various times through December 2005. The bank counterparties in these contracts expose us to credit-related losses in the event of their nonperformance. However, to mitigate that risk we only contract with reputable institutions. We apply hedge accounting based upon the criteria established by Statement of Financial Accounting Standards No. 133 ("SFAS 133"), whereby we designate our derivatives for revenue hedging purposes as cash flow hedges. We have elected not to designate our derivatives for balance sheet purposes as fair value hedges under SFAS 133 and have appropriately recorded any changes in fair value to interest income and other, net.

A sensitivity analysis was performed on all of our foreign exchange derivatives as of December 31, 2004. This sensitivity analysis was based on a modeling technique that measures the hypothetical market value resulting from a 10% shift in the value of exchange rates relative to the U.S. dollar. For our forward contracts, we used a hypothetical change made to the spot rates of the currency. A 10% increase in the value of the U.S. dollar would lead to an increase in the fair value of our financial hedging instruments by $6.1 million. Conversely, a 10% decrease in the value of the U.S. dollar would result in a decrease in the fair value of these financial instruments by $6.8 million.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS
AFFYMETRIX, INC.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM ON CONSOLIDATED FINANCIAL STATEMENTS

To the Board of Directors and Stockholders of Affymetrix, Inc.

We have audited the consolidated balance sheets of Affymetrix, Inc. as of December 31, 2004 and 2003, and the related consolidated statements of operations, stockholders' equity, and cash flows for each of the three years in the period ended December 31, 2004. Our audits also included the financial statement schedule listed in the Index at Item 15(a). These financial statements and schedule are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements and schedule based on our audits.

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

In our opinion, the financial statements referred to above present fairly, in all material respects, the consolidated financial position of Affymetrix, Inc. at December 31, 2004 and 2003, and the consolidated results of its operations and its cash flows for each of the three years in the period ended December 31, 2004, in conformity with accounting principles generally accepted in the United States. Also, in our opinion, the related financial statement schedule, when considered in relation to the basic financial statements taken as a whole, presents fairly in all material respects the information set forth therein.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the effectiveness of Affymetrix, Inc.'s internal control over financial reporting as of December 31, 2004, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission and our report dated March 11, 2005 expressed an unqualified opinion thereon. Our audits also included the financial statement schedule listed in the Index at Item 15(a) and our report dated March 11, 2005 expressed an unqualified opinion thereon.

/s/ ERNST & YOUNG LLP

Palo Alto, California,
March 11, 2005

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM ON INTERNAL CONTROL OVER FINANCIAL REPORTING

To the Board of Directors and Stockholders of Affymetrix, Inc.

We have audited management's assessment, included in the accompanying Management's Report on Internal Control over Financial Reporting included in Item 9A, that Affymetrix, Inc. maintained effective internal control over financial reporting as of December 31, 2004, based on criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (the COSO criteria). Affymetrix, Inc.'s management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting. Our responsibility is to express an opinion on management's assessment and an opinion on the effectiveness of the company's internal control over financial reporting based on our audit.

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

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

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

In our opinion, management's assessment that Affymetrix, Inc. maintained effective internal control over financial reporting as of December 31, 2004, is fairly stated, in all material respects, based on the COSO criteria. Also, in our opinion, Affymetrix, Inc. maintained, in all material respects, effective internal control over financial reporting as of December 31, 2004, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the consolidated balance sheets of Affymetrix, Inc. as of December 31, 2004 and 2003, and the related consolidated statements of operations, stockholders' equity, and cash flows for each of the three years in the period ended December 31, 2004.

/s/ ERNST & YOUNG LLP

Palo Alto, California,
March 11, 2005

AFFYMETRIX, INC.

CONSOLIDATED BALANCE SHEETS

(In thousands, except per share amounts)

	December 31, 2004	December 31, 2003
ASSETS:		
Current assets:		
Cash and cash equivalents	$ 42,595	$275,928
Available-for-sale securities	163,120	183,955
Accounts receivable (net of allowances of $841 in 2004 and $761 in 2003)	89,441	68,440
Accounts receivable from Perlegen Sciences	3,964	2,903
Inventories	17,997	22,632
Prepaid expenses and other current assets	5,833	7,443
Total current assets	322,950	561,301
Property and equipment, net	64,179	62,611
Acquired technology rights, net	64,334	27,818
Goodwill	18,601	18,601
Notes receivable from employees	1,900	1,500
Other assets	27,807	28,333
Total assets	$499,771	$700,164
LIABILITIES AND STOCKHOLDERS' EQUITY:		
Current liabilities:		
Accounts payable and accrued liabilities	$ 61,265	$ 69,646
Deferred revenue — current portion	33,776	30,019
Convertible subordinated notes — short-term	—	267,460
Other current liabilities	1,698	1,398
Total current liabilities	96,739	368,523
Deferred revenue — long-term portion	29,463	43,346
Other long-term liabilities	4,382	3,240
Convertible notes	120,000	120,000
Commitments and contingencies (Note 12)		
Stockholders' equity:		
Convertible redeemable preferred stock, $0.01 par value; 5,000 shares authorized; no shares issued and outstanding at December 31, 2004 and 2003	—	—
Common stock, $0.01 par value; 200,000 shares authorized; 61,588 and 59,474 shares issued and outstanding at December 31, 2004 and 2003, respectively	616	595
Additional paid-in capital	407,258	370,304
Notes receivable from stockholders	—	(428)
Deferred stock compensation	(4,265)	(5,185)
Accumulated other comprehensive loss	(3,371)	(1,572)
Accumulated deficit	(151,051)	(198,659)
Total stockholders' equity	249,187	165,055
	$499,771	$700,164

See Accompanying Notes

AFFYMETRIX, INC.

CONSOLIDATED STATEMENTS OF OPERATIONS

(In thousands, except per share amounts)

	Year Ended December 31,		
	2004	2003	2002
REVENUE:			
Product sales	$277,256	$222,748	$201,594
Product related revenue	53,629	58,032	46,944
Total product and product related revenue	330,885	280,780	248,538
Royalties and other revenue	9,832	10,556	19,777
Revenue from Perlegen Sciences	5,245	9,460	21,559
Total revenue	345,962	300,796	289,874
COSTS AND EXPENSES:			
Cost of product sales	81,700	80,158	82,597
Cost of product related revenue	9,634	9,657	5,718
Cost of revenue from Perlegen Sciences	3,611	9,460	21,000
Research and development	73,405	65,909	69,520
Selling, general and administrative	116,973	104,797	96,260
Stock-based compensation (1)	920	2,238	8,388
Amortization of purchased intangibles	—	937	1,125
Acquired in-process technology	—	10,096	—
Total costs and expenses	286,243	283,252	284,608
Income from operations	59,719	17,544	5,266
Interest income and other, net	2,317	16,662	13,535
Interest expense	(11,102)	(17,358)	(19,730)
Income (loss) before income taxes	50,934	16,848	(929)
Income tax provision	(3,326)	(2,563)	(701)
Net income (loss)	$ 47,608	$ 14,285	$ (1,630)
Basic net income (loss) per common share	$ 0.79	$ 0.24	$ (0.03)
Diluted net income (loss) per common share	$ 0.74	$ 0.24	$ (0.03)
Shares used in computing basic net income (loss) per share	60,512	58,860	58,018
Shares used in computing diluted net income (loss) per share	66,878	60,852	58,018
(1) Stock-based compensation related to the following:			
Research and development	$ 720	$ 1,713	$ 5,799
Selling, general and administrative	200	525	2,589
	$ 920	$ 2,238	$ 8,388

See Accompanying Notes

AFFYMETRIX, INC.

CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY

(In thousands, except share amounts)

	Common Stock		Additional Paid-in Capital	Notes Receivable from Stockholder	Deferred Stock Compensation	Accumulated Other Comprehensive Income (Loss)	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount						
Balance, December 31, 2001	58,007	$ 580	$349,375	$(634)	$(14,873)	$ 5,876	$(211,314)	$129,010
Comprehensive loss:								
Unrealized loss on available-for-sale securities of $3,333, net of reclassification adjustments for gains included in net loss of $1,384	—	—	—	—	—	(4,717)	—	(4,717)
Foreign currency translation adjustment	—	—	—	—	—	(644)	—	(644)
Net loss	—	—	—	—	—	—	(1,630)	(1,630)
Comprehensive loss								(6,991)
Issuance of common stock upon exercise of stock options	497	5	4,535	—	—	—	—	4,540
Amortization of deferred stock compensation	—	—	1,605	—	6,858	—	—	8,463
Accretion of interest on notes receivable	—	—	—	(86)	—	—	—	(86)
Balance, December 31, 2002	58,504	585	355,515	(720)	(8,015)	515	(212,944)	134,936
Comprehensive income:								
Unrealized loss on available-for-sale securities of $6,827, net of reclassification adjustments for gains included in net income of $6,057	—	—	—	—	—	(770)	—	(770)
Unrealized loss on hedging contracts	—	—	—	—	—	(963)	—	(963)
Foreign currency translation adjustment	—	—	—	—	—	(354)	—	(354)
Net income	—	—	—	—	—	—	14,285	14,285
Comprehensive income								12,198
Issuance of common stock upon exercise of stock options	843	9	12,487	—	—	—	—	12,496
Issuance of common stock upon exercise of stock purchase right	127	1	3,000	—	—	—	—	3,001
Cancellation of common stock	—	—	(106)	106	—	—	—	—
Repayment of notes receivable	—	—	—	344	—	—	—	344
Reduction of deferred stock compensation for terminated employee	—	—	(592)	—	592	—	—	—
Amortization of deferred stock compensation	—	—	—	—	2,238	—	—	2,238
Accretion of interest on notes receivable	—	—	—	(158)	—	—	—	(158)
Balance, December 31, 2003	59,474	595	370,304	(428)	(5,185)	(1,572)	(198,659)	165,055
Comprehensive income:								
Unrealized loss on available-for-sale securities of $1,500, net of reclassification adjustments for losses included in net income of $287	—	—	—	—	—	(1,213)	—	(1,213)
Unrealized loss on hedging contracts of $1,152, net of reclassification adjustments for losses included in net income of $963	—	—	—	—	—	(189)	—	(189)
Foreign currency translation adjustment	—	—	—	—	—	(397)	—	(397)
Net income	—	—	—	—	—	—	47,608	47,608
Comprehensive income								45,809
Issuance of common stock upon exercise of stock options and warrants	2,114	21	36,220	—	—	—	—	36,241
Income tax benefit from employee stock option exercises	—	—	734	—	—	—	—	734
Repayment of notes receivable	—	—	—	454	—	—	—	454
Amortization of deferred stock compensation	—	—	—	—	920	—	—	920
Accretion of interest on notes receivable	—	—	—	(26)	—	—	—	(26)
Balance, December 31, 2004	61,588	$ 616	$407,258	$ —	$ (4,265)	$(3,371)	$(151,051)	$249,187

See Accompanying Notes

AFFYMETRIX, INC.

CONSOLIDATED STATEMENTS OF CASH FLOWS

(In thousands)

	Year Ended December 31,		
	2004	2003	2002
CASH FLOWS FROM OPERATING ACTIVITIES:			
Net income (loss)	$ 47,608	$ 14,285	$ (1,630)
Adjustments to reconcile net income (loss) to net cash provided by operating activities:			
Depreciation and amortization	19,660	22,214	21,955
Amortization of intangible assets	6,075	4,463	3,976
Gain from repurchase of convertible notes	—	(739)	(165)
Redemption premium and related write-off of debt issuance costs	8,095	—	—
Amortization of investment premiums, net	(1,142)	2,013	2,234
Stock-based compensation	920	2,238	8,463
Write down of equity investments	2,283	938	4,774
Realized loss (gain) on the sales of investments	859	(5,603)	(5,162)
Amortization of debt offering costs	756	1,538	1,765
Accretion of interest on notes receivable	(26)	(158)	(86)
Loss on disposal of equipment	657	447	436
Changes in operating assets and liabilities:			
Accounts receivable, net	(22,062)	(5,357)	(21,174)
Inventories	4,635	4,107	2,073
Prepaid expenses and other assets	(2,867)	(2,647)	(1,862)
Accounts payable and accrued liabilities	(7,535)	3,217	15,665
Deferred revenue	(10,126)	53,984	(196)
Other long-term liabilities	1,142	(5,082)	—
Net cash provided by operating activities	48,932	89,858	31,066
CASH FLOWS FROM INVESTING ACTIVITIES:			
Capital expenditures	(21,885)	(12,436)	(24,409)
Purchases of available-for-sale securities	(182,876)	(447,422)	(639,588)
Proceeds from sales and maturities of available-for-sale securities	202,780	560,057	650,318
Purchase of non-marketable equity investments	(1,741)	(7,500)	(4,000)
Purchases of technology rights	(43,063)	(3,303)	(7,255)
Purchase of option to license technology	—	(3,000)	—
Net cash (used in) provided by investing activities	(46,785)	86,396	(24,934)
CASH FLOWS FROM FINANCING ACTIVITIES:			
Issuance of common stock	36,241	12,497	4,540
Repayment of notes receivable from stockholders	454	344	—
Issuance of senior convertible notes	—	120,000	—
Repurchase of convertible subordinated notes	—	(100,701)	(935)
Redemption of convertible subordinated notes	(271,778)	—	—
Net cash (used in) provided by financing activities	(235,083)	32,140	3,605
Effect of foreign currency translation on cash and cash equivalents	(397)	(354)	(644)
Net (decrease) increase in cash and cash equivalents	(233,333)	208,040	9,093
Cash and cash equivalents at beginning of year	275,928	67,888	58,795
Cash and cash equivalents at end of year	$ 42,595	$275,928	$ 67,888
SUPPLEMENTAL DISCLOSURE OF NONCASH INVESTING AND FINANCING ACTIVITIES:			
Acquisition of technology rights	$ —	$ 3,000	$ 3,000
Issuance of common stock upon exercise of common stock purchase rights	$ —	$ 3,000	$ —
SUPPLEMENTAL DISCLOSURE OF CASH FLOW INFORMATION:			
Cash paid for interest	$ 10,623	$ 17,346	$ 17,950
Cash paid for taxes	$ 1,127	$ 1,751	$ 119

See Accompanying Notes

NOTE 1—NATURE OF OPERATIONS

Affymetrix, Inc. ("Affymetrix" or the "Company") is engaged in the development, manufacture, sale and service of systems for genetic analysis for use in the life sciences and in clinical diagnostics. Affymetrix has developed its GeneChip® system and related microarray technology as the platform of choice for acquiring, analyzing and managing complex genetic information. The Company's integrated GeneChip® platform includes: disposable DNA probe arrays (chips) consisting of gene sequences set out in an ordered, high density pattern, certain reagents for use with the probe arrays, a scanner and other instruments used to process the probe arrays, and software to analyze and manage genomic information obtained from the probe arrays. Related microarray technology also offered by Affymetrix includes instrumentation, software and licenses for fabricating, scanning, collecting and analyzing results from low density microarrays. The Company commenced the first commercial sale for research use in August 1994, with broader commercial sales beginning in April 1996. The Company currently sells its products directly to pharmaceutical, biotechnology, agrichemical, diagnostics and consumer products companies as well as academic research centers, government research laboratories, private foundation laboratories and clinical reference laboratories in North America and Europe. The Company also sells some of its products through life science supply specialists acting as authorized distributors in Mexico, India, the Middle East and Asia Pacific regions.

NOTE 2—SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

BASIS OF PRESENTATION

The consolidated financial statements include the accounts of Affymetrix and its wholly owned subsidiaries. All significant intercompany accounts and transactions have been eliminated. The Company has accounted for its ownership interest in Perlegen Sciences, Inc. ("Perlegen") using the equity method since March 30, 2001. (See Note 11).

USE OF ESTIMATES

The preparation of the financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect amounts reported in the financial statements and accompanying notes. Actual results could differ materially from those estimates.

FOREIGN CURRENCY

Assets and liabilities of non-U.S. subsidiaries that operate in a local currency environment are translated to U.S. dollars at exchange rates in effect at the balance sheet date, with the resulting translation adjustments directly recorded to a separate component of accumulated other comprehensive income. Income and expense accounts are translated at average exchange rates during the year. Where the U.S. dollar is the functional currency, translation adjustments are recorded in interest income and other, net. Currency transaction gains and losses are recognized in interest income and other, net and were comprised of net gains of $0.5 million, $3.6 million and $2.7 million for the fiscal years ended 2004, 2003, and 2002, respectively.

NOTE 2—SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

CASH EQUIVALENTS, AVAILABLE-FOR-SALE SECURITIES AND INVESTMENTS

Marketable Securities

The Company's investments consist of U.S. government notes and bonds; corporate notes, bonds and asset-backed securities; municipal notes and bonds; and publicly traded equity securities. The Company reports all debt securities with maturities at the date of purchase of three months or less that are readily convertible into cash and have insignificant interest rate risk as cash equivalents. Cash equivalents and available-for-sale securities consist of marketable equity and debt securities. Management determines the appropriate classification of debt securities at the time of purchase. As of December 31, 2004 and 2003, the Company's investments in debt securities are classified as available-for-sale and are carried at fair value with unrealized gains and losses reported in accumulated other comprehensive income (loss) in stockholders' equity. The cost of debt securities is adjusted for amortization of premiums and discounts to maturity. This amortization is included in interest income and other, net. Realized gains and losses, as well as interest income, on available-for-sale securities are also included in interest income and other, net. The cost of securities sold is based on the specific identification method. The fair values of securities are based on quoted market prices. All of the Company's available-for-sale securities are included in current assets as management considers the securities readily available to fund current operations. The Company monitors its investment portfolio for impairment on a periodic basis. In the event that the carrying value of an investment exceeds its fair value and the decline in value is determined to be other-than-temporary, an impairment charge is recorded and a new cost basis for the investment is established. Fair values for investments in public companies are determined using quoted market prices.

Non-marketable Securities

The Company also has investments in non-marketable securities issued by privately held companies. These investments are included in other assets in the Consolidated Balance Sheets and are primarily carried at cost. The Company periodically monitors the liquidity and financing activities of the respective issuers to determine if any impairment exists and accordingly write down to the extent necessary, the cost basis of our non-marketable equity securities to their estimated fair values. In order to determine whether a decline in value is other-than-temporary, the Company evaluates, among other factors: the duration and extent to which the fair value has been less than the carrying value; the financial condition of and business outlook for the company, including key operational and cash flow metrics, current market conditions; and the Company's intent and ability to retain the investment for a period of time sufficient to allow for any anticipated recovery in fair value.

ACCOUNTS RECEIVABLE

Trade accounts receivables are recorded at net invoice value. The Company considers amounts past due based on the related terms of the invoice. The Company reviews its exposure to amounts receivable and reserve specific amounts if collectibility is no longer reasonably assured. The Company also reserves a percentage of the gross trade receivable balance (excluding any specifically reserved amounts) based on its collection history.

NOTE 2—SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

DERIVATIVE INSTRUMENTS

The Company has international operations and during the normal course of business is exposed to foreign currency exchange risks as a result of transactions that are denominated in currencies other than the United States dollar. During the quarter ended March 31, 2003, the Company began entering into foreign currency forward contracts to manage a portion of the volatility of transactions that are denominated in foreign currencies. The Company's foreign currency forward contracts are entered into for periods consistent with the related underlying exposures and do not constitute positions that are independent of those exposures. In addition, the Company does not enter into foreign currency forward contracts for trading or speculative purposes, is not party to any leveraged derivative instrument, and may only enter into derivative agreements with highly rated counterparties.

The foreign currency forward contracts used by the Company are generally short-term in nature, maturing within one year, and are accounted for as cash flow hedges. The effect of exchange rate changes on foreign currency forward contracts is expected to offset the effect of exchange rate changes on the underlying hedged items. For these contracts, unrealized gains or losses from the effective portion of the hedge is reported as a component of other comprehensive income (loss) in stockholders' equity and is reclassified using the specific identification method into earnings in the same period or periods in which the hedged transaction affects earnings, and within the same consolidated statement of operations line item. The gain or loss from the ineffective portion of the hedge in excess of the cumulative change in the present value of future cash flows of the hedged item, if any, is recognized in interest income and other, net during the period of change.

INVENTORIES

Inventories are stated at the lower of cost or market, cost being determined on the first-in, first-out method. Provisions for slow moving, excess and obsolete inventories are provided based on demand requirements, product life cycle and development plans, component cost trends, product pricing, product expiration and quality issues.

PROPERTY AND EQUIPMENT

Property and equipment are recorded at cost and are depreciated using the straight-line method over the estimated useful lives of the assets or the lease term, whichever is shorter. Equipment and furniture is depreciated over useful lives ranging from 3 to 7 years, company-owned buildings are depreciated over 25 years and leasehold improvements are depreciated over lease terms ranging from 5 to 15 years. Maintenance and repair costs are expensed as incurred.

GOODWILL AND ACQUIRED TECHNOLOGY RIGHTS

Goodwill represents the difference between the purchase price and the estimated fair value of the net assets acquired arising from business combinations. In accordance with Statement of Financial Accounting Standards No. 142, "Goodwill and Other Intangible Assets" ("SFAS 142"), goodwill is subject to impairment tests annually, or earlier if indicators of potential impairment exist, using a fair-value-based approach. As of December 31, 2004 and 2003, goodwill relates to the acquisition of

NOTE 2—SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

Neomorphic in October 2000. Based on the impairment tests performed, there was no impairment of goodwill for any period presented.

Acquired technology rights are carried at cost less accumulated amortization and are comprised of licenses to technology covered by patents from third parties. Amortization is computed over the estimated useful life of the underlying patents, which have historically ranged from one to thirteen years. SFAS 142 requires purchased intangible assets other than goodwill to be amortized over their useful lives unless these lives are determined to be indefinite.

IMPAIRMENT OF LONG-LIVED ASSETS

Long-lived assets and certain identifiable intangible assets are reviewed for impairment when events or changes in circumstances indicate that the carrying amount of such assets may not be recoverable. Determination of recoverability is based on an estimate of undiscounted future cash flows resulting from the use of the asset and its eventual disposition. In the event that such cash flows are not expected to be sufficient to recover the carrying amount of the assets, the assets are written down to their estimated fair values.

INCOME TAXES

Under the asset and liability method, deferred tax assets and liabilities are recognized for 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 apply 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 the statement of operations in the period of enactment.

CONTINGENCIES

The Company is subject to legal proceedings principally related to intellectual property matters. Based on the information available at the most recent balance sheet date, the Company assesses the likelihood of any material adverse judgments or outcomes that may result from these matters, as well as the range of possible or probable loss, if any. If losses are probable and reasonably estimable, the Company will record a reserve in accordance with SFAS 5, "Accounting for Contingencies." Any reserves recorded may change in the future due to new developments in each matter.

REVENUE RECOGNITION

Overview

The Company recognizes revenue when persuasive evidence of an arrangement exists, delivery has occurred, the fee is fixed or determinable, and collectibility is reasonably assured. In instances where final acceptance of the product or system is required, revenue is deferred until all the acceptance criteria have been met.

NOTE 2—SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

The Company derives the majority of its revenue from product sales of GeneChip® probe arrays, reagents, and related instrumentation that may be sold individually or combined with any of the product or product related revenue items listed below. When a sale combines multiple elements, the Company accounts for multiple element arrangements under Emerging Issues Task Force Issue No. 00-21 ("EITF 00-21"), "Revenue Arrangements with Multiple Deliverables."

EITF 00-21 provides guidance on accounting for arrangements that involve the delivery or performance of multiple products, services and/or rights to use assets. In accordance with EITF 00-21, the Company allocates revenue for transactions or collaborations that include multiple elements to each unit of accounting based on its relative fair value, and recognizes revenue for each unit of accounting when the revenue recognition criteria have been met. The price charged when the element is sold separately generally determines fair value. In the absence of fair value of a delivered element, the Company allocates revenue first to the fair value of the undelivered elements and the residual revenue to the delivered elements. The Company recognizes revenue for delivered elements when the delivered elements have standalone value and the Company has objective and reliable evidence of fair value for each undelivered element. If the fair value of any undelivered element included in a multiple element arrangement cannot be objectively determined, revenue is deferred until all elements are delivered and services have been performed, or until fair value can objectively be determined for any remaining undelivered elements.

Product Sales

Product sales, as well as revenues from Perlegen Sciences, include sales of GeneChip® probe arrays, reagents and related instrumentation. Probe array, reagent and instrumentation revenues are recognized when earned, which is generally upon shipment and transfer of title to the customer and fulfillment of any significant post-delivery obligations. Accruals are provided for anticipated warranty expenses at the time the associated revenue is recognized.

Product Related Revenue

Product related revenue includes subscription fees earned under GeneChip® array access programs; license fees; milestones and royalties earned from collaborative product development and supply agreements; equipment service revenue; product related scientific services revenue; and revenue from custom probe array design fees.

Revenue from subscription fees earned under GeneChip® array access programs is recorded ratably over the related supply term.

The Company enters into collaborative arrangements which generally include a research and product development phase and a manufacturing and product supply phase. These arrangements may include up-front nonrefundable license fees, milestones, the rights to royalties based on the sale of final product by the partner, product supply agreements and distribution arrangements.

Any up-front, nonrefundable payments from collaborative product development agreements are recognized over the research and product development period, and at-risk substantive based milestones are recognized when earned. Any payments received which are not yet earned are included in deferred revenue.

NOTE 2—SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

Revenue related to extended warranty arrangements is deferred and recognized over the applicable periods. Revenue from custom probe array design fees associated with the Company's GeneChip® CustomExpress™ and CustomSeq™ products are recognized when the associated products are shipped. In 2002, custom probe array design fees were included in research revenue based on the fact that we had not fully commercialized this product offering.

Royalties and Other Revenue

Royalties and other revenue include royalties earned from third party license agreements and research revenue which mainly consists of amounts earned under government grants. Additionally, other revenue includes fees earned through the license of the Company's intellectual property. In 2002, research revenue also included custom probe array design fees.

Royalty revenues are earned from the sale of products by third parties who have been licensed under the Company's intellectual property portfolio. Revenue from minimum royalties is amortized over the term of the creditable royalty period. Any royalties received in excess of minimum royalty payments are recognized under the terms of the related agreement, generally upon notification of manufacture or shipment of a product by a licensee.

Research revenues result primarily from research grants received from U.S. Government entities or from subcontracts with other life science research-based companies which receive their research grant funding from the U.S. Government. Revenues from research contracts are generated from the efforts of the Company's technical staff and include the costs for material and subcontract efforts. The Company's research grant contracts generally provide for the payment of negotiated fixed hourly rates for labor hours incurred plus reimbursement of other allowable costs. Research revenue is recorded in the period in which the associated costs are incurred, up to the limit of the prior approval funding amounts contained in each agreement. The costs associated with these grants are reported as research and development expense.

License revenues are generally recognized upon execution of the agreement unless the Company has continuing performance obligations, in which case the license revenue is recognized ratably over the period of expected performance.

Transactions with Distributors

The Company recognizes revenue on sales to distributors in accordance with SEC Staff Accounting Bulletin No. 104, "Revenue Recognition," or SAB 104. The Company recognizes revenue when persuasive evidence of an arrangement exists, delivery has occurred or services have been rendered, the seller's price is fixed or determinable, and collectibility is reasonably assured. The Company's agreements with distributors do not include rights of return.

RESEARCH AND DEVELOPMENT EXPENSES

Research and development expenses consist of costs incurred for internal, collaborative and grant-sponsored research and development. Research and development expenses include salaries, contractor fees, building costs, utilities and allocations of shared corporate services. In addition, the Company

NOTE 2—SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

funds research and development at other companies and research institutions under agreements which are generally cancelable. All such costs are charged to research and development expense as incurred.

SOFTWARE DEVELOPMENT COSTS

Statement of Financial Accounting Standards No. 86, "Accounting for the Costs of Computer Software to be Sold, Leased or Otherwise Marketed," requires the capitalization of certain software development costs subsequent to the establishment of technological feasibility. The Company's software is deemed to be technologically feasible at the point a working model of the software product is developed. Through December 31, 2004, for products developed by the Company, the period from attainment of technological feasibility to general release has been brief and qualifying costs were not significant. Accordingly, the Company has not capitalized any qualifying software development costs in the accompanying consolidated financial statements. The costs of developing routine enhancements are expensed as research and development costs as incurred because of the short time between the determination of technological feasibility and the date of general release of the related products.

The Company applies Statement of Position No. 98-1, "Accounting for the Costs of Computer Software Developed or Obtained for Internal Use." Historically, internal use software costs were insignificant. During fiscal 2002, the Company capitalized $2.0 million of costs incurred to acquire and implement its Enterprise Resource Planning system ("ERP"), including software coding, designing system interfaces, installation and testing of the software. The Company began amortizing the costs associated with its ERP system during the year ended December 31, 2002, at the time when the software was ready for its intended use.

ADVERTISING COSTS

The Company expenses advertising costs as incurred. Advertising costs were $1.9 million for 2004, $1.5 million for 2003, and $1.1 million for 2002.

STOCK-BASED COMPENSATION

At December 31, 2004, the Company has six stock-based employee and non-employee director compensation plans, which are described more fully in Note 15. The Company has elected to continue to follow the recognition and measurement principles of Accounting Principles Board Opinion No. 25, *"Accounting for Stock Issued to Employees"* ("APB 25") and related Interpretations for these plans.

NOTE 2—SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

The following table illustrates the effect on reported net income (loss) and net income (loss) per share if the Company had applied the fair value recognition provisions of SFAS 123, as amended by SFAS 148, to stock-based employee compensation (in thousands, except per share amounts):

	Year Ended December 31,		
	2004	2003	2002
Net income (loss)—as reported	$ 47,608	$ 14,285	$ (1,630)
Add: Stock-based employee compensation expense included in reported net income (loss), net of tax	920	2,238	8,388
Deduct: Total stock-based employee compensation expense determined under fair value method for all awards, net of tax	(15,984)	(29,220)	(47,459)
Pro forma net income (loss)	$ 32,544	$(12,697)	$(40,701)
Net income (loss) per share:			
Basic net income (loss) per share—as reported	$ 0.79	$ 0.24	$ (0.03)
Diluted net income (loss) per share—as reported	$ 0.74	$ 0.24	$ (0.03)
Basic net income (loss) per share—pro forma	$ 0.54	$ (0.22)	$ (0.70)
Diluted net income (loss) per share—pro forma	$ 0.51	$ (0.22)	$ (0.70)

The fair value of options was estimated at the date of grant using a Black-Scholes option pricing model with the following weighted average assumptions:

	Year Ended December 31,		
	2004	2003	2002
Risk free interest rate	3.2%	2.0%	1.9%
Expected dividend yield	0.0%	0.0%	0.0%
Expected volatility	0.56	0.72	0.81
Expected option term (in years)	3.4	2.9	2.7

The Black-Scholes option valuation model was developed for use in estimating the fair value of traded options which have no vesting restrictions and are fully transferable. In addition, option valuation models require the input of highly subjective assumptions including the expected stock volatility. Because the Company's employee stock options have characteristics significantly different from those of traded options, and because changes in the subjective input assumptions can materially affect the fair value estimate, in management's opinion, the existing models do not necessarily provide a reliable single measure of the fair value of its employee stock options.

Based on this calculation, the weighted average fair value of options granted during 2004, 2003 and 2002 was $12.99, $10.72 and $11.48, respectively. For purposes of pro forma disclosures pursuant to SFAS 123, as amended by SFAS 148, the estimated fair value of options is amortized to expense over the options' vesting period, generally four years.

NOTE 2—SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

COMPREHENSIVE INCOME (LOSS)

Comprehensive income (loss) is comprised of net income (loss) and other comprehensive income (loss). Other comprehensive income (loss) includes unrealized gains and losses on the Company's available-for-sale securities that are excluded from net income (loss), changes in fair value of derivatives designated as and effective as cash flow hedges, and foreign currency translation adjustments. Total comprehensive income (loss) has been disclosed in the consolidated statement of stockholders' equity.

The components of accumulated other comprehensive loss are as follows (in thousands):

	December 31,	
	2004	2003
Foreign currency translation adjustment	$(1,395)	$ (998)
Unrealized (loss) gain on available-for-sale securities	(824)	389
Unrealized loss on hedging contracts	(1,152)	(963)
Accumulated other comprehensive loss	$(3,371)	$(1,572)

NET INCOME (LOSS) PER SHARE

Basic net income (loss) per share is calculated using the weighted-average number of common shares outstanding during the period less the weighted-average shares subject to repurchase. Diluted income (loss) per share gives effect to the dilutive common stock subject to repurchase, stock options and warrants (calculated based on the treasury stock method), and convertible debt (calculated using an as if-converted method).

NOTE 2—SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

The following table sets forth a reconciliation of basic and diluted net income (loss) per share (in thousands, except per share amounts):

	Year Ended December 31,		
	2004	2003	2002
Numerator:			
Net income (loss)—basic	$47,608	$14,285	$(1,630)
Add effect of dilutive securities:			
Interest on convertible notes	1,655	74	—
Net income (loss) — diluted	$49,263	$14,359	$(1,630)
Denominator:			
Weighted-average shares outstanding	60,591	58,970	58,206
Less: weighted-average shares of common stock subject to repurchase	(79)	(110)	(188)
Shares used in computing basic net income (loss) per share	60,512	58,860	58,018
Add effect of dilutive securities:			
Employee stock options	2,380	1,685	—
Common stock subject to repurchase	79	110	—
Warrants to purchase common stock	37	38	—
Convertible notes	3,870	159	—
Shares used in computing diluted net income (loss) per share	66,878	60,852	58,018
Basic net income (loss) per share	$ 0.79	$ 0.24	$ (0.03)
Diluted net income (loss) per share	$ 0.74	$ 0.24	$ (0.03)

In September 2004, the Emerging Issues Task Force reached a consensus on Issue No. 04-8, "The Effect of Contingently Convertible Debt on Diluted Earnings Per Share," ("EITF 04-8") which addresses when the dilutive effect of contingently convertible debt instruments should be included in diluted earnings per share. EITF 04-8 requires that contingently convertible debt instruments be included in the computation of diluted earnings per share regardless of whether the market price trigger has been met. EITF 04-8 also requires that prior period diluted earnings per share amounts presented for comparative purposes be restated. EITF 04-8 is effective for reporting periods ending after December 15, 2004. The adoption of EITF 04-8 resulted in a $0.02 decrease in diluted earnings per share for the year ended December 31, 2004 and had no impact for the year ended December 31, 2003.

For fiscal 2004 and 2003, diluted earnings per share include common share equivalents from outstanding stock options (on the treasury stock method), common stock subject to repurchase, outstanding warrants to purchase common stock and convertible notes (on the as-if-converted basis). For the year ended December 31, 2002, all of these securities have been excluded since they were anti-dilutive.

NOTE 2—SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

The securities excluded from diluted earnings per share, on an actual outstanding basis, were as follows (in thousands):

	Year Ended December 31,		
	2004	2003	2002
	(in thousands)		
Employee stock options	2,613	5,253	11,034
Common stock subject to repurchase	—	—	132
Warrants to purchase common stock	—	—	66
Convertible notes	—	2,689	3,803
Total	2,613	7,942	15,035

RECENT ACCOUNTING PRONOUNCEMENTS

On December 16, 2004, the Financial Accounting Standards Board (FASB) issued FASB Statement No. 123 (revised 2004), Share-Based Payment, which is a revision of FASB Statement No. 123, *Accounting for Stock-Based Compensation*. Statement 123(R) supersedes APB Opinion No. 25, *Accounting for Stock Issued to Employees*, and amends FASB Statement No. 95, *Statement of Cash Flows*. Generally, the approach in Statement 123(R) is similar to the approach described in Statement 123. However, Statement 123(R) *requires* all share-based payments to employees, including grants of employee stock options, to be recognized in the income statement based on their fair values. Pro forma disclosure is no longer an alternative. Statement 123(R) must be adopted no later than July 1, 2005. Statement 123(R) permits public companies to adopt its requirements using one of two methods: (1) a "modified prospective" method in which compensation cost is recognized beginning with the effective date (a) based on the requirements of Statement 123(R) for all share-based payments granted after the effective date and (b) based on the requirements of Statement 123 for all awards granted to employees prior to the effective date of Statement 123(R) that remain unvested on the effective date or (2) a "modified retrospective" method which includes the requirements of the modified prospective method described above, but also permits entities to restate based on the amounts previously recognized under Statement 123 for purposes of pro forma disclosures either (a) all prior periods presented or (b) prior interim periods of the year of adoption. The Company expects to adopt Statement 123(R) effective July 1, 2005 under the modified-prospective method.

As permitted by Statement 123, the Company currently accounts for share-based payments to employees using Opinion 25's intrinsic value method and, as such, generally recognizes no compensation cost for employee stock options. Accordingly, the adoption of Statement 123(R)'s fair value method will have a significant impact on our result of operations, although it will have no impact on our overall financial position. The impact of adoption of Statement 123(R) cannot be predicted at this time because it will depend on levels of share-based payments granted in the future. However, had we adopted Statement 123(R) in prior periods, the impact of that standard would have approximated the impact of Statement 123 as described in the disclosure of pro forma net income and earnings per share in Note 2 to our consolidated financial statements. Statement 123(R) also requires the benefits of tax deductions in excess of recognized compensation cost to be reported as a financing cash flow, rather than as an operating cash flow as required under current literature. This requirement will reduce

NOTE 2—SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

net operating cash flows and increase net financing cash flows in periods after adoption. While the company cannot estimate what those amounts will be in the future (because they depend on, among other things, when employees exercise stock options), the amount of operating cash flows recognized in prior periods for such excess tax deductions was $0.7 million in 2004 and none for prior years.

In March 2004, the FASB approved the consensus reached on EITF Issue No. 03-1, "The Meaning of Other-Than-Temporary Impairment and Its Application to Certain Investments." The objective of EITF 03-1 is to provide guidance for identifying other-than-temporary impaired investments. EITF 03-1 also provides new disclosure requirements for investments that are deemed to be temporarily impaired. In September 2004, the FASB issued a Staff Position (FSP) EITF 03-1-1 that delays the effective date of measurement and recognition guidance in EITF 03-1 until after further deliberations by the FASB. The disclosure requirements of EITF 03-1 are effective for the Company's fiscal 2004 annual report. Once the FASB reaches a final decision on the measurement and recognition provisions, the Company will evaluate the impact, if any, of the adoption of EITF 03-1.

NOTE 3—PRODUCT SALES AND PRODUCT RELATED REVENUE

The components of product sales are as follows (in thousands):

	Year ended December 31,		
	2004	2003	2002
Probe arrays	$168,243	$139,591	$140,039
Reagents	31,744	20,419	15,341
Instruments	77,269	62,738	46,214
Total product sales	$277,256	$222,748	$201,594

The components of product related revenue are as follows (in thousands):

	Year ended December 31,		
	2004	2003	2002
Subscription fees	$20,669	$26,208	$32,125
Service and other	15,526	18,451	14,819
License fees and milestone revenue	17,434	13,373	—
Total product related revenue	$53,629	$58,032	$46,944

NOTE 4—COLLABORATIVE AGREEMENTS

The Company has agreements with many entities to develop and test probe arrays for the detection of certain gene sequences, mutations or organisms. Under such agreements, the Company may receive development fees and may receive payments upon achievement of certain technical goals. The Company also has research agreements with many universities and research organizations.

NOTE 4—COLLABORATIVE AGREEMENTS (Continued)

BECKMAN COULTER, INC. ("Beckman")

In July 1998, the Company entered into an arrangement with Beckman that involved the execution of a series of agreements including an Asset Purchase Agreement (the "APA"). Pursuant to the APA, which was implemented and became effective in June 1999, the Company purchased Beckman's array business. Under the APA, the Company agreed to grant Beckman licenses to commercialize probe arrays manufactured using certain Affymetrix technologies other than light-directed synthesis, and an OEM supply agreement for products that use the Company's GeneChip® array technology. Under the arrangement, Beckman would pay Affymetrix transfer prices and royalties on sales of these products.

Under the agreements, Affymetrix made a $5.9 million payment to Beckman in 1998 and agreed to provide a credit of $5.0 million to be applied against research and development services to be performed by the Company. Affymetrix had the option of performing or agreeing to perform such services by July 2003, or paying the amount of the unapplied credit in cash or stock to Beckman. In addition, under the agreement Affymetrix contracted to establish a joint venture with Beckman. The Company determined after review of EITF 98-3, "Determining Whether a Nonmonetary Transaction Involves Receipt of Productive Assets or a Business" that the purchase should be accounted for as the receipt of an intangible asset. Therefore, the payments and credit obligation to Beckman were accounted for as the purchase of an intangible asset which is being amortized on a straight-line basis over its estimated useful life of 15 years. At December 31, 2004 and 2003, accumulated amortization amounted to $6.6 million and $3.7 million, respectively. During the year ended December 31, 2003, the Company paid to Beckman $5.0 million in settlement of the obligation to perform research and development activities and established a joint venture with Beckman called Array Automation, LLC. (See Note 11 Related Parties).

BIOMÉRIEUX, INC. ("bioMérieux")

In September 1996, bioMérieux and Affymetrix entered into a collaborative development agreement and associated supply agreement to develop and commercialize DNA probe arrays using the Affymetrix GeneChip® technology for diagnostic kits for bacterial identification and antibiotic resistance analysis. On March 31, 2003, Affymetrix signed a Multi-Agreement Amendment with bioMérieux modifying the existing collaboration agreement to reinstate bioMérieux's license and to extend the contract terms through January 1, 2020. The agreement provides for certain research funding, license and milestone payments. bioMérieux is also funding certain research activities at Affymetrix. Research revenue under this contract was approximately $0.2 million, $0.2 million, and $0.7 million, for the years ended December 31, 2004, 2003 and 2002, respectively. The associated research costs are not signficant for each of the years presented. Additionally, a manufacturing agreement was signed under which Affymetrix will manufacture GeneChip® probe arrays for sale to bioMérieux. The agreement provides for royalties to Affymetrix on bioMérieux's sales of GeneChip® probe arrays.

F. HOFFMANN-LA ROCHE LTD. ("Roche")

In February 1998, Affymetrix entered into a non-exclusive collaborative development agreement with Roche to initially develop probe array-based diagnostic products. Under the terms of the agreement the parties were collaborating to develop mutually agreed upon arrays directed to selected

NOTE 4—COLLABORATIVE AGREEMENTS (Continued)

genes, as well as associated instrumentation and reagents. In January 2003, the Company expanded its collaboration with Roche by granting Roche access to its GeneChip® technologies to develop and commercialize GeneChip® diagnostic laboratory tests for DNA analysis, genotyping and resequencing applications, as well as for RNA expression analysis, in a broad range of human disease areas. Using Affymetrix' GeneChip® technologies, Roche is seeking to develop and market diagnostic tests for diseases such as cancer, osteoporosis, cardiovascular, metabolic, infectious and inflammatory diseases. Affymetrix and Roche believe that developing targeted microarray expression profiles for cancer and genotyping and resequencing profiles for other diseases will enable the creation and commercialization of novel standardized diagnostic solutions. These solutions ultimately may allow physicians to better diagnose and treat human disease. Under the terms of the expanded collaborative agreement, Roche paid Affymetrix an access fee of $70 million, which the Company is recognizing as a component of product related revenue over the estimated research and development period of approximately five years. Research revenue under this contract was approximately $14.2 million and $13.1 million for the years ended December 31, 2004 and 2003, respectively. The associated research costs are not significant for each of the years presented. The expanded collaboration agreement, which is subject to Roche's option to terminate on December 31, 2007, December 31, 2010 or any time on or after December 31, 2015, with one year's prior notice, includes a broad range of other compensation payable by Roche to Affymetrix throughout the life of the agreement based on annual royalties on sales of diagnostic kits, milestone payments for technical and commercial achievements, a manufacturing and supply agreement, and related license installments.

NUVELO, INC. (formerly Hyseq Pharmaceuticals, Inc.) ("Nuvelo")

In October 2001, Nuvelo created a new majority owned subsidiary, Callida Genomics, Inc. ("Callida"), which was intended to focus on the development and commercialization of Nuvelo's sequencing-by-hybridization ("SBH") technology. Nuvelo contributed all of its SBH patents to Callida. Affymetrix had an initial 10% equity interest in Callida. In addition, Callida entered into a collaboration arrangement with Affymetrix, through Callida's wholly owned subsidiary, N-Mer, Inc. ("N-Mer"), for the development and commercialization of a high speed DNA sequencing chip. Affymetrix, Nuvelo, Callida and N-Mer also entered into various cross-licensing arrangements. In October 2001, Affymetrix paid Nuvelo a one-time license fee for the non-exclusive license described above, and Affymetrix loaned Nuvelo $4.0 million, all of which was intended to be used to fund Callida and N-Mer. The loan bears interest at the rate of 7.5% and matures in 2006. The loan is repayable by Nuvelo at any time at Nuvelo's option and, subject to specified conditions, is exchangeable for common stock of Nuvelo. Through November 2004, the loan was secured by all of Nuvelo's equity interest in Callida and is recorded in other assets. The license fee was capitalized in acquired technology rights and is being amortized over the remaining patent lives. Affymetrix and Nuvelo each agreed to make additional investments, which were conditioned on N-Mer's attainment of a specified technical milestone and the procurement of third-party financing, however, such technical milestone was not achieved and third party financing for N-Mer was not attained.

In December 2004, Nuvelo and Affymetrix entered into and consummated a Stock Purchase Agreement with SBH Genomics, Inc. ("SBH Genomics") a privately held Delaware corporation, pursuant to which Nuvelo and Affymetrix sold all of their stock in Callida to SBH Genomics. In exchange for all its equity ownership interest in Callida, Affymetrix received a secured convertible

NOTE 4—COLLABORATIVE AGREEMENTS (Continued)

promissory note from SBH Genomics in the principal amount of $0.1 million and potential additional payments based on SBH Genomics' future revenues, if any. The original loan to Nuvelo of $4.0 million plus accrued interest remains due to Affymetrix in 2006 and is recorded in other assets.

NOTE 5—CONCENTRATIONS OF RISK

Cash equivalents and investments are financial instruments that potentially subject Affymetrix to concentrations of risk to the extent of amounts recorded in the consolidated balance sheet. Company policy restricts the amount of credit exposure to any one issuer and to any one type of investment, other than securities issued by the United States Government.

The Company has not experienced significant credit losses from its accounts receivable. Affymetrix performs a regular review of its customer activity and associated credit risks and does not require collateral from its customers. The Company maintains an allowance for doubtful accounts receivable based upon the expected collectibility of accounts receivable.

Key parts of the GeneChip® product line, such as certain reagent kits and lithographic masks as well as certain raw materials used in the synthesis of probe arrays, are currently available only from a single source or limited sources. No assurance can be given that reagents, lithographic masks or other components of the GeneChip® system will be available in commercial quantities at acceptable costs from other vendors should the need arise. If the Company is required to seek alternative sources of supply, it could be time consuming and expensive.

In addition, the Company is dependent on its vendors to provide components of appropriate quality and reliability and to meet applicable regulatory requirements. Consequently, in the event that supplies from these vendors are delayed or interrupted for any reason, the Company's ability to develop and supply its products could be impaired, which could have a material adverse effect on the Company's business, financial condition and results of operations.

Approximately 48% of the Company's revenue is generated from sales outside the United States. Though such transactions are denominated in both United States dollars and foreign currencies, the Company's results of operations are still affected by such factors as changes in foreign currency exchange rates, trade protection measures, longer accounts receivable collection patterns and changes in regional or worldwide economic or political conditions. The risks of the Company's international operations are mitigated in part by the extent to which its sales are geographically distributed and its foreign currency hedging program.

NOTE 6—AVAILABLE-FOR-SALE SECURITIES AND OTHER FINANCIAL INSTRUMENTS

INVESTMENTS IN DEBT AND EQUITY SECURITIES

The fair values of all available-for-sale securities are based on quoted market prices and are included in current assets as management considers the securities readily available to fund current

NOTE 6—AVAILABLE-FOR-SALE SECURITIES AND OTHER FINANCIAL INSTRUMENTS (Continued)

operations. The following is a summary of available-for-sale securities as of December 31, 2004 (in thousands):

	Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
U.S. Government obligations and agency securities	$ 68,253	$ 3	$(289)	$ 67,967
U.S. corporate debt securities	113,179	14	(552)	112,641
Total securities	$181,432	$17	$(841)	$180,608
Amounts included in:				
Cash equivalents	$ 17,487	$ 1	$ —	$ 17,488
Available-for-sale securities	163,945	16	(841)	163,120
Total securities	$181,432	$17	$(841)	$180,608
Amounts mature in:				
Less than one year	$146,316	$17	$(613)	$145,720
One to three years	35,116	—	(228)	34,888
Total securities	$181,432	$17	$(841)	$180,608

The following is a summary of available-for-sale securities as of December 31, 2003 (in thousands):

	Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
U.S. Government obligations and agency securities	$214,041	$ 29	$(137)	$213,933
U.S. corporate debt securities	190,237	355	(231)	190,361
Total debt securities	404,278	384	(368)	404,294
Equity securities	349	374	—	723
Total securities	$404,627	$758	$(368)	$405,017
Amounts included in:				
Cash equivalents	$221,060	$ 2	$ —	$221,062
Available-for-sale securities	183,567	756	(368)	183,955
Total securities	$404,627	$758	$(368)	$405,017
Amounts mature in:				
Less than one year	$336,616	$317	$(211)	$336,722
One to three years	67,662	67	(157)	67,572
Total debt securities	$404,278	$384	$(368)	$404,294

NOTE 6—AVAILABLE-FOR-SALE SECURITIES AND OTHER FINANCIAL INSTRUMENTS (Continued)

Realized gains and losses for the year ended December 31, 2004 were $0.3 million and $1.2 million, respectively. Realized gains and losses for the year ended December 31, 2003 were $6.0 million and $0.4 million, respectively. Realized gains and losses for the year ended December 31, 2002 were $5.2 million and $4.0 million, respectively. Realized gains and losses are included in interest income and other, net in the accompanying Consolidated Statements of Operations.

The declines in value of certain investments were determined to be other-than-temporary. Accordingly, the Company recorded net investment losses, including impairments, on its investments in both publicly-traded and non-marketable equity securities of $2.3 million, $0.9 million and $4.8 million during the years ended December 31, 2004, 2003 and 2002, respectively. Net investment losses are included in interest income and other, net on the Consolidated Statement of Operations. Depending on market conditions, the Company may incur additional charges on this investment portfolio in the future.

DERIVATIVE FINANCIAL INSTRUMENTS

The Company is exposed to foreign currency exchange rate fluctuations in the normal course of its business. As part of its risk management strategy, the Company uses derivative instruments to hedge certain foreign currency exposures. The Company hedges a percentage of forecasted international revenue with forward contracts and the gains and losses on these contracts largely offset gains and losses on the transactions being hedged. The Company's revenue hedging policy is designed to reduce the impact on its revenue of foreign currency exchange rate movements. The Company also hedges a percentage of its assets that are held in nonfunctional currencies of our subsidiaries with forward contracts and the gains or losses on these contracts largely offset gains and losses on the change in value of the underlying asset. The Company's balance sheet hedging policy is designed to reduce the fluctuations in earnings due to changes in foreign currency exchange rates. The Company does not use derivative contracts for speculative purposes. During the years ended December 31, 2004 and 2003, all of the Company's hedges were deemed effective. At December 31, 2004 and 2003, total outstanding contracts included the notional equivalent of $62.6 million and $18.9 million in foreign currency forward exchange contracts with a fair value of $1.7 million and $1.0 million, respectively, which are included in other current liabilities on the Company's Consolidated Balance Sheets. As of December 31, 2004, all contracts were set to expire at various times through December 2005. The Company applies hedge accounting based upon the criteria established by Statement of Financial Accounting Standards No. 133, whereby the Company designates its derivatives for revenue hedging purposes as cash flow hedges. We have elected not to designate our derivatives for balance sheet purposes as fair value hedges under SFAS 133 and have appropriately recorded any changes in fair value to interest income and other, net. The net realized foreign currency losses related to the foreign currency forward contracts were $1.1 million and $1.2 million for the years ended December 31, 2004 and 2003, respectively.

NOTE 6—AVAILABLE-FOR-SALE SECURITIES AND OTHER FINANCIAL INSTRUMENTS (Continued)

OTHER FINANCIAL INSTRUMENTS

The carrying amounts and estimated fair values of financial instruments, other than those accounted for in accordance with Statement of Financial Accounting Standards No. 115, were as follows at December 31, 2004 and 2003 (in thousands):

	2004		2003	
	Carrying Amount	Estimated Fair Value	Carrying Amount	Estimated Fair Value
Assets:				
Non-marketable equity securities	$ 14,890	$ 14,890	$ 14,530	$ 14,530
Note receivable from Nuvelo	4,940	4,940	4,640	4,640
Employee loans receivable	1,900	1,900	1,500	1,500
Notes receivable from shareholders	—	—	428	428
Liability:				
Convertible notes	120,000	162,300	387,460	384,713

The fair value estimates provided above for the Company's convertible notes were based on quoted market prices available at December 31, 2004 and 2003. All other fair values were based on current market rates, liquidation and net realizable values.

NOTE 7—INVENTORIES

Inventories consist of the following at December 31, 2004 and 2003 (in thousands):

	2004	2003
Raw materials	$ 6,719	$ 9,129
Work-in-process	4,181	4,226
Finished goods	7,097	9,277
Total	$17,997	$22,632

NOTE 8—PROPERTY AND EQUIPMENT

Property and equipment consists of the following as of December 31, 2004 and 2003 (in thousands):

	2004	2003
Property and equipment:		
Construction-in-progress	$ 16,927	$ 9,314
Land	1,310	1,310
Equipment and furniture	96,843	87,734
Building and leasehold improvements	41,597	43,301
	156,677	141,659
Less accumulated depreciation and amortization	(92,498)	(79,048)
Net property and equipment	$ 64,179	$ 62,611

Construction-in-progress includes construction costs for new and upgraded facilities as well as related purchased equipment not yet placed in service.

NOTE 9—ACQUIRED TECHNOLOGY RIGHTS

Acquired technology rights are comprised of licenses to technology covered by patents owned by third parties and are amortized over the expected useful life of the underlying patents, which range from one to fifteen years. Accumulated amortization of these rights amounted to $14.6 million and $8.0 million at December 31, 2004 and 2003, respectively.

In May 2004, the Company reached an agreement with Oxford Gene Technology, Ltd. ("OGT") that required the Company to make a total cash payment of $62.5 million to OGT. The agreement included two distinct components. The first component related to the payment of approximately $20.6 million due in connection with previously accrued and expensed royalty obligations through May 2004 calculated using the terms of the original license agreement. The second component related to a cash payment of approximately $41.9 million to convert the Company's non exclusive royalty bearing license to certain OGT patents to a fully paid up license. The Company determined that the $41.9 million cash payment is less than the net present value of the future estimated royalty obligations under the terms of the original license agreement. In accordance with Statement of Financial Accounting Standard 142 ("SFAS 142"), *Goodwill and Other Intangible Assets*, the $41.9 million was recorded as an intangible asset. Consistent with the guidance in SFAS 142 and with Statement of Financial Accounting Standard 141 ("SFAS 141"), *Business Combinations*, this fully paid license is being amortized over its remaining useful life of approximately ten years.

NOTE 9—ACQUIRED TECHNOLOGY RIGHTS (Continued)

The expected future annual amortization expense of our acquired technology rights is as follows (in thousands):

For the Year Ending December 31,	Amortization Expense
2005	$ 7,496
2006	7,413
2007	7,413
2008	7,401
2009	6,540
Thereafter	28,071
Total expected future annual amortization	$64,334

NOTE 10—ACCOUNTS PAYABLE AND ACCRUED LIABILITIES

Accounts payable and accrued liabilities as of December 31, 2004 and 2003 consist of the following (in thousands):

	2004	2003
Accounts payable	$14,000	$15,130
Accrued compensation and related liabilities	27,416	18,767
Accrued interest on convertible notes	37	4,260
Accrued taxes	10,158	3,394
Accrued legal	694	3,261
Accrued royalties	581	15,465
Accrued warranties	4,113	2,950
Other	4,266	6,419
Total	$61,265	$69,646

NOTE 11—RELATED PARTY TRANSACTIONS AND NOTES RECEIVABLE FROM EMPLOYEES

RELATED PARTY TRANSACTIONS

Perlegen Sciences, Inc.

As of December 31, 2004, the Company held an approximately 40% ownership interest in Perlegen Sciences, Inc. ("Perlegen"), a privately-held biotechnology company in which two members of Perlegen's board of directors are also members of the Company's board of directors. In addition, certain affiliates, including the Company's chief executive officer and members of the Company's board of directors, hold direct or indirect equity interests in Perlegen.

The Company formed Perlegen in October 2000 as a wholly-owned subsidiary and spun it off in March 2001 in conjunction with a $100 million private equity financing. In connection with the formation of Perlegen, the Company contributed to Perlegen the rights to use certain of the Company's intellectual property in its development efforts and received rights to use and commercialize certain

NOTE 11—RELATED PARTY TRANSACTIONS AND NOTES RECEIVABLE FROM EMPLOYEES (Continued)

data generated by Perlegen in the array field. The Company's ownership interest was recorded at a zero cost basis.

In December 2003, the Company sold 950,000 shares of Perlegen common stock and realized a gain of $1.4 million which was included in interest and other income, net. Additionally, In January 2004, the Company sold 400,000 shares of Perlegen common stock and realized a gain of $0.6 million which was included in interest income and other, net.

The Company accounts for its ownership interest in Perlegen using the equity method as the Company and its affiliates do not control the strategic, operating, investing and financing activities of Perlegen. Further, the Company has no obligations to provide funding to Perlegen nor does it guarantee or otherwise have any obligations related to the liabilities or results of operations of Perlegen or its investors. Given that the Company's investment in Perlegen has no cost basis, the Company has not recorded any proportionate share of Perlegen's operating losses in its financial statements since the completion of Perlegen's initial financing. In February 2005, the Company purchased $2.0 million of Perlegen's Series D preferred stock. As a result of this private equity placement, the Company's ownership interest, including that of its affiliates, was reduced from approximately 40% as of December 31, 2004, to approximately 30%.

In accordance with Financial Accounting Standards Board Interpretation No. 46R ("FIN 46R"), "Consolidation of Variable Interest Entities, an Interpretation of ARB No. 51" as amended, the Company has concluded that Perlegen is a Variable Interest Entity (VIE) in which it holds a variable interest, and that the Company is not the primary beneficiary. The Company has also concluded, however, that it is not the primary beneficiary of Perlegen. Accordingly, no change to the Company's historical accounting for Perlegen is required.

On January 9, 2003, the Company entered into an agreement with Perlegen to in-license certain intangible assets that are expected to accelerate its plans to design and commercialize the Company's microarrays for whole genome and candidate region DNA analysis. In addition to broadening its access to certain specific Perlegen technologies, this licensing agreement advanced by approximately three years its prior commercialization rights to the Perlegen single nucleotide polymorphism (SNP) database for the development of Affymetrix microarray DNA products that the Company already had under development prior to January 2003. This agreement also eliminated any future royalty obligations for array products that the Company may commercialize based on information contained in Perlegen's SNP database. Under the terms of the licensing agreement, the Company paid Perlegen a total of $15.0 million in cash and granted Perlegen a $3.0 million credit to be applied against the margin on the Company's future sales of chips to Perlegen that were utilized by Perlegen in their revenue generating activities. In the second quarter of 2004, Perlegen had used all of the $3.0 million credit and as such, the Company has started to record margin on specific sales to Perlegen.

The $15.0 million of cash consideration in this transaction was allocated to the following intangible asset categories based upon their relative estimated fair values: (i) The advancement by three years of its access to the Perlegen SNP database, which allowed the Company to substantially accelerate its ongoing development of a limited number of DNA analysis products; and (ii)Various licenses or

NOTE 11—RELATED PARTY TRANSACTIONS AND NOTES RECEIVABLE FROM EMPLOYEES (Continued)

modification of existing licenses for several Perlegen technologies which provided the Company benefits across a larger number of its microarray products;

In connection with the advanced access to the Perlegen SNP database, the Company recorded a charge of approximately $10.1 million related to the license in the first quarter of 2003. The remaining $4.9 million was recorded as intangible assets which are being amortized over their useful lives of six to ten years.

The Company's management engaged an independent third party valuation professional to assist them in determining the relative fair values of each intangible asset licensed and the allocation of the consideration paid. While management considered the work of the independent third party valuation professional, management took primary responsibility for allocating the consideration paid for the intangible assets acquired. The $10.1 million charge associated with advanced access to the Perlegen SNP database was included in acquired in-process technology in the statements of operations as the database has no alternative future use to us beyond its developing a limited number of closely related DNA analysis products. The advanced access to the Perlegen SNP database was obtained for use in developing a finite number of products within its DNA analysis product line. Therefore, as of the license date, the Company did not forecast any material changes from its historical gross margins for any of its DNA analysis products.

The Company determined the value of the SNP database license by using the Income Approach. In applying this approach, the Company estimated the net present value of future cash flows expected from the sale of DNA analysis products to be developed in reliance on the content from the Perlegen SNP database. The analysis included forecasted future cash flows that the Company expected from the progress made on its DNA microarray development projects prior to the date of the Perlegen SNP database license. These cash flows were first estimated by forecasting total revenue associated with sales of certain of its future DNA analysis products. A portion of this revenue was then removed to account for the contribution provided by its existing core technology that was considered to benefit the DNA products under development. Appropriate operating expenses, cash flow adjustments, and contributory asset returns were deducted from the estimated cash flows to establish a forecast of net cash flows. Finally, these net cash flows were converted to a present value using a discount rate of 30%, which was based on its weighted average cost of capital adjusted for the technical and market risks associated with its ongoing research project in which the SNP database content would be used. Significant cash inflows from the associated DNA products were forecasted to begin in 2004 and continue through 2008.

The remaining various licenses or substantive modification of existing licenses for several other Perlegen in-licensed technologies had alternative future uses to us beyond the development of a limited number of closely related DNA analysis products. The Company determined the relative fair value assigned to these assets using the Royalty Savings approach. In applying this approach, the Company estimated the value of the licenses by capitalizing the royalties saved because the Company obtained royalty-free access to these licenses. These cash flows were estimated by forecasting total royalty savings by multiplying the assumed royalty rates by the estimated annual revenues for certain products for the fiscal years 2004 through 2012. Finally, these cash flows were discounted to a present value using a

NOTE 11—RELATED PARTY TRANSACTIONS AND NOTES RECEIVABLE FROM EMPLOYEES (Continued)

lower discount rate of 17%, which the Company believes appropriately reflects the risk associated with its future product revenue streams.

ARRAY AUTOMATION, LLC

The Company is currently a partner in Array Automation, LLC ("AAL"), a joint venture with Beckman Coulter, Inc. ("Beckman"). In July 1998, the Company entered into an asset purchase agreement with Beckman. As part of the asset purchase agreement, the Company agreed to establish a joint venture with Beckman. AAL was incorporated in July 2003, with the primary purpose of product research and development in the field of non-photolithographic arrays of polynucleotide sequences and instruments. In accordance with the agreement between the Company and Beckman, 100% of the losses generated by AAL are allocated to Beckman. Future net income generated by AAL, if any, is allocated 51% to the Company and 49% to Beckman, after Beckman has recovered all of the cumulative losses it has recorded.

Based on the application of FIN 46R, the Company has concluded that AAL is a VIE, but that the Company is not the primary beneficiary of AAL. Accordingly, the Company will account for its investment in AAL using the equity method. Since the cost basis of the Company's assets contributed to AAL were of zero value, the Company's investment in AAL is also recorded at zero value. As a result, the Company will not record any impact of AAL's operating results in its consolidated statements of operations until, and only if, Beckman has recovered all of the losses that it will absorb pursuant to the terms of the joint venture agreement. If AAL is terminated with a cumulative deficit, the Company is not obligated to fund any such losses. In addition, the Company does not have any obligation to provide funding to AAL, guarantee or otherwise have any obligations related to the liabilities of AAL or its investors.

NOTES RECEIVABLE FROM EMPLOYEES

The Company has notes receivable from employees totaling $1.9 million and $1.5 million as of December 31, 2004 and 2003, respectively. The notes are generally due four to five years after the date of issuance and accrued interest is due based on the Internal Revenue Service imputed interest rate at the date of issuance. Interest rates have generally been between 2% and 6%. In July 2001, the Company entered into a credit arrangement with an officer of the Company for an amount not to exceed $1.2 million. Amounts under the arrangement may be drawn in one lump-sum or in periodic draws. As of December 31, 2003, no amounts under the extension of credit were drawn. In January 2004, the officer borrowed the entire $1.2 million available under the arrangement. Repayment of the $1.2 million is due on the earlier date of i) four years from the date of withdrawal or ii) the date the executive leaves the Company. The note bears interest at the IRS imputed rate of 3.5%, and accrued interest is payable after two years.

NOTE 12—COMMITMENTS AND CONTINGENCIES

OPERATING LEASES

Affymetrix leases laboratory, office and manufacturing facilities under non-cancelable operating leases that expire at various times through 2016. Some of these leases contain renewal options ranging from two to five years and escalation clauses. Rent expense related to operating leases was approximately $8.6 million in 2004, $6.9 million in 2003, and $7.0 million in 2002. In connection with some of these facility leases, the Company has made security deposits totaling $2.4 million, which are included in other assets in the Consolidated Balance Sheets. Future minimum lease obligations at December 31, 2004 under all non-cancelable operating leases are as follows (in thousands):

Year Ending December 31,	Amount
2005	$ 7,366
2006	6,813
2007	7,174
2008	7,364
2009	6,972
Thereafter	20,103
Total minimum lease payments	$55,792

PRODUCT WARRANTY COMMITMENT

The Company provides for anticipated warranty costs at the time the associated revenue is recognized. Product warranty costs are estimated based upon the Company's historical experience and the warranty period. Information regarding the changes in the Company's product warranty liability for the years ended December 31, 2003 and December 31, 2004 is as follows (in thousands):

	Amount
Balance at December 31, 2002	$ 1,924
New warranties issued	4,190
Repairs and replacements	(3,164)
Balance at December 31, 2003	2,950
New warranties issued	4,684
Repairs and replacements	(3,521)
Balance at December 31, 2004	$ 4,113

NOTE 12—COMMITMENTS AND CONTINGENCIES (Continued)

FUNDING COMMITMENTS

The Company has invested $7.5 million and is committed to invest up to additional $2.5 million in a venture capital limited partnership. The investment is included on the Consolidated Balance Sheet as a component of other assets.

NON-CANCELABLE SUPPLY AGREEMENTS

As of December 31, 2004, the Company had approximately $6.5 million of non-cancelable inventory supply agreements that are in effect through 2005 and an additional $1.0 million of non-cancelable inventory supply agreements that are in effect through 2006.

INDEMNIFICATIONS

From time to time the Company has entered into indemnification provisions under certain of its agreements with other companies in the ordinary course of business, typically with business partners, customers, and suppliers. Pursuant to these agreements, the Company generally indemnifies, holds harmless, and agrees to reimburse the indemnified parties on a case by case basis for losses suffered or incurred by the indemnified parties in connection with any U.S. patent or other intellectual property infringement claim by any third party with respect to its products. The term of these indemnification provisions is generally perpetual from the time of the execution of the agreement. The maximum potential amount of future payments the Company could be required to make under these indemnification provisions is unlimited. In addition, the Company has entered into indemnification agreements with its officers and directors. The Company has not incurred material costs to defend lawsuits or settle claims related to these indemnification provisions. As of December 31, 2004, the Company had not accrued a liability for this guarantee, because the likelihood of incurring a payment obligation in connection with this guarantee is remote.

LEGAL PROCEEDINGS

GENERAL

The Company has been in the past and continues to be a party to litigation which has consumed and may in the future continue to consume substantial financial and managerial resources and which could adversely affect its business, financial condition and results of operations. If in any pending or future intellectual property litigation involving the Company or its collaborative partners, the Company is found to have infringed the valid intellectual property rights of third parties, the Company, or its collaborative partners, could be subject to significant liability for damages, could be required to obtain a license from a third party, which may not be available on reasonable terms or at all, or could be prevented from manufacturing and selling its products. In addition, if the Company is unable to enforce its patents and other intellectual property rights against others, or if its patents are found to be invalid or unenforceable, third parties may more easily be able to introduce and sell DNA array technologies that compete with the Company's GeneChip® brand technology, and the Company's competitive position could suffer. The Company expects to devote substantial financial and managerial resources to protect its intellectual property rights and to defend against the claims described below as well as any future claims asserted against it. Further, because of the substantial amount of discovery required in

NOTE 12—COMMITMENTS AND CONTINGENCIES (Continued)

connection with any litigation, there is a risk that confidential information could be compromised by disclosure.

Multilyte Litigation

Multilyte Ltd., a British corporation, and Affymetrix are engaged in legal proceedings in the United States, United Kingdom and German courts to address allegations made by Multilyte that the Company infringes certain patents owned by Multilyte (the "Multilyte patents") by making and selling the GeneChip® DNA microarray products.

Germany

In the actions pending in Germany, on July 18, 2003, Multilyte filed proceedings in the state court of Dusseldorf, alleging infringement of the Multilyte patents. In a separate action in Germany, on October 15, 2003, the Company commenced nullity proceedings in German Federal Patent Court in Munich alleging that the German part of Multilyte's two European patents (EPs 0 134 215 and 0 304 202) are invalid. On June 29 and 30, 2004, the German Federal Patent Court in Munich held that both Multilyte's European patents are invalid in Germany. Following that ruling, on July 12, 2004, the Dusseldorf court stayed both sets of infringement proceedings before it, pending Multilyte's appeal of the decisions of the German Federal Patent Court in Munich nullifying both Multilyte patents.

United Kingdom

On August 14, 2003, the Company commenced proceedings in the English High Court seeking a declaratory judgment that three Multilyte patents are not infringed and are invalid. On September 25, 2003, Multilyte filed a counterclaim in the U.K. proceedings, alleging that the Company infringed two Multilyte patents (EP '215 and EP '202) in the U.K. and claiming damages, an injunction and legal costs. Multilyte agreed that Affymetrix did not infringe the third patent and it was dropped from the lawsuit. On March 3, 2004, Multilyte notified the Company that they would be surrendering EP '215 and that the counterclaim of infringement would necessarily be withdrawn as a result. On August 18, 2004, Multilyte informed the Company that Multilyte would no longer defend the invalidity proceedings in respect of EP '215 or EP '202. At a hearing on August 31, 2004, the English High Court ruled that the EP '215 and EP '202 were invalid in the United Kingdom. Multilyte consented to this final judgment, and it is not appealable. As a consequence of the judgment, Multilyte was required to repay a substantial portion of Affymetrix's costs of the U.K. actions.

United States

In the action pending in the U.S., on August 13, 2003, the Company commenced proceedings in the United States District Court for the Northern District of California seeking a declaratory judgment that eight Multilyte patents are not infringed and are invalid. Multilyte has agreed that the Company does not infringe five of the eight named patents. On October 24, 2003, the Company filed an amended complaint seeking a declaratory judgment as to three of the original eight named patents—U.S. Patents 5,432,099, 5,599,720 and 5,807,755. Multilyte answered the Company's complaint for declaratory judgment and asserted counterclaims against the Company alleging infringement of the three patents named by the Company in its complaint. Multilyte has submitted the three patents-in-suit

NOTE 12—COMMITMENTS AND CONTINGENCIES (Continued)

to the United States Patent and Trademark Office for voluntary re-examination and on June 3, 2004, the Court stayed the case before it pending the outcome of these re-examination proceedings. On February 22, 2005, the Court issued a claim construction order that will govern subsequent proceedings in the case in connection with four disputed claim terms.

The Company believes that Multilyte's remaining claims against it are without merit and has filed the declaratory judgment and nullity actions to protect its interests. However, the Company cannot be sure that it will prevail in these matters. The Company's failure to successfully defend against these allegations could result in a material adverse effect on its business, financial condition and results of operations.

Enzo Litigation

On October 28, 2003, Enzo Life Sciences, Inc., a wholly-owned subsidiary of Enzo Biochem, Inc. (collectively "Enzo") filed a complaint against the Company that is now pending in the United States District Court for the Southern District of New York for breach of contract, injunctive relief and declaratory judgment. The Enzo complaint relates to a 1998 distributorship agreement with Enzo under which the Company served as a non-exclusive distributor of certain reagent labeling kits supplied by Enzo. In its complaint, Enzo seeks monetary damages and an injunction against the Company from using, manufacturing or selling Enzo products and from inducing collaborators and customers to use Enzo products in violation of the 1998 agreement. Enzo also seeks the transfer of certain Affymetrix patents to Enzo. In connection with its complaint, Enzo provided the Company with a notice of termination of the 1998 agreement effective on November 12, 2003.

On November 10, 2003, the Company filed a complaint against Enzo in the United States District Court for the Southern District of New York for declaratory judgment, breach of contract and injunctive relief relating to the 1998 agreement. In its complaint, the Company alleges that Enzo has engaged in a pattern of wrongful conduct against it and other Enzo labeling reagent customers by, among other things, asserting improperly broad rights in its patent portfolio, improperly using the 1998 agreement and distributorship agreements with others in order to corner the market for non-radioactive labeling reagents, and improperly using the 1998 agreement to claim ownership rights to the Company's proprietary technology. The Company seeks declarations that it has not breached the 1998 agreement, that it is entitled to sell its remaining inventory of Enzo reagent labeling kits, and that nine Enzo patents that are identified in the 1998 agreement are invalid and/or not infringed by it. The Company also seeks damages and injunctive relief to redress Enzo's alleged breaches of the 1998 agreement, its alleged tortious interference with the Company's business relationships and prospective economic advantage, and Enzo's alleged unfair competition. The Company filed a notice of related case stating that its complaint against Enzo is related to the complaints already pending in the Southern District of New York against eight other former Enzo distributors. The Southern District of New York has related the Company's case. On April 9, 2004, the Company filed its answer to Enzo's complaint. Enzo filed an answer to the Company's complaint on May 13, 2004. On September 14, 2004, the Southern District of New York conducted a consolidated status conference for the various Enzo litigations and scheduled a claim construction hearing for the Enzo patents on June 28, 2005. There is no trial date in the actions between Enzo and the Company.

NOTE 12—COMMITMENTS AND CONTINGENCIES (Continued)

The Company believes that the claims set forth in Enzo's complaint are without merit and have filed the action in the Southern District of New York to protect its interests. However, the Company cannot be sure that it will prevail in these matters. The Company's failure to successfully defend against these allegations could result in a material adverse effect on its business, financial condition and results of operation.

Administrative Litigation and Proceedings

The Company's intellectual property is expected to be subject to significant additional administrative and litigation actions. For example, in Europe and Japan, third parties are expected to oppose significant patents that the Company owns or controls. Currently, Multilyte Ltd. and ProtoGene Laboratories, Inc. are parties that have filed oppositions against the Company's EP 0 619 321 patent in the European Patent Office, and PamGene B.V. has filed an opposition against the Company's EP 0 728 520. Also, Abbott Laboratories, Applera, Clondiag and CombiMatrix are parties in opposition against the Company's EP 0 834 575 and CombiMatrix has filed an opposition against EP 0 695 941. Agilent, CombiMatrix, Clondiag and Applera have filed an opposition against EP 0 853 679 and Applera has opposed EP 0 972 564. Degussa AG has filed an opposition against EP 1 086 742. These procedures will result in the patents being either upheld in their entireties, allowed to issue in amended form in designated European countries, or revoked. In connection with an opposition proceeding against the Company's EP 0 834 576 by Abbott Laboratories, CombiMatrix, PamGene B.V., Applera and Dr. Peter Schneider, the European Patent Office ruled on February 23, 2005 to revoke the patent.

Further, in the United States, the Company expects that third parties will continue to "copy" the claims of its patents in order to provoke interferences in the United States Patent & Trademark Office, and it may copy the claims of others. These proceedings could result in the Company's patent protection being significantly modified or reduced, and could result in significant costs and consume substantial managerial resources.

At this time, the Company cannot determine the outcome of any of the matters described above.

NOTE 13—CONVERTIBLE SUBORDINATED NOTES

On September 22, 1999, the Company completed the sale of $150 million principal amount of 5% convertible subordinated notes due 2006 (the "5% Notes"). The 5% Notes mature on October 1, 2006 and bear interest at a rate of 5% per annum, which is payable semi-annually on April 1 and October 1. The 5% Notes are convertible, at the option of the holder at any time prior to maturity or redemption, into shares of the Company's common stock at a conversion price of $61.50 per share, subject to adjustment. The Company can redeem some or all of the 5% Notes at any time after October 7, 2002, and the debt holder has a right to require the Company to purchase all or a portion of the 5% Notes upon a change in control. The 5% Notes are subordinated to all of the Company's existing and future senior indebtedness. Total offering expenses related to the 5% Notes were $5.4 million and have been included in other assets. These expenses will be amortized to interest expense over the life of the notes.

On February 14, 2000, the Company completed the sale of $225.0 million principal amount of 4.75% convertible subordinated notes due 2007 (the "4.75% Notes"). The 4.75% Notes mature on February 15, 2007 and bear interest at a rate of 4.75% per annum, which is payable semi-annually on

NOTE 13—CONVERTIBLE SUBORDINATED NOTES (Continued)

February 15 and August 15. The 4.75% Notes are convertible, at the option of the holder at any time prior to maturity or redemption, into shares of the Company's common stock at a conversion price of $160.50 per share, subject to adjustment. The Company can redeem some or all of the 4.75% Notes at any time after February 20, 2003 and the debt holders have a right to require the Company to purchase all or a portion of the 4.75% Notes upon a change in control. The 4.75% Notes are subordinated to all of the Company's existing and future senior indebtedness. Total offering expenses related to these notes were $7.2 million and have been included in other assets. These expenses will be amortized to interest expense over the life of the notes.

Between August 2001 and June 2003, the Company repurchased $59.5 million and $48.0 million principal amounts of its 4.75% and 5% Notes, respectively. On January 9, 2004, the Company completed the redemption of its 5.0% Notes ($102.0 million face value). In connection with the redemption, the Company recorded a charge of $3.2 million to interest expense in the first quarter of 2004, related to the unamortized issuance costs and redemption fee associated with the repurchased notes. On February 19, 2004, the Company also completed the redemption of its 4.75% Notes ($165.5 million face value). In connection with the redemption, the Company recorded a charge of $4.9 million to interest expense related to the unamortized issuance costs and redemption fee associated with the repurchased notes.

NOTE 14—SENIOR CONVERTIBLE NOTES

On December 10, 2003, the Company issued $120.0 million of 0.75% Senior Convertible Notes (the "0.75% Notes") due December 15, 2033. The net proceeds after issuance costs (which will be amortized over 5 years, the earliest term for redemption outside of the Company's control), from the 0.75% Notes offering were $116.0 million. The 0.75% Notes bear interest of 0.75% per year on the principal amount payable semi-annually in arrears on June 15 and December 15 of each year, beginning June 15, 2004. The 0.75% Notes are convertible into 32.2431 shares of Affymetrix common stock per $1,000 principal amount of notes which equates to 3,869,172 shares of common stock, or $31.01 per share of common stock subject to adjustment, prior to the close of business on the business day prior to the maturity date under the following circumstances: (1) during any quarterly conversion period prior to December 15, 2028, if the sales price of the Company's common stock for at least 20 trading days in the 30 consecutive trading-day period ending on the first day of such conversion period reaches a specified threshold, (2) on or after December 28, 2028, at any time after the sale price of the Company's common stock on any date is greater than 130% of the then current conversion price, (3) during the five consecutive trading-day period in which the average of the trading prices for the notes was less than 98% of the average of the sale price of the Company's common stock multiplied by the then applicable conversion rate (4) the 0.75% Notes are called for redemption, or (5) specified corporate transactions have occurred.

On December 15, 2008, the security holders have the option to deliver the 0.75% Notes to Affymetrix and require the Company to repurchase all outstanding 0.75% Notes for $1,000 in cash each up to a maximum of $120.0 million for all outstanding 0.75% Notes. Additionally, security holders also have the option to require the Company to repurchase the 0.75% Notes payable in cash along with any accrued but unpaid interest on December 15, 2013, 2018, 2023, and 2028. The Company used the net proceeds of the offering to repurchase its 4.75% Notes. Additionally, Affymetrix has the option of

NOTE 14—SENIOR CONVERTIBLE NOTES (Continued)

redeeming all or part of the 0.75% Notes plus accrued but unpaid interest on or after December 15, 2008 for cash.

NOTE 15—STOCKHOLDERS' EQUITY

COMMON STOCK WARRANTS

As of December 31, 2004 and 2003, there were warrants oustanding to purchase 27,970 shares of common stock at $3.58 per share, which expire in 2008. As of December 31, 2004 and 2003, there were warrants outstanding to purchase 24,164 and 38,148 shares of common stock at $15.20 per share outstanding, respectively, which expire in 2009.

STOCK OPTION EXCHANGE OFFERING

On March 7, 2002, the Company filed a Schedule Tender Offer, as subsequently amended on April 4, 2002, with the Securities and Exchange Commission relating to an offer (the "Offer") to current employees (excluding officers as defined in Rule 16a-1(f) of the Securities Exchange Act of 1934, as amended) of the Company or its wholly owned subsidiaries, to exchange all of the options outstanding under the Affymetrix, Inc. Amended and Restated 1993 Stock Plan, Affymetrix, Inc. 1998 Stock Incentive Plan, Affymetrix/Genetic MicroSystems 1998 Stock Option Plan, Affymetrix/ Neomorphic 1998 Stock Option Plan, and Affymetrix, Inc. Amended and Restated 2000 Equity Incentive Plan (collectively, the "Plans") to purchase shares of the Company's common stock ("Common Stock"), for new options (the "New Options") to purchase shares of the Common Stock to be granted under the Plans, upon the terms and subject to the conditions described in an Offer to Exchange and related Letter of Transmittal. Following the expiration of the Offer on April 12, 2002, the Company accepted for exchange options to purchase 2,272,984 shares of its common stock (the "Tendered Options"), representing approximately 27.5% of the 8,269,774 options that were eligible to be tendered in the Offer. After a period of more than six months and a day from the expiration date of the Offer, on October 16, 2002 the Company granted New Options to purchase an aggregate of 1,276,234 shares of its common stock in exchange for the Tendered Options. The New Options were granted with exercise prices equal to $23.185 which was the fair market value of the Company's common stock on October 16, 2002. Executive officers of the Company were not permitted to participate in the offer.

The number of shares of common stock subject to the New Options was equal to the number of shares of common stock subject to the Tendered Options that were accepted for exchange and canceled in accordance with the following exchange ratios:

Exercise Price of Option Tendered	Exchange Ratio
$44.99 or less	1 for 1
$45.00-$59.99	0.67 for 1
$60.00-$99.99	0.50 for 1
$100.00 or more	0.33 for 1

NOTE 15—STOCKHOLDERS' EQUITY (Continued)

STOCKHOLDER RIGHTS PLAN

On October 15, 1998, the Board of Directors of the Company declared a dividend of (i) one preferred share purchase right (a "Right") for each outstanding share of common stock of the Company, and (ii) a number of Rights for each share of Series AA Preferred Stock of the Company equal to the number of shares of common stock into which such share of Series AA Preferred Stock was convertible. The dividend was paid on October 27, 1998 (the "Record Date") to the stockholders of record on that date. Each Right entitles the registered holder to purchase from the Company one one-thousandth of a share of Series B Junior Participating Preferred Stock, par value $.01 per share, of the Company (the "Series B Preferred Stock") at a price of $62.50 per one one-thousandth of a share of Series B Preferred Stock, subject to adjustment. The Rights will be exercisable if a person or group hereafter acquires beneficial ownership of 15% or more of the common stock of the Company or announces a tender offer for 15% or more of the common stock. The Board of Directors will be entitled to redeem the Rights at one cent per Right at any time before any such person acquires beneficial ownership of 15% or more of the outstanding common stock. If a person or group acquires 15% or more of the outstanding common stock of the Company, each Right will entitle its holder to purchase, at the Right's exercise price, a number of shares of common stock having a market value at that time of twice the Right's exercise price. Rights held by the 15% holder will become void and will not be exercisable to purchase shares at the bargain purchase price. If the Company is acquired in a merger or other business combination transaction after a person acquires 15% or more of the Company's common stock, each Right will entitle its holder to purchase, at the Right's then-current exercise price, a number of the acquiring company's common shares having a market value at that time of twice the Right's exercise price.

On February 7, 2000, the Company's Board of the Directors approved an amendment to its stockholders rights plan. The amendment increases the exercise price of the Preferred Share Purchase Rights to $625.00 and extends the expiration date of the plan to February 2010. Under the amended plan, each Preferred Share Purchase Right entitles stockholders to buy one one-thousandth of a share of Series B Junior Participating Preferred Stock of the Company at the new exercise price of $625.00. The Rights will be exercisable if a person or group acquires beneficial ownership of 15% or more of the common stock of the Company or announces a tender offer for 15% or more of the common stock.

STOCK OPTION AND BENEFIT PLANS

In 1996, the Board of Directors adopted the Affymetrix 1996 Non-Employee Directors Stock Option Plan (the "1996 Stock Plan"), which was amended and restated in 2001, under which only nonqualified stock options may be granted to non-employee directors of the Company. Options granted under the 1996 Stock Plan expire no later than ten years and two days from the date of grant. The option price shall be at least 100% of the fair value of the Company's common stock on the date of grant (110% in certain circumstances), as determined by the Board of Directors. Options granted under the 1996 Stock Plan are subject to the vesting provisions set forth in that plan. A total of 600,000 shares of common stock are authorized for issuance under the 1996 Stock Plan and the shares are subject to repurchase by the Company under the terms of the grant. All options granted under the 1996 Stock Plan are exercisable in full six months after the date of grant and are subject to repurchase at the original exercise price by the Company over the remaining vesting period which is generally five

NOTE 15—STOCKHOLDERS' EQUITY (Continued)

years for initial grants and one year for annual grants. At December 31, 2004, there were no shares subject to repurchase under this plan.

In 1998, the Board of Directors adopted the Affymetrix 1998 Stock Incentive Plan (the "1998 Stock Plan") under which nonqualified stock options and restricted stock may be granted to employees and outside consultants, except that members of the Board of Directors and individuals who are considered officers of the Company under the rules of the National Association of Securities Dealers shall not be eligible. Options granted under the 1998 Stock Plan expire no later than ten years from the date of grant. The option price shall be at least 100% of the fair value of the Company's common stock on the date of grant (110% in certain circumstances), as determined by the Board of Directors. Options may be granted with different vesting terms from time to time as determined by the Board of Directors. A total of 3,600,000 shares of common stock are authorized for issuance under the 1998 Stock Plan and no shares are subject to repurchase by the Company.

In 2000, the Board of Directors adopted the 2000 Equity Incentive Plan (the "2000 Stock Plan"), which was amended and restated in 2001, under which restricted shares, stock units, stock options and stock appreciation rights may be granted to employees, outside directors and consultants. Options granted under the 2000 Stock Plan expire no later than ten years from the date of grant. The option price shall be at least 100% of the fair value of the Company's common stock on the date of grant (110% in certain circumstances), as determined by the Board of Directors. Options may be granted with different vesting terms from time to time as determined by the Board of Directors. In 2004, the 2000 Stock Plan was amended and restated to increase share availability by 2,500,000 shares bringing the total shares of common stock authorized for issuance under the 2000 Stock Plan to 7,500,000 and no shares are subject to repurchase by the Company.

NOTE 15—STOCKHOLDERS' EQUITY (Continued)

Activity under the stock plans through December 31, 2004 is as follows (in thousands, except per share amounts):

		Options Outstanding	
	Options Available for Grant	Number Outstanding	Weighted Averaged Exercise Price Per Share
Balance at December 31, 2001	1,987	11,718	$36.99
Granted	(3,336)	3,336	$23.46
Exercised	—	(497)	$ 9.27
Canceled	3,431	(3,431)	$66.61
Balance at December 31, 2002	2,082	11,126	$24.66
Granted	(436)	436	$23.10
Exercised	—	(834)	$14.33
Canceled	652	(653)	$24.21
Expired	(660)	—	—
Balance at December 31, 2003	1,638	10,075	$25.48
Authorized	2,500	—	—
Granted	(1,729)	1,730	$30.75
Exercised	—	(2,101)	$17.32
Canceled	361	(361)	$39.05
Expired	(43)	—	$23.01
Balance at December 31, 2004	2,727	9,343	$27.72

The following table summarized information concerning currently outstanding and exercisable options at December 31, 2004:

	Options Outstanding			Options Exercisable	
Range of Exercise Prices	Number (in thousands)	Weighted-Average Remaining Contractual Life (In Years)	Weighted-Average Exercise Price Per Share	Number (in thousands)	Weighted-Average Exercise Price Per Share
$0.26-16.39	1,236	2.74	$ 8.68	1,197	$ 8.45
$16.59-21.26	1,200	6.75	$19.69	719	$19.46
$21.48-24.44	1,989	5.14	$23.74	1,691	$23.85
$24.48-29.76	1,235	5.75	$26.66	506	$26.53
$29.76-34.45	1,837	6.76	$31.42	363	$32.57
$34.47-37.72	413	6.44	$35.73	251	$35.61
$38.97-47.85	1,180	5.67	$47.32	1,175	$47.34
$47.85-133.50	253	5.69	$63.93	205	$64.98
$0.26-133.50	9,343	5.57	$27.72	6,107	$27.43

NOTE 15—STOCKHOLDERS' EQUITY (Continued)

RESERVED SHARES

At December 31, 2004, the Company has shares reserved for future issuance as follows (in thousands):

Options outstanding	9,343
Options available for future grants	2,727
Convertible subordinated notes	3,870
Warrants	52
	15,992

DEFERRED STOCK COMPENSATION

Upon the acquisition of Neomorphic, the fair value of unvested common stock subject to restricted stock agreements and the intrinsic value of the unvested options held by employees was deducted from the purchase price and allocated to deferred stock compensation. Through December 31, 2004, this deferred stock compensation was fully amortized on a straight-line basis to compensation expense over the remaining vesting term except for $4.3 million related to an executive level Neomorphic employee who commenced a leave of absence during the latter part of fiscal 2001. The remaining $4.3 million balance will be amortized if and when the employee resumes active status with us.

NOTE 16—INCOME TAXES

Pretax income (losses) from foreign operations were approximately $2.7 million, $2.0 million, and $(0.8) million for the years ended December 31, 2004, 2003 and 2002, respectively.

The provision for income taxes consisted of the following (in thousands):

	2004	2003	2002
Current:			
Federal	$ 437	$1,500	$ —
State	280	293	99
Foreign	2,609	770	602
	$3,326	$2,563	$701

NOTE 16—INCOME TAXES (Continued)

The difference between the provision for income taxes and the amount computed by applying the Federal statutory income tax rate (35%) to loss before taxes is explained as follows (in thousands):

	Year Ended December 31,		
	2004	2003	2002
Tax at federal statutory rate	$ 17,827	$ 5,896	$ (325)
Previously unbenefited losses	(17,503)	(6,571)	(3,102)
State taxes, net	182	190	65
Non-deductible stock compensation	322	783	3,362
Foreign taxes	1,657	748	602
Alternative minimum taxes	1,751	1,500	—
Other	(910)	17	99
	$ 3,326	$ 2,563	$ 701

Significant components of the Company's deferred tax assets are as follows (in thousands):

	December 31,	
	2004	2003
Deferred tax assets:		
Net operating loss carryforwards	$ 64,034	$ 57,542
Tax credit carryforwards	16,682	13,675
Accrued legal	128	1,390
Deferred revenue	18,631	25,593
Capitalized research and development costs	3,985	5,148
Property and equipment	—	2,083
Intangibles	2,704	3,245
Accrued compensation	3,349	2,933
Accrued warranty	1,652	1,147
Equipment reserve	2,477	2,551
Other, net	5,002	5,989
Total deferred tax assets	118,644	121,296
Valuation allowance for deferred tax assets	(118,182)	(121,296)
Net deferred tax assets	462	—
Net deferred tax liabilities:		
Property and equipment	(462)	—
Net deferred tax assets	$ —	$ —

Realization of deferred tax assets is dependant upon future earnings, if any, the timing and amount of which are uncertain. Accordingly, the net deferred tax assets have been fully offset by a valuation allowance. The valuation allowance (decreased) increased by $(3.1) million, $(3.0) million and $18.0 million during 2004, 2003, and 2002 respectively. Included in the valuation allowance balance is $75.6 million related to the exercise of stock options which are not reflected as an expense for financial

NOTE 16—INCOME TAXES (Continued)

reporting purposes. Accordingly, any future reduction in the valuation allowance relating to this amount will be credited directly to stockholders' equity and not reflected as an income tax benefit in the statement of operations.

The Company has not provided for deferred income taxes on a cumulative total of $2.3 million of undistributed earnings of foreign subsidiaries because these earnings are intended to be reinvested indefinitely. As of December 31, 2004, the unrecognized deferred tax liability for these earnings was approximately $0.8 million.

The American Jobs Creation Act of 2004 (the "Jobs Act"), enacted on October 22, 2004, includes numerous changes to tax law, including a one-time favorable incentive for certain foreign earnings repatriated to the United States. As of December 31, 2004, the Company is in the process of evaluating whether it will repatriate foreign earnings under the repatriation provision of the Jobs Act, and if so, the amount that will be repatriated. As of December 31, 2004, it is the Company's intention to continue to indefinitely reinvest certain undistributed foreign earnings and accordingly, no deferred tax liability has been recorded herewith. The Company anticipates that it will conclude its analysis of the impact of the Jobs Act related to the Company's unrepatriated foreign earnings during, or prior to, the Company's fourth quarter of its fiscal year ending December 31, 2005.

As of December 31, 2004, the Company had total tax-effected net operating loss carryforwards for federal and state income tax purposes of approximately $64.0 million, which expire in the years 2018 through 2023, and federal and state research and development tax credit carryforwards of approximately $16.2 million, which expire in the years 2007 through 2024. Utilization of the Company's net operating loss and tax credit carryforwards may be subject to substantial annual limitations due to the ownership change limitations provided by the Internal Revenue Code and similar state provisions. Such an annual limitation could result in the expiration of the net operating loss before utilization.

The Company's income taxes payable for federal and state purposes have been reduced by the tax benefits associated with the exercise of certain employee stock options. The Company receives an income tax benefit calculated as the difference between the fair market value of the stock issued at the time of exercise and the option price, tax effected. These benefits were credited directly to shareholders' equity and amounted to $0.7 million for the year ended December 31, 2004. There were no benefits received for the years ended December 31, 2003 and 2002.

NOTE 17—PRODUCT SALES, GEOGRAPHIC SALES, AND SIGNIFICANT CUSTOMERS

The Company has determined that, in accordance with Statement of Financial Accounting Standards No. 131, "Disclosures about Segments of an Enterprise and Related Information" it operates in one segment as it only reports operating results on an aggregate basis to the chief operating decision

NOTE 17—PRODUCT SALES, GEOGRAPHIC SALES, AND SIGNIFICANT CUSTOMERS (Continued)

makers of the Company. The Company reported product and product related revenue by type and by region as follows (in thousands):

	Year Ended December 31,		
	2004	2003	2002
Total product and product related revenue:			
Probe arrays	$168,243	$139,591	$140,039
Reagents	31,744	20,419	15,341
Instruments	77,269	62,738	46,213
Subscription fees	20,669	26,208	32,125
Service and other	15,526	18,451	14,820
License fee and milestone revenue	17,434	13,373	—
Total product and product related revenue	$330,885	$280,780	$248,538
Customer location:			
United States	$171,674	$152,937	$160,573
Europe(1)	100,553	82,850	58,802
Japan(2)	43,488	35,409	—
Other	15,170	9,584	29,163
Total	$330,885	$280,780	$248,538

(1) In 2003 and 2004, revenue earned from Europe includes license fees earned in connection with the Roche agreement.

(2) Prior to fiscal year 2003 sales to Japan are included in "Other" as sales were made through a Japanese distributor. Beginning in January 2003, sales to Japan were made through the Company's wholly owned Japanese subsidiary.

There were no customers representing 10% or more of total revenue in 2004, 2003 and 2002.

NOTE 18—DEFINED-CONTRIBUTION SAVINGS PLANS

401(K) PLAN

The Company maintains a defined-contribution savings plan which is qualified under Section 401(k) of the Internal Revenue Code. The plan covers substantially all full-time U.S. employees. Participating employees may defer a portion of their pretax earnings, up to the Internal Revenue Service annual contribution limit. The Company's expense for matching employee contributions totaled $3.0 million in 2004, $1.7 million in 2003 and $2.5 million in 2002. Company contributions vest to employees ratably over four years.

DIRECTOR AND EXECUTIVE DEFERRED COMPENSATION PLAN

In December 2004, the Board of Directors approved the creation of the Affymetrix, Inc. Deferred Compensation Plan (the "Plan"). The Plan provides directors, executive officers and other eligible employees with the opportunity to enter into agreements to defer specified percentages of their cash compensation derived from base salary, bonus awards and other specified compensation (including director fees). Distributions occur upon termination of service (or the 6-month anniversary after termination), death or upon such other dates that may be elected by the participant in accordance with the terms of the Plan. Generally participants may elect for distributions of deferred amounts upon termination or death to be paid in the form of either a lump sum or in annual installments. Distributions would be made in the event of a change of control of Affymetrix. Deferrals are adjusted for gain or loss based on the performance of one or more investment options selected by the participant from among investment funds chosen by the Compensation Committee of the Board. The Company in its sole discretion may suspend or terminate the Plan or revise or amend it in any respect, except that no such action may reduce vested amounts credited to deferral accounts, and such accounts will continue to be owed to the participants or beneficiaries and will continue to be a liability of the Company until paid. For the year ended December 31, 2004, the Company incurred no expense in connection with the Plan.

NOTE 19—UNAUDITED QUARTERLY FINANCIAL INFORMATION

	2004				2003			
	Fourth Quarter	Third Quarter	Second Quarter	First Quarter(2)	Fourth Quarter	Third Quarter	Second Quarter	First Quarter(1)
	(in thousands, except per share amounts)							
Total revenue (excluding Perlegen)	$106,383	$78,988	$78,362	$76,984	$87,709	$73,441	$65,883	$ 64,302
Perlegen revenue	$ 1,325	$ 2,742	$ 1,392	$ 1,649	$ 1,455	$ 2,744	$ 2,751	$ 2,509
Total cost of goods sold (excluding Perlegen)	$ 26,808	$19,474	$21,464	$23,588	$26,800	$24,697	$19,305	$ 19,013
Perlegen cost of goods sold	$ 572	$ 569	$ 1,099	$ 1,371	$ 1,455	$ 2,744	$ 2,751	$ 2,509
Net income (loss)	$ 27,055	$15,377	$ 7,009	$(1,833)	$16,010	$ 5,802	$ 5,195	$(12,722)
Basic net income (loss) per share	$ 0.44	$ 0.25	$ 0.12	$ (0.03)	$ 0.27	$ 0.10	$ 0.09	$ (0.22)
Diluted net income (loss) per share (3)	$ 0.41	$ 0.24	$ 0.11	$ (0.03)	$ 0.26	$ 0.10	$ 0.09	$ (0.22)

(1) On January 9, 2003, the Company entered into an agreement with Perlegen to license certain Perlegen technologies. Under the terms of the licensing agreement, the Company paid Perlegen a total of $15.0 million in cash. A charge of approximately $10.1 million related to acquired in-process technology valued using the Income Approach was recorded in the first quarter of 2003. The remaining $4.9 million was recorded as an intangible asset and is being amortized over the useful lives of the various components of the asset from six to ten years.

(2) In January 2004, the Company completed the redemption of its 5.0% notes ($102.0 million face value). In connection with the redemption, the Company recorded a charge of $3.2 million to interest expense in the first quarter of 2004, related to the unamortized issuance costs and redemption fee associated with the repurchased 5.0% notes. In February 2004, the Company also completed the redemption of its 4.75% notes ($165.5 million face value). In connection with the redemption, the Company recorded a charge of $4.9 million to interest expense related to the unamortized issuance costs and redemption fee associated with the repurchased 4.75% notes.

(3) In September 2004, the Emerging Issues Task Force reached a consensus on Issue No. 04-8, "The Effect of Contingently Convertible Debt on Diluted Earnings Per Share," ("EITF 04-8") which addresses when the dilutive effect of contingently convertible debt instruments should be included in diluted earnings per share. EITF 04-8 requires that contingently convertible debt instruments be included in the computation of diluted earnings per share regardless of whether the market price trigger has been met. EITF 04-8 also requires that prior period diluted earnings per share amounts presented for comparative purposes be restated. EITF 04-8 is effective for reporting periods ending after December 15, 2004. The Company's diluted earnings per share calculation has been restated to include shares issuable upon conversion of the Company's 0.75% senior convertible notes issued in 2003 for periods where the Company reported net income. There were no changes to reported diluted earnings per share except for the third quarter of 2004 where the diluted earnings per share decreased from $0.25 to $0.24.

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

Not applicable.

ITEM 9A. CONTROLS AND PROCEDURES

Disclosure Controls and Procedures

As required by paragraph (b) of Exchange Act Rules 13a-15 or 15d-15, Affymetrix' management, including our Chief Executive Officer and Chief Financial Officer, conducted an evaluation as of the end of the period covered by this report, of the effectiveness of Affymetrix' disclosure controls and procedures as defined in Exchange Act Rule 13a-15(e). Based on that evaluation, our Chief Executive Officer and Chief Financial Officer concluded that Affymetrix' disclosure controls and procedures were effective as of the end of the period covered by this report.

Management's Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Exchange Act Rules 13a-15(f) and 15d-15(f). Under the supervision of our Chief Executive Officer and Chief Financial Officer and with the participation of our management, we conducted an evaluation of the effectiveness of our internal control over financial reporting as of December 31, 2004 based on the framework in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Based on that evaluation, our management concluded that our internal control over financial reporting was effective as of December 31, 2004. Management's assessment of the effectiveness of our internal control over financial reporting as of December 31, 2004 has been audited by Ernst & Young LLP, an independent registered public accounting firm, as stated in their report which is included on page 62 of this Annual Report on Form 10-K.

Changes in Internal Control over Financial Reporting

There were no changes in our internal control over financial reporting identified in connection with the evaluation required by paragraph (d) of Exchange Act Rules 13a-15 or 15d-15 that occurred during our last fiscal quarter that have materially affected or are reasonably likely to materially affect, our internal control over financial reporting.

ITEM 9B. OTHER INFORMATION

Not applicable.

PART III

ITEM 10. DIRECTORS AND EXECUTIVE OFFICERS OF THE REGISTRANT

Information regarding out directors and executive officers is incorporated by reference to the sections of the Company's proxy statement for the 2005 Annual Meeting of Stockholders (the "Proxy Statement") entitled "Election of Directors" and "Management."

The information concerning our audit committee required by this Item is incorporated by reference to the sections of the Proxy Statement entitled "Governance of the Company" and "Report of the Audit Committee."

The information concerning compliance with Section 16(a) of the Exchange Act required by this Item is incorporated by reference to the section of the Proxy Statement entitled "Section 16(a)

Beneficial Ownership Reporting Compliance" under the heading "Stock Ownership of Principal Stockholders and Management."

CODE OF ETHICS

Affymetrix has adopted a code of business conduct and ethics for directors, officers (including Affymetrix' Chief Executive Officer, Chief Financial Officer and Corporate Controller) and employees, known as the Code of Business Conduct and Ethics. The Code of Business Conduct and Ethics is available on Affymetrix' website at *http://www.affymetrix.com* in the Corporate Governance Section under the "Investors" link. Stockholders may request a free copy of the Code of Business Conduct and Ethics by sending an email request to investor@affymetrix.com.

ITEM 11. EXECUTIVE COMPENSATION

Incorporated by reference to the sections of the Proxy Statement entitled "Executive Compensation," "Compensation Committee Report," "Certain Transactions" and "Compensation of Directors."

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS.

Incorporated by reference to the section of the Proxy Statement entitled "Stock Ownership of Principal Stockholders and Management."

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS

Incorporated by reference to the section of the Proxy Statement entitled "Certain Transactions."

ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

Information about principal accountant fees and services as well as related pre-approval policies appears under "Fees Paid to Ernst & Young LLP" and "Audit and Finance Committee Pre-Approval of Audit and Permissible Non-Audit Services of Independent Registered Public Accounting Firm" in the Proxy Statement. Those portions of the Proxy Statement are incorporated by reference into this report.

PART IV

ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

(a)(1) Financial Statements. The financial statements as set forth under Item 8 of this report on Form 10-K are incorporated herein by reference.

(a)(2) Financial Statement Schedule—Schedule II—Valuation and Qualifying Accounts. All other schedules have been omitted as they are not required, not applicable or the information is otherwise included.

(a)(3) Exhibits:

EXHIBIT NUMBER	DESCRIPTION OF DOCUMENT
3.1(1)	Restated Certificate of Incorporation
3.2(2)	Bylaws
3.3(3)	Amendment No. 1 to the Bylaws dated as of April 25, 2001
3.4(4)	Summary of Rights to Purchase Shares of Preferred Stock pursuant to the Rights Agreement dated as of October 15, 1998
4.1(5)	Rights Agreement, dated October 15, 1998, between Affymetrix, Inc. and American Stock Transfer & Trust Company, as Rights Agent
4.2(6)	Amendment No. 1 to Rights Agreement, dated as of February 7, 2000, between Affymetrix, Inc. and American Stock Transfer & Trust Company, as Rights Agent
4.3(7)	Indenture dated as of December 15, 2003, between Affymetrix, Inc. and The Bank of New York, as Trustee
4.4(7)	Affymetrix, Inc. 0.75% Senior Convertible Notes due 2033 Registration Rights Agreement dated December 15, 2003
10.1(8)†	1993 Stock Plan, as amended
10.2(8)†	1996 Nonemployee Directors Stock Option Plan
10.3(8)†*	Form of Director and Officer Indemnification Agreement
10.4(9)	Lease between Sobrato Interests and Affymetrix, Inc. dated June 12, 1996 (3380 Central Expressway, Santa Clara, CA)
10.5(9)	Lease between Sobrato Interests and Affymetrix, Inc. dated May 31, 1996 (3450 Central Expressway, Santa Clara, CA)
10.6(10)†	1998 Stock Incentive Plan
10.7(10)†	Form of Officer and Director Indemnification Agreement
10.8(11)	Lease Agreement by and between the Company and Aetna Life Insurance Company dated as of July 30, 1999
10.9(12)	Amendment No. 1 to the 1996 Nonemployee Directors Stock Option Plan of Affymetrix, Inc.

EXHIBIT NUMBER	DESCRIPTION OF DOCUMENT
10.10(13)	Amended and Restated 1996 Non-Employee Directors Stock Plant
10.11(14)*	Common Terms Agreement between F. Hoffmann-La Roche Ltd. and Affymetrix, Inc. dated January 29, 2003
10.12(14)*	License Agreement between F. Hoffmann-La Roche Ltd. and Affymetrix, Inc. dated January 29, 2003
10.13(14)*	Affymetrix Instrument and Chip Supply Agreement between F. Hoffmann-La Roche Ltd. and Affymetrix, Inc. dated January 29, 2003
10.14(14)*	Research & Development Collaboration Agreement between F. Hoffmann-La Roche Ltd. and Affymetrix, Inc. dated January 29, 2003
10.15(14)*	Diagnostic Product and Instrument Agency Agreement between F. Hoffmann-La Roche Ltd. and Affymetrix, Inc. dated January 29, 2003
10.16(14)*	Affymetrix Instrument Agency Agreement between F. Hoffmann-La Roche Ltd. and Affymetrix, Inc. dated January 29, 2003
10.17(15)	Lease between Sobrato Interests and Affymetrix dated July 3, 2002 (3420 Central Expressway, Santa Clara, CA)
10.18(15)	First Amendment to Lease between Sobrato Interests and Affymetrix dated September 30, 2003 (3420 Central Expressway, Santa Clara, CA)
10.19(15)†	Loan Agreement in principal amount of $1.2 million executed by Barbara A. Caulfield dated January 7, 2004 pursuant to an extension of credit made to Ms. Caulfield by the Company on July 16, 2001
10.20(16)	Affymetrix, Inc. Amended and Restated 2000 Equity Incentive Plan
10.21(17)	Form of Non-Qualified Stock Option Agreement under the Affymetrix, Inc. Amended and Restated 1996 Non-Employee Directors Stock Plan
10.22(17)	Form of Stock Option Agreement under the Affymetrix, Inc. Amended and Restated 2000 Equity Incentive Plan
10.23(18)	Affymetrix, Inc. Deferred Compensation Plan
10.24	Fifth Amendment to Lease between Sobrato Interests and Affymetrix, Inc. dated July 3, 2002 (3380 Central Expressway, Santa Clara, CA)
10.25	First Amendment to Lease between Sobrato Interests and Affymetrix, Inc. dated July 3, 2002 (3450 Central Expressway, Santa Clara, CA)
21	List of Subsidiaries
23	Consent of Independent Registered Public Accounting Firm
31.1	Certification of Chief Executive Officer Pursuant to Section 302 of Sarbanes-Oxley Act of 2002
31.2	Certification of Chief Financial Officer Pursuant to Section 302 of Sarbanes-Oxley Act of 2002
32.1	Certification of Chief Executive Officer Pursuant to Section 906 of Sarbanes-Oxley Act of 2002

EXHIBIT NUMBER	DESCRIPTION OF DOCUMENT
32.2	Certification of Chief Financial Officer Pursuant to Section 906 of Sarbanes-Oxley Act of 2002

(1) Incorporated by reference to Registrant's Form 8-K as filed on June 13, 2000 (File No. 000-28218)

(2) Incorporated by reference to Appendix C of Registrant's Definitive Proxy Statement on Schedule 14A as filed on April 29, 1998 (File No. 000-28218)

(3) Incorporated by reference to Registrant's Form 10-Q as filed on May 15, 2001 (File No. 000-28218)

(4) Incorporated by reference to Registrant's Form 8-K as filed on October 16, 1998 (File No. 000-28218)

(5) Incorporated by reference to Registrant's Form 8-A as filed on October 16, 1998 (File No. 000-28218)

(6) Incorporated by reference to Registrant's Form 8-A/A as filed on March 29, 2000 (File No. 000-28218)

(7) Incorporated by reference to Registrant's Form S-3 as filed on January 29, 2004 (File No. 333-112311)

(8) Incorporated by reference to Registrant's Registration Statement on Form S-1 (File No. 333-3648), as amended

(9) Incorporated by reference to Registrant's Quarterly Report on Form 10-Q as filed on August 14, 1996 (File No. 000-28218)

(10) Incorporated by reference to Registrant's Report on Form 10-K as filed on March 31, 1999 (File No. 000-28218)

(11) Incorporated by reference to Registrant's Form 10-Q as filed on August 16, 1999 (File No. 000-28218)

(12) Incorporated by reference to Registrant's Registration Statement on Form S-3 as filed on July 12, 1999 (File No. 333-82685), as amended

(13) Incorporated by reference to Registrant's Form 10-Q as filed on May 15, 2001 (File No. 000-28218)

(14) Incorporated by reference to Registrant's Form 10-Q as filed on May 15, 2003 (File No. 000-0-28218)

(15) Incorporated by reference to Registrant's Form 10-K as filed on March 15, 2004 (File No. 000-28218

(16) Incorporated by reference to Registrant's Form 10-Q as filed on August 9, 2004 (File No. 000-0-28218)

(17) Incorporated by reference to Registrant's Form 10-Q as filed on November 9, 2004 (File No. 000-0-28218)

(18) Incorporated by reference to Registrant's Form 8-K as filed on December 14, 2004 (File No. 000-28218)

* Confidential treatment granted

† Management contract, compensatory plan or arrangement

AFFYMETRIX, INC.

Schedule II—Valuation and Qualifying Accounts

(in thousands)

	Balance at Beginning of Period	Charged to Costs and Expenses	Deductions(1)	Balance at End of Period
Year Ended December 31, 2004:				
Allowance for doubtful accounts	$ 761	$ 765	$ (685)	$ 841
Year Ended December 31, 2003:				
Allowance for doubtful accounts	$2,835	$ 161	$(2,235)	$ 761
Year Ended December 31, 2002:				
Allowance for doubtful accounts	$1,847	$1,351	$ (363)	$2,835

(1) Includes specific accounts receivable balances written off against the allowance of $64, $850 and $363 for the years ended December 31, 2004, 2003 and 2002, respectively. Remaining amounts were credited to bad debt expense.

SIGNATURES

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

AFFYMETRIX, INC.
(Registrant)

March 16, 2005 By: /s/ STEPHEN P.A. FODOR, PH.D.

Stephen P.A. Fodor, Ph.D.
FOUNDER, CHAIRMAN OF THE BOARD AND 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.

Name	Title	Date
By: /s/ STEPHEN P.A. FODOR, PH.D. Stephen P.A. Fodor, Ph.D.	Founder, Chairman of the Board and Chief Executive Officer (Principal Executive Officer)	March 16, 2005
By: /s/ GREGORY T. SCHIFFMAN Gregory T. Schiffman	Executive Vice President and Chief Financial Officer (Principal Financial Officer)	March 16, 2005
By: /s/ JOHN D. DIEKMAN, PH.D. John D. Diekman, Ph.D.	Director	March 16, 2005
By: /s/ PAUL BERG, PH.D. Paul Berg, Ph.D.	Director	March 16, 2005
By: /s/ SUSAN D. DESMOND-HELLMANN, M.D. Susan D. Desmond-Hellmann, M.D.	Director	March 16, 2005
By: /s/ VERNON R. LOUCKS, JR. Vernon R. Loucks, Jr.	Director	March 16, 2005
By: /s/ SUSAN E. SIEGEL Susan E. Siegel	Director	March 16, 2005
By: /s/ DAVID B. SINGER David B. Singer	Director	March 16, 2005
By: /s/ JOHN A. YOUNG John A. Young	Director	March 16, 2005

INDEX TO EXHIBITS

EXHIBIT NUMBER	DESCRIPTION OF DOCUMENT
3.1(1)	Restated Certificate of Incorporation
3.2(2)	Bylaws
3.3(3)	Amendment No. 1 to the Bylaws dated as of April 25, 2001
3.4(4)	Summary of Rights to Purchase Shares of Preferred Stock pursuant to the Rights Agreement dated as of October 15, 1998
4.1(5)	Rights Agreement, dated October 15, 1998, between Affymetrix, Inc. and American Stock Transfer & Trust Company, as Rights Agent
4.2(6)	Amendment No. 1 to Rights Agreement, dated as of February 7, 2000, between Affymetrix, Inc. and American Stock Transfer & Trust Company, as Rights Agent
4.3(7)	Indenture dated as of December 15, 2003, between Affymetrix, Inc. and The Bank of New York, as Trustee
4.4(7)	Affymetrix, Inc. 0.75% Senior Convertible Notes due 2033 Registration Rights Agreement dated December 15, 2003
10.1(8)†	1993 Stock Plan, as amended
10.2(8)†	1996 Nonemployee Directors Stock Option Plan
10.3(8)†	Form of Director and Officer Indemnification Agreement
10.4(9)	Lease between Sobrato Interests and Affymetrix, Inc. dated June 12, 1996 (3380 Central Expressway, Santa Clara, CA)
10.5(9)	Lease between Sobrato Interests and Affymetrix, Inc. dated May 31, 1996 (3450 Central Expressway, Santa Clara, CA)
10.6(10)†	1998 Stock Incentive Plan
10.7(10)†	Form of Officer and Director Indemnification Agreement
10.8(11)	Lease Agreement by and between the Company and Aetna Life Insurance Company dated as of July 30, 1999
10.9(12)	Amendment No. 1 to the 1996 Nonemployee Directors Stock Option Plan of Affymetrix, Inc.
10.10(13)	Amended and Restated 1996 Non-Employee Directors Stock Plan
10.11(14)*	Common Terms Agreement between F. Hoffmann-La Roche Ltd. and Affymetrix, Inc. dated January 29, 2003
10.12(14)*	License Agreement between F. Hoffmann-La Roche Ltd. and Affymetrix, Inc. dated January 29, 2003
10.13(14)*	Affymetrix Instrument and Chip Supply Agreement between F. Hoffmann-La Roche Ltd. and Affymetrix, Inc. dated January 29, 2003
10.14(14)*	Research & Development Collaboration Agreement between F. Hoffmann-La Roche Ltd. and Affymetrix, Inc. dated January 29, 2003

EXHIBIT NUMBER	DESCRIPTION OF DOCUMENT
10.15(14)*	Diagnostic Product and Instrument Agency Agreement between F. Hoffmann-La Roche Ltd. and Affymetrix, Inc. dated January 29, 2003
10.16(14)*	Affymetrix Instrument Agency Agreement between F. Hoffmann-La Roche Ltd. and Affymetrix, Inc. dated January 29, 2003
10.17(15)	Lease between Sobrato Interests and Affymetrix dated July 3, 2002 (3420 Central Expressway, Santa Clara, CA)
10.18(15)	First Amendment to Lease between Sobrato Interests and Affymetrix dated September 30, 2003 (3420 Central Expressway, Santa Clara, CA)
10.19(15)†	Loan Agreement in principal amount of $1.2 million executed by Barbara A. Caulfield dated January 7, 2004 pursuant to an extension of credit made to Ms. Caulfield by the Company on July 16, 2001
10.20(16)	Affymetrix, Inc. Amended and Restated 2000 Equity Incentive Plan
10.21(17)	Form of Non-Qualified Stock Option Agreement under the Affymetrix, Inc. Amended and Restated 1996 Non-Employee Directors Stock Plan
10.22(17)	Form of Stock Option Agreement under the Affymetrix, Inc. Amended and Restated 2000 Equity Incentive Plan
10.23(18)	Affymetrix, Inc. Deferred Compensation Plan
10.24	Fifth Amendment to Lease between Sobrato Interests and Affymetrix, Inc. dated July 3, 2002 (3380 Central Expressway, Santa Clara, CA)
10.25	First Amendment to Lease between Sobrato Interests and Affymetrix, Inc. dated July 3, 2002 (3450 Central Expressway, Santa Clara, CA)
21	List of Subsidiaries
23	Consent of Independent Registered Public Accounting Firm
31.1	Certification of Chief Executive Officer Pursuant to Section 302 of Sarbanes-Oxley Act of 2002
31.2	Certification of Chief Financial Officer Pursuant to Section 302 of Sarbanes-Oxley Act of 2002
32.1	Certification of Chief Executive Officer Pursuant to Section 906 of Sarbanes-Oxley Act of 2002
32.2	Certification of Chief Financial Officer Pursuant to Section 906 of Sarbanes-Oxley Act of 2002

(1) Incorporated by reference to Registrant's Form 8-K as filed on June 13, 2000 (File No. 000-28218)

(2) Incorporated by reference to Appendix C of Registrant's Definitive Proxy Statement on Schedule 14A as filed on April 29, 1998 (File No. 000-28218)

(3) Incorporated by reference to Registrant's Form 10-Q as filed on May 15, 2001 (File No. 000-28218)

(4) Incorporated by reference to Registrant's Form 8-K as filed on October 16, 1998 (File No. 000-28218)

(5) Incorporated by reference to Registrant's Form 8-A as filed on October 16, 1998 (File No. 000-28218)

(6) Incorporated by reference to Registrant's Form 8-A/A as filed on March 29, 2000 (File No. 000-28218)

(7) Incorporated by reference to Registrant's Form S-3 as filed on January 29, 2004 (File No. 333-112311)

(8) Incorporated by reference to Registrant's Registration Statement on Form S-1 (File No. 333-3648), as amended

(9) Incorporated by reference to Registrant's Quarterly Report on Form 10-Q as filed on August 14, 1996 (File No. 000-28218)

(10) Incorporated by reference to Registrant's Report on Form 10-K as filed on March 31, 1999 (File No. 000-28218)

(11) Incorporated by reference to Registrant's Form 10-Q as filed on August 16, 1999 (File No. 000-28218)

(12) Incorporated by reference to Registrant's Registration Statement on Form S-3 as filed on July 12, 1999 (File No. 333-82685), as amended

(13) Incorporated by reference to Registrant's Form 10-Q as filed on May 15, 2001 (File No. 000-28218)

(14) Incorporated by reference to Registrant's Form 10-Q as filed on May 15, 2003 (File No. 000-0-28218)

(15) Incorporated by reference to Registrant's Form 10-K as filed on March 15, 2004 (File No. 000-28218

(16) Incorporated by reference to Registrant's Form 10-Q as filed on August 9, 2004 (File No. 000-0-28218)

(17) Incorporated by reference to Registrant's Form 10-Q as filed on November 9, 2004 (File No. 000-0-28218)

(18) Incorporated by reference to Registrant's Form 8-K as filed on December 14, 2004 (File No. 000-28218)

* Confidential treatment granted

† Management contract, compensatory plan or arrangement

EXHIBIT 21

AFFYMETRIX, INC.
LIST OF SUBSIDIARIES

Affymetrix, UK Ltd, wholly-owned subsidiary incorporated in the United Kingdom and doing business under such name.

Affymetrix France S.A.S., wholly-owned subsidiary incorporated in France and doing business under such name.

Affymetrix GmbH, wholly-owned subsidiary incorporated in Germany and doing business under such name.

Affymetrix Japan K.K., a wholly-owned subsidiary incorporated in Japan and doing business under such name.

Affymetrix Pte Ltd, wholly-owned subsidiary incorporated in Singapore and doing business under such name.

Affymetrix Technology, Ltd, wholly-owned subsidiary incorporated in Bermuda and doing business under such name.

Genetic MicroSystems, Inc., wholly-owned subsidiary incorporated in Massachusetts and doing business under such name.

Neomorphic, Inc., wholly-owned subsidiary incorporated in California and doing business under such name.

EXHIBIT 23

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in the Registration Statements (Forms S-3 No. 333-112311, No. 333-38167, No. 333-82685, No. 333-92577, No. 333-36790 and No. 333-51914) and in the related prospectuses, and to the incorporation by reference in the Registration Statements (Forms S-8 Nos. 333-11299, No. 333-35287, No. 333-85575 and 333-59158, No. 333-34320, No. 333-52804 and No. 333-59160) pertaining to the 1993 Stock Plan, the 1996 Nonemployee Directors Stock Option Plan, the 1998 Stock Incentive Plan, the GMS/Affymetrix 1998 Stock Plan, the Affymetrix/Neomorphic, Inc. 1998 Stock Option Plan and the Affymetrix, Inc. 2000 Equity Incentive Plan of Affymetrix, Inc. of our reports dated March 11, 2005, with respect to the consolidated financial statements and schedule of Affymetrix, Inc., Affymetrix, Inc. management's assessment of the effectiveness of internal control over financial reporting, and the effectiveness of internal control over financial reporting of Affymetrix, Inc., included in this Annual Report (Form 10-K) for the year ended December 31, 2004.

/s/ ERNST & YOUNG LLP

Palo Alto, California
March 11, 2005

EXHIBIT 31.1

Certification

I, Stephen P.A. Fodor, Ph.D., Founder, Chairman and Chief Executive Officer, certify that:

1. I have reviewed this annual report on Form 10-K for the period ended December 31, 2004 of Affymetrix, 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 officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   a. designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, 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. designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   c. evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this annual report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this annual report, based on such evaluation; and

   d. disclosed in this annual report any change in the registrant's internal control over financial reporting that occurred during the registrant's fourth fiscal quarter that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting.

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal controls over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   a. all significant deficiencies and material weaknesses in the design or operation of internal controls over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; 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 over financial reporting.

Date: March 16, 2005

/s/ STEPHEN P.A. FODOR, PH.D.

Name: Stephen P.A. Fodor, Ph.D
Title: Founder, Chairman and Chief Executive Officer

EXHIBIT 31.2

Certification

I, Gregory T. Schiffman, Executive Vice President and Chief Financial Officer, certify that:

1. I have reviewed this annual report on Form 10-K for the period ended December 31, 2004 of Affymetrix, 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 officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   a. designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, 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. designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   c. evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this annual report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this annual report, based on such evaluation; and

   d. disclosed in this annual report any change in the registrant's internal control over financial reporting that occurred during the registrant's fourth fiscal quarter that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting.

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal controls over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   a. all significant deficiencies and material weaknesses in the design or operation of internal controls over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; 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 over financial reporting.

Date: March 16, 2005

/s/ GREGORY T. SCHIFFMAN

Name: Gregory T. Schiffman
Title: Executive Vice President and Chief Financial Officer

EXHIBIT 32.1

CERTIFICATION OF CHIEF EXECUTIVE OFFICER
PURSUANT TO SECTION 906 OF SARBANES-OXLEY ACT OF 2002

The certification set forth below is being submitted in connection with this Annual Report on Form 10-K for the year ended December 31, 2004 (the "Report") for the purpose of complying with Rule 13a-14(b) or Rule 15d-14(b) of the Securities Exchange Act of 1934 (the "Exchange Act") and Section 1350 of Chapter 63 of Title 18 of the United States Code.

Stephen P.A. Fodor, Ph.D., the Founder, Chairman and Chief Executive Officer of Affymetrix, Inc. certifies that, to the best of such officer's knowledge:

1. the Report fully complies with the requirements of Section 13(a) or 15(d) of the Exchange Act; and
2. the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of Affymetrix, Inc.

March 16, 2005

/s/ STEPHEN P.A. FODOR, PH.D.

Name: Stephen P.A. Fodor, Ph.D.
Title: Founder, Chairman and Chief Executive Officer

EXHIBIT 32.2

CERTIFICATION OF CHIEF FINANCIAL OFFICER
PURSUANT TO SECTION 906 OF SARBANES-OXLEY ACT OF 2002

The certification set forth below is being submitted in connection with this Annual Report on Form 10-K for the period ended December 31, 2004 (the "Report") for the purpose of complying with Rule 13a-14(b) or Rule 15d-14(b) of the Securities Exchange Act of 1934 (the "Exchange Act") and Section 1350 of Chapter 63 of Title 18 of the United States Code.

Gregory T. Schiffman, the Executive Vice President and Chief Financial Officer of Affymetrix, Inc. certifies that, to the best of such officer's knowledge:

1. the Report fully complies with the requirements of Section 13(a) or 15(d) of the Exchange Act; and
2. the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of Affymetrix, Inc.

March 16, 2005

/s/ GREGORY T. SCHIFFMAN

Name: Gregory T. Schiffman
Title: Executive Vice President and Chief Financial Officer

(This page has been left blank intentionally.)

CORPORATE INFORMATION

Directors

Paul Berg, PhD [2]
Cahill Professor in
Cancer Research and
Biochemistry, Emeritus;
Director, Beckman Center,
Emeritus
Stanford University
Medical Center

Susan Desmond-Hellmann, M.D.
President of Product
Development
Genentech, Inc.

John D. Diekman, PhD [1,3]
Managing Partner
5AM Ventures

Stephen P. A. Fodor, PhD
Founder, Chairman, and
Chief Executive Officer
Affymetrix, Inc.

Vernon R. Loucks, Jr [3]
Chairman
The Aethena Group, LLC;
Former Chairman and
Chief Executive Officer
Baxter International, Inc.

Susan E. Siegel
President
Affymetrix, Inc.

David B. Singer [3]
Principal
Maverick Capital, Ltd.

John A. Young [1,2]
President and Chief
Executive Officer (Retired)
Hewlett-Packard Company

1 Nominating and
Corporate Governance Committee
2 Compensation Committee
3 Audit Committee

Executive Officers

Barbara A. Caulfield
Executive Vice President
and General Counsel

Stephen P. A. Fodor, PhD
Founder, Chairman, and
Chief Executive Officer

Gregory T. Schiffman
Executive Vice President and
Chief Financial Officer

Susan E. Siegel
President

Headquarters

Affymetrix, Inc.
3380 Central Expressway
Santa Clara, CA 95051
United States

Affymetrix UK Ltd.
Voyager, Mercury Park
Wycombe Lane
Wooburn Green
High Wycombe
HP10 0HH
United Kingdom

Affymetrix Japan K.K.
Mita NN Bldg., 16th Floor
4-1-23 Shiba, Minato-ku
Tokyo 108-0014
Japan

Independent Registered Public Accounting Firm
Ernst & Young LLP
Palo Alto, CA

Transfer Agent / Registrar
American Stock Transfer
& Trust Company
59 Maiden Lane
New York, NY 10038
Tel 800 937 5449

Stock Market Information

The Company's Common Stock trades on the Nasdaq Stock Market® under the symbol AFFX. As of March 1, 2005, there were approximately 387 registered holders of record of our common stock. The table listed below reflects the high and low bidding prices for 2003 and 2004.

2003	High	Low
First Quarter	$ 29.93	$ 21.13
Second Quarter	$ 28.47	$ 16.25
Third Quarter	$ 26.45	$ 18.76
Fourth Quarter	$ 26.56	$ 20.45

2004	High	Low
First Quarter	$ 36.30	$ 23.18
Second Quarter	$ 38.20	$ 26.56
Third Quarter	$ 32.52	$ 24.48
Fourth Quarter	$ 37.48	$ 28.89

SEC Form 10-K
A copy of the Company's Annual Report to the Securities and Exchange Commission on Form 10-K is available without charge upon request.

Contact:
Investor Relations
Affymetrix, Inc.
3380 Central Expressway
Santa Clara, CA 95051

Additional Company information may be obtained at www.affymetrix.com.

All statements and graphic presentations in the annual report that are not historical are "forward-looking statements" within the meaning of Section 21E of the Securities Exchange Act as amended, including statements and graphic presentations regarding our "expectations," "beliefs," "hopes," "intentions," "strategies," or the like. Such statements are based on our current expectations and are subject to a number of factors and uncertainties that could cause actual results to differ materially from those described in the forward-looking statements, including, but not limited to, risks of Affymetrix' ability to achieve and sustain higher levels of revenue, higher gross margins, and reduced operating expenses. Affymetrix cautions investors there can be no assurance that actual results or business conditions will not differ materially from those projected or suggested in such forward-looking statements as a result of various factors, including, but not limited to, the risk factors discussed in Affymetrix' Form 10-K for the year ended December 31, 2004 and other SEC reports, including its Quarterly Reports on Form 10-Q for subsequent quarterly periods. Affymetrix expressly disclaims any obligation or undertaking to release publicly any updates or revisions to any forward-looking statements contained herein to reflect any change in Affymetrix' expectations with regard thereto, or any change in events, conditions, or circumstances on which any such statements are based.
Affymetrix, the Affymetrix logo, and GeneChip® are registered trademarks owned or used by Affymetrix, Inc. "The Way Ahead" and "Powered by Affymetrix" are trademarks owned by Affymetrix, Inc.

Concept Design:
Howry Design Associates, SF/CA

1895 X-Ray of hand on page 2:
AIP Emilio Segrè Visual Archives, Lande Collection

Affymetrix, Inc.
3380 Central Expressway
Santa Clara, CA 95051
T 408 731 5000
F 408 481 0422
www.affymetrix.com