There's only one true direct.

Why settle for copies when you can have the original? Helicos True Single Molecule Sequencing (tSMS)™ technology brings you true direct DNA measurement without amplification and the cost and complexity that often accompany it. Now is the time to take those large-scale experiments off of your wish list and perform them with the accuracy, simplicity and scale that only Helicos can offer.

Bec ies.

True direct DNA measurement is here.
Get your own look at true DNA | helicosbio.com

Helicos
BioSciences Corporation

April 2008
Dear Stockholders,

We launched Helicos BioSciences Corporation in February 2004 to build and sell genetic analysis systems capable of the highest possible throughputs, the lowest-possible costs, and maximum scalability. We believe this is possible only through the direct sequencing of single molecules of DNA. Helicos' True Single Molecule Sequencing (tSMS) ™ technology allows researchers to pose genome-scale questions. Answering these questions will, we believe, prove to be the key to better understanding, diagnosing and treating many important diseases.

The opportunity is large; current estimates are $5 billion. This market responds to the best technology for specific applications: technology that is fast, inexpensive and easy to use.

Our April 2008 publication in *Science* magazine entitled "Single Molecule Sequencing of a Viral Genome" clearly demonstrates that our tSMS technology works and works well. The shipment of our first commercial instrument in March of 2008 was a major achievement as well. These two events, we believe, are important milestones in genomic science. The decades' long wait for single molecule sequencing has ended. I take great pride in this accomplishment on the part of the Helicos team, doing so substantially on-time and on-budget.

We started 2007 as essentially an R&D organization focused on completing development of the Helicos™ Genetic Analysis System. We emerged from 2007 as a fully functional commercial company. Here is a summary of highlights at Helicos in 2007.

- **R&D:** Our product R&D team under the leadership of Bill Efcavitch, our Senior Vice President of Product Research and Development, continued to develop tSMS technology, bioinformatics software to support real-time processing, and our patent-pending Virtual Terminators™ Nucleotides. Virtual Terminators are our novel approach to the analysis of homopolymers (stretches of the same nucleotide within a DNA strand). Their efforts brought us to the threshold of commercialization by the end of 2007.
- **Operations:** We commenced commercial manufacturing of the Helicos Genetic Analysis System. A seasoned executive, Bill Cotter, Vice President of Operations, leads these efforts. Our operations group builds and tests our products including the components of the Helicos Genetic Analysis System, single-molecule-grade reagents and associated supplies here in Cambridge, MA.
- **CSO:** Dr. Patrice Milos, a scientific leader in the field of personalized genomics, joined as Vice President and Chief Scientific Officer. Patrice's team of world class genomics scientists has already begun collaborations with leading academic centers which we expect will provide unaffiliated third-party validation of the power of tSMS technology and result in groundbreaking publications.
- **Sales and Marketing:** Our sales and marketing efforts are underway under the leadership of Chip Leveille, our VP of Sales and Marketing. Chip has built a sales and support team to address the needs of customers in pharmaceutical companies, academic health centers and genome centers. Our philosophy from the outset is to provide a high level of support to all of our customers, domestic and international.
- **Finance:** In 2007, we completed a successful IPO raising approximately $47.2 million. At the end of the year, we took down a $10 million tranche from a line of credit we established with GE Healthcare Financial Services.

We promoted Steve Lombardi to President and Chief Operating Officer. Steve played a central role in building the team and commercial infrastructure necessary in completing our transformation to a fully functional commercial company. He brings years of experience in driving revenue and earnings in the genetics and genomics industry.

We expect 2008 will be a year of rapidly translating the progress made in our R&D laboratory into measureable commercial success. We look forward to working with leading scientists as they use the Helicos Genetic Analysis system to pose new questions and gain new insights into medicine and biology—all enabled by the power and simplicity of our tSMS technology. Expect us to continue to move rapidly as we drive commercial uptake. Expect to see more publications and more announcements of our collaborations to further validate our tSMS technology. Expect continued investments in R&D, sales and marketing, and intellectual property. Expect transparency regarding shipments and backlog.

We are confident that Helicos is capable of leading the next-generation sequencing market, even as others claim to do so. By directly sequencing single molecules of DNA, the Helicos Genetic Analysis System significantly increases the throughput of sequencing, while decreasing cost and simplifying or eliminating what one customer refers to as "complex sample-prep gymnastics."

Finally, I'd like to thank the 100+ dedicated men and women of Helicos who have overcome challenge after challenge to create a completely new way to make biological measurements—directly. We believe our team's breakthroughs will lead to tremendous benefits for the scientists who strive to better understand disease and to their ultimate beneficiaries, the public at large.

As we say at Helicos: "Copies are out. Originals are in. True direct DNA measurement is here."

Stanley N. Lapidus
Chairman and Chief Executive Officer

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, 2007

or

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

For the transition period from to

COMMISSION FILE NUMBER 001-33484

HELICOS BIOSCIENCES CORPORATION

(Exact name of registrant as specified in its charter)

DELAWARE (State or other jurisdiction of incorporation or organization)	**05-0587367** (I.R.S. Employer Identification No.)
One Kendall Square **Building 700** **Cambridge, Massachusetts** (Address of principal executive offices)	**02139** (Zip Code)

Registrant's telephone number, including area code: **(617) 264-1800**

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

Title of each class	Name of each exchange on which registered
Common Stock, $0.001 par value	The NASDAQ Global Market

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

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☐ No ☒

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☒

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 a large accelerated filer, an accelerated filer, a non-accelerated filer or smaller reporting company. See the definitions of "large accelerated filer, large accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act. (Check one):

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

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes ☐ No ☒

The aggregate market value of the registrant's Common Stock held beneficially or of record by stockholders who are not affiliates of the registrant, based upon the closing price of the Common Stock on February 29, 2008, as reported by the NASDAQ Global Market, was approximately $60,555,149. For the purposes hereof, "affiliates" include all executive officers and directors of the registrant.

As of February 29, 2008, the Company had 21,004,461 shares of Common Stock outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's Proxy Statement relating to the registrant's 2008 Annual Meeting of Stockholders, to be held on May 22, 2008, are incorporated by reference in Part III of this Annual Report on Form 10-K where indicated.

HELICOS BIOSCIENCES CORPORATION
FORM 10-K
FOR THE FISCAL YEAR ENDED DECEMBER 31, 2007

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PART I

ITEM 1. BUSINESS

OVERVIEW

Helicos BioSciences Corporation is a life sciences company focused on innovative genetic analysis technologies for the research, drug discovery and clinical diagnostics markets. Our products are based on our proprietary True Single Molecule Sequencing (tSMS)™ technology which enables rapid analysis of large quantities of genetic material by directly sequencing single molecules of DNA or single DNA copies of RNA. This approach differs from current methods of sequencing DNA because it analyzes individual molecules of DNA directly instead of analyzing a large number of copies of the molecule produced through complex sample preparation techniques. Our tSMS technology eliminates the need for costly, labor-intensive and time-consuming sample preparation techniques, such as amplification or cloning, which are required by other methods to produce a sufficient quantity of genetic material for analysis. By enabling direct sequencing of single DNA molecules, we believe that our tSMS technology represents a fundamental breakthrough in genetic analysis.

Most of the common diseases that account for significant morbidity and mortality, such as cancer, heart disease and diabetes, have complex genetic components, which researchers are seeking to understand fully through genetic analysis. In the last 20 to 30 years, scientists have developed a variety of genetic analysis methods, including DNA sequencing, gene expression analysis and genotyping. In 2006, sales of systems, supplies and reagents for performing these genetic analysis methods represented an approximately $5 billion market worldwide according to Strategic Directions International. Despite their broad use, most existing technologies have significant cost, accuracy and throughput limitations and lack the capacity for cost-effective and comprehensive genome-wide analysis on large numbers of samples. Knowledge of the human genome has grown dramatically since the first genome sequence was determined earlier this decade. Recent research suggests that a significant portion of what was once thought to be non-functional "junk DNA" is functionally active. To fully understand the biology of gene and genome regulation, we believe that researchers are contemplating experiments on an exponentially larger scale involving thousands of patients or thousands of compounds. Many scientists believe that these experiments would be enabled by a 10,000-fold decrease in the cost per base of reagents and supplies for DNA sequencing.

The 2007 calendar year represented an inflection point in both our knowledge of genome structure and function, and in the application of this knowledge to understanding the genetics of disease and of health. We have seen remarkable progress in the elucidation of the genetic factors of common disease. The international ENCODE research program revealed new insight into the complexity of the human genome through a detailed examination of approximately 1% of the human genome. In confirming the hypothesis that the genome is composed of many more functional units than thought plausible six years previously when the human genome was first sequenced, the scientific community also recognized that new analytical tools which allow unbiased views of the entire genome are required. Whole genome association studies which assess some one million common human genetic differences called single nucleotide polymorphisms, or SNPs, have shone light on regions of the genome associated with disease and health. These variations, valuable in their own right, do not begin to tell the whole story of human genetics. The sequencing of two human genomes, including both copies of their 26 chromosomes completed in 2007 revealed a much greater level of human genome variation (some 10 fold more) than expected. Lastly, consumer genetics companies were formed in 2007, offering people around the world access to portions of their common genome variation for the first time. This momentum continues with the announcement of the 1,000 Genomes Project in January 2008, an international consortium was formed to sequence 1,000 human genomes to create a database of human variation unprecedented in the history of science.

With all this activity in the marketplace, we believe that our tSMS technology will represent the first comprehensive and universal solution for single molecule genetic analysis and that its adoption can expand the market for genetic analysis while substantially lowering the cost of individual analyses. Our goal is to enable production-level genetic analysis on an unprecedented scale by providing scientists and clinicians with the ability to compare genes and genomes from thousands of individuals. If our tSMS-based products are successful, the information generated from using these products may lead to improved drug therapies, personalized medical treatments and more accurate diagnostics for cancer and other diseases.

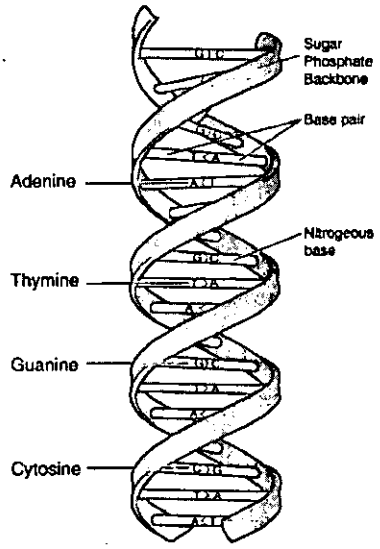
Our Helicos™ Genetic Analysis Platform is designed to obtain sequencing information by repetitively performing a cycle of biochemical reactions on individual DNA molecules and imaging the results after each cycle. The platform consists of an instrument called the HeliScope™ Single Molecule Sequencer, an image analysis computer tower called the HeliScope™ Analysis Engine, associated reagents, which are chemicals used in the sequencing process, and disposable supplies.

The imaging capability of the HeliScope Sequencer is designed to accommodate performance beyond what is needed to meet the platform's initial goals, providing the flexibility to introduce substantial throughput and cost improvements in the future without major changes to or replacement of the instrument. We believe that the Helicos Genetic Analysis Platform will ultimately enable the automated, parallel sequencing of billions of individual DNA molecules at orders of magnitude greater speed and lower cost than the current market-leading sequencing systems.

BACKGROUND ON DNA STRUCTURE AND FUNCTION

The genetic program that controls a living cell is encoded in its DNA. The diagram below shows the typical double-helix structure of DNA. The two strands are made of subunits called nucleotides, each of which contains a phosphate, a sugar and a side-chain called a base. The phosphates and sugars form the backbone of the polymer, and the bases face each other. The letters A, G, T and C represent the four types of nucleotide bases: adenine, guanine, thymine and cytosine.

The bases align with each other in a complementary structure held together by hydrogen bonds. A "T" on one strand always bonds with an "A" on the other strand, and a "G" on one strand always bonds with a "C" on the other strand. This bonding between DNA strands is called hybridization, and the resulting structure is called a base pair.



The genome of an organism is a complete DNA sequence of that organism. The human genome contains about three billion base pairs of DNA, which is represented twice in each cell. In a human, the individual acquires one version of the genome from the mother and one version from the father.

The human genome includes approximately 30,000 genes. Genes are segments of DNA that contain the information needed for a cell to make proteins. Each gene has one or more parts called coding regions that specify the sequence of amino acids for that protein. Genes also contain regulatory elements that determine when, where and how much protein is made. While it is currently understood that approximately 97% of the human genome does not code for proteins, recent research suggests that this non-coding DNA also contains important regulatory elements which plays an important role in controlling when and how much genes are expressed.

The process of making proteins using the information in DNA involves a process called gene expression. To express a gene, enzymes called RNA polymerases transcribe the coding region into molecules of messenger RNA, or mRNA. The mRNA moves from the nucleus into the cytoplasm, where the cell's protein synthesis machinery translates the genetic sequence information and assembles a chain of amino acids into a protein.

On June 26, 2000, scientists announced completion of the rough draft human genome sequence. This ten-year effort, known as the Human Genome Project, yielded many surprising discoveries. Among these was the realization that the human genome contains roughly the same number of genes, about 30,000, as other mammalian species. Moreover, the vast majority of genes and their sequences were found to be remarkably similar among different species. Much ongoing research involves understanding the subtle variations in genes and regulatory regions of the genome that make a human different from a mouse, and make individuals within a species different from each other.

Studying how genes and proteins differ between species and among individuals within a species helps scientists to determine their functions and their roles in health and disease. Inherited genetic variations among individuals contribute to differences in susceptibility to diseases and responses to drug treatments. Recent studies across the genomes of several individuals has begun to point to the fact that variation between any two individuals is significantly greater than anticipated, which opens the door for further understanding the spectrum of human diseases and differing responses to dietary, life style and environmental inputs in our daily lives.

Genetic mutations that arise in the body can lead to the development of cancer and other diseases. The current understanding of cancer suggests that a relatively few changes to key elements in genes or regulatory regions can lead to the wildly differing phenotypes which are the characteristic of cancers. A research goal of cancer biology is to be able to understand how cancers differ at the genomic level and to use this information to match the correct therapy to a specific kind cancer therefore increasing probability of successful treatment.

In addition, cells of the immune system have the means to rearrange their genes to better fight infection, but faulty operation of this system can lead to inflammatory and autoimmune diseases. Increased understanding of genetic variation is expected to yield improvements in the diagnosis, treatment and even prevention of many diseases.

INDUSTRY OVERVIEW

Genomic information has become a critical tool to understanding the mechanics of life, the environmental effect on biological systems, diagnosis of disease and the treatment of disease. Life science tools that analyze genomic material have provided tremendous insights into the complexity and variability of the genome and have changed the methods and strategies by which scientists conduct their research. Genomic information enables the possibility and promise of personalized medicine and should bring forth a new era in patient knowledge whereby individuals now can have access to their own genetic information to make informed decisions concerning the prevention and treatment of disease.

Genomic analysis market opportunity

Since the development of genetic engineering techniques in the 1970s, the analysis of genetic material has become a mainstay of biological research. The first automated DNA sequencer was invented in 1986, based on technology developed by Frederick Sanger and his colleagues in 1975, which is commonly referred to as Sanger sequencing. Subsequent versions of commercial DNA sequencers have increased the speed of DNA sequencing by 3,000 fold, making possible the Human Genome Project. In 1996 the first commercial microarray was introduced and enabled a new era of RNA analysis by measuring gene expression across many genes in a single experiment. Subsequent versions of the commercial microarrays including DNA and RNA have significantly increased the amount of information per run and provided selected SNPs of the whole human genome on a single chip, enabled large scale genome-wide SNP association studies and have been commercialized for several diagnostic applications. Today, manufacturers of systems, supplies and reagents for performing genetic analysis, which includes DNA sequencing, genotyping, and gene expression analysis, serve a worldwide market of approximately $5 billion, according to Strategic Directions International. Strategic Directions International estimates that DNA sequencing serves approximately 17% of this demand for genetic analysis. The remainder of this market is addressed by other genetic analysis methods, such as gene expression analysis and genotyping. Recent studies have demonstrated the complexity and variability of the human genome. This new information will necessitate larger scale studies, and require new methods and strategies that combine different application and data analysis techniques across these larger studies. Sanger methods of DNA and RNA sequencing and microarray based technologies will have limited utility in these new strategies based on their inherent technology limitations, throughput, cost and complexity of sample preparation. Therefore, high throughput technologies that provide complete sequence and quantitative information with simplified workflows and low cost per sample will be required.

The problem

To explore the next frontier of biomedical research, scientists must design comprehensive experiments on a larger scale than previously thought possible. Current methods of genetic analysis include DNA sequencing, gene expression analysis and genotyping. DNA and RNA sequencing provide the most comprehensive genome-wide information without any prior knowledge of the sequence or sequence variation; however, the limitations of Sanger sequencing technologies restrict their use in large-scale studies and as a replacement for multiple technologies. In particular, limitations of Sanger sequencing include:

- *Low throughput.* Scientists measure the throughput of a DNA sequencing technology based on the number of bases analyzed per unit of time. We believe the highest-throughput automated Sanger sequencers can produce up to 2.9 million bases of genomic sequence data per day, or approximately 120,000 bases per hour, based on their performance specifications. Accordingly, we estimate it would take a single Sanger sequencer nearly 50 years to sequence an entire individual human genome. This timeframe is impractical for population disease studies as well as for individualized patient analysis and diagnostics.
- *Lack of sensitivity.* Sanger sequencing instruments inherently lack the sensitivity to analyze single molecules and therefore require the use of amplification or cloning to make thousands to millions of copies of DNA to obtain sufficient genetic material for sequencing. A preferred method of amplification involves a biochemical process known as a polymerase chain reaction, or PCR. However, PCR introduces new errors in the analyzed genetic sequence in each round of the copying process, which may result in incorrect and possibly misleading results. In an important recent study of mutations in cancer cells published in the October 2006 edition of *Science*, PCR-related errors accounted for more than one-third of the putative candidate mutations. In addition, the use of amplification or cloning results in a population of molecules,

the sequences of which are averaged together, thus making it difficult to detect low-prevalence sequence variations in the starting sample.

- *High cost.* The cost of sample preparation and sequence analysis for a complete individual human genome using current Sanger sequencing methods is approximately $15 million according to the National Institutes of Health. The high cost of sequencing has restricted scientific research. For example, for almost twenty years the scientific community has understood that cancer is a disease arising from mutations of the tumor genome yet not a single complete cancer genome has been sequenced to date.
- *Complex and hard-to-use.* Sanger sequencing technologies require extensive, labor-intensive and time-consuming sample preparation processes. These sample preparation processes often involve costly additional capital equipment, reagents, supplies and physical space as well as experimental redundancy to account for human error or limitations in accuracy. Thus, the complexity of sample preparation creates workflow bottlenecks in applying Sanger sequencing to large numbers of samples.

In response to these limitations, recently introduced next generation sequencing technologies seek to improve the speed and reduce the per base cost of sequencing. However, these new technologies continue to be limited by their sensitivity to the need for amplification or cloning to obtain enough DNA or RNA from a sample for their instruments to adequately read the sequence. As with Sanger-based sequencing technologies, this requirement for amplification or cloning adds to the cost and complexity of these sequencing methods, limits the scalability of sample preparation and may limit the accuracy of the data they produce. Moreover, these next generation sequencing technologies appear to possess biases and are hampered by their lack of quantitative accuracy which may limit their applicability to the broader genetic analysis space.

In the past, the prohibitive cost of high-volume sequencing at the genome scale has caused scientists to use other genetic analysis technologies to examine discrete aspects of gene structure or function. For example, researchers use gene expression analysis to compare amounts of mRNA made from different genes, and genotyping to examine specific gene segments known to contain sequence variations, called single nucleotide polymorphisms, or SNPs. Technologies available for gene expression analysis and genotyping include:

- chip- or bead-based microarrays, in which collections of short DNA molecules are attached to the surface of a glass chip or to beads and used to determine the identity and abundance of particular DNA or RNA molecules in a sample; and
- real-time PCR, also called RT-PCR, which is the method of biochemically copying or amplifying the DNA in a sample through a process called PCR in which the identity and quantity of amplified DNA from the sample is measured as the analysis is performed.

While these other genetic analysis technologies address the cost limitations of DNA and RNA sequencing, they generally provide only limited information and suffer from a range of technical limitations, the most important of which is the high cost of replacement as new sequence information is

added and products are updated. The following table summarizes the advantages and disadvantages of the genomic analysis technologies described above:

Comparison of established genomic analysis technologies

Analysis	Description	Technology	Advantages	Disadvantages
Sequencing	Determination of the complete sequences of DNA or RNA molecules	Automated Sanger-based instruments	• Comprehensive sequence information • Industry standard technology	• High cost • Low throughput • Complex sample preparation
Next Generation Sequencing	Determination of the complete sequences of DNA and RNA molecules	Ensemble-on-bead based technologies	• Comprehensive sequence information • High throughput/lower cost per sequence • Seen as "upgrade" to Sanger sequencers	• Complex sample preparation • Limited scalability • High cost of sample preparation • Limited quantitation
Gene Expression Analysis	Detection and quantitation of RNA to determine gene expression levels	DNA arrays on chips or beads	• Can perform genome-wide analysis of expressed genes • Widely available	• Low sensitivity • Relative quantitation • Limited sequence information • Limited to known genomic sequences • Biased based on templates
		RT-PCR	• Absolute quantitation • Highest sensitivity	• Higher cost per gene than arrays • Labor intensive • Not scalable
Genotyping	Analysis of short specific sequences within genomic DNA to look for known variants	DNA arrays on chips or beads	• High throughput/low cost per genotype • Can be applied to large numbers of samples	• Provides only limited genomic information • Only interrogates known sequence variants
		RT-PCR	• Higher sensitivity than arrays	• Provides very limited genomic information • Higher cost per genotype than arrays • Biased based on templates

The scope and pace of much important research, and the routine application of genomic information in clinical medicine, remain limited by the cost and throughput of the currently available genomic analysis systems. Many scientists believe that a further 10,000-fold decrease in the cost per base of reagents and supplies for DNA sequencing using basic Sanger techniques would enable unprecedented research and large-scale clinical and other scientific studies. This goal is endorsed by the National Institutes of Health, whose National Human Genome Research Institute established the "Revolutionary Genome Sequencing Technologies—The $1,000 Genome," grant program to fund researchers' efforts to develop technology to enable the complete sequencing of an individual human genome at a cost of approximately $1,000. This goal is measured by the cost of the consumables used in the sequencing of the human genome and without regard to the cost of the sequencing instrument. In September 2006, we received a $2 million grant under this program to foster our technology development on the path to the $1,000 genome.

Scientists have long realized that many of the disadvantages of ensemble based sequencing could be addressed through the direct sequencing of single molecules. This ability to directly measure individual sequences would reduce the cost and complexity of large scale experiments while increasing sensitivity. The simplicity of the sample preparation and detection would also provide the capability to

combine multiple application techniques in order to get the most comprehensive view of each sample. For nearly 20 years, researchers have attempted without success to develop such a single molecule sequencing technology. Past efforts fell short largely due to complexity or technological hurdles in signal detection, surface materials, biochemistry, enzymology, bioinformatics, automation or engineering. In 2003, one of our co-founders, Stephen R. Quake, DPhil, demonstrated, we believe for the first time, that sequence information could be obtained from single molecules of DNA. We have replicated and improved upon Professor Quake's approach to develop our True Single Molecule Sequencing (tSMS)™ technology. We are not aware of any company that has successfully reported results from single molecule sequencing technology.

THE HELICOS SOLUTION

Our True Single Molecule Sequencing (tSMS)™ technology is a powerful new approach that directly measures single molecules and will enable the large-scale analysis of DNA and RNA. We believe our Helicos™ Genetic Analysis System, based on this technology, has the potential to deliver unprecedented performance compared to the current market-leading sequencing and microarray methods. This novel approach allows our system to directly measure billions of individual sequences in parallel and avoids the need for complex sample preparation techniques, amplification or cloning required by existing methods. Our products utilizing our tSMS technology will benefit from simple, scalable sample preparation techniques and automated high-throughput sequencing processes that will enable sequencing at significantly greater speed and lower cost than other methods. This technology will provide scientists and clinicians with extensive capabilities for basic and translational research, for pharmaceutical research and development, and for the development and clinical application of genomic diagnostics. We believe that our products based on our technology will ultimately make it practical to compare genes, genomes, and transcriptomes from thousands of individuals, thereby enabling revolutionary biomedical research. In turn, subsequent discoveries may lead to more accurate molecular diagnostics for cancer and other diseases, improved drug therapies and personalized medical treatments.

Our Helicos Genetic Analysis System is designed to provide the following advantages over current Sanger sequencing technologies:

- *Enhanced throughput.* Scientists measure the throughput of a DNA sequencing technology based on the number of bases analyzed per unit of time. Initially, we expect the HeliScope™ Single Molecule Sequencer to achieve throughput of approximately 25 to 90 million analyzable bases per hour, depending on the application. This compares to a throughput of approximately 120,000 bases per hour for Sanger sequencing technologies and approximately 21 million bases per hour for next-generation Sanger sequencers. In addition, we have designed the imaging capability of the HeliScope Sequencer to accommodate a maximum throughput approaching one billion bases per hour, which would represent a more than 40-fold improvement over the published specifications of current market-leading sequencing technologies. To achieve this additional increase in throughput, we will need to significantly improve the efficiency and accuracy of the system's sequencing reactions or the density of strands of DNA that bind to the surface of the flow cell in which the sequencing reactions take place and make corresponding enhancements to the image processing subsystem.
- *Increased sensitivity.* Our tSMS technology has the sensitivity to directly image and analyze single DNA and RNA molecules. Therefore, our HeliScope Sequencer will not require the sample preparation processes of existing sequencing technologies, which are costly, time-consuming and may introduce errors.
- *Simplicity.* Because the sample preparation process for genome sequencing using our HeliScope Sequencer involves only small quantities of reagents and a few simple steps, we believe that it will be less costly, less time-consuming, and less error prone than the sample preparation processes used in current technologies.

- *Lower cost.* According to published price quotes from research core laboratories and other sequencing providers, the price of sequencing using current market-leading sequencing methods is approximately $3 per thousand bases of sequencing data. We believe that the largest genome sequencing centers charge approximately $1 per thousand bases. In large scale studies, we expect that our initial Helicos System will enable users to generate sequencing information at a cost per thousand bases for reagents and supplies that is more than 100 fold lower. We are planning improvements, some of which are under way, that are designed to achieve a further per base cost reduction of approximately 100-fold without requiring major modifications to the instrument. These improvements relate to enhancing the performance of the system's reagents and disposable supplies and enhancing the image processing subsystem, increasing the number of DNA molecules that the HeliScope Sequencer can analyze per run and improving fluid handling to decrease reagent consumption.
- *Scalability.* The sample preparation process is highly scalable because it does not require the need for complex sample preparation techniques, amplification or cloning required by existing methods.

We believe that our Helicos System can be used as a universal method of genetic analysis potentially replacing existing methods of gene expression analysis and genotyping. Based on its anticipated performance, we believe that the initial version of our Helicos System will be able to perform applications of gene expression analysis at a comparable cost per sample, and in the case of high volume analyses, a significantly lower cost, in comparison with current technologies.

Our True Single Molecule Sequencing (tSMS)™ Technology

Our True Single Molecule Sequencing (tSMS)™ technology enables the simultaneous sequencing of large numbers of strands of single DNA molecules. The first step of our single molecule sequencing approach is to cut, or shear, a sample of DNA into relatively small fragments. The double helix of each fragment is then separated into its two complementary strands. Each strand is used as a template for synthesis of a new complementary strand. This is accomplished through a series of biochemical reactions in which each of the four bases are successively introduced. If the introduced base is complementary to the next base in the template, it will be added to the new strand. Each of the added bases is tagged with a fluorescent dye, which is illuminated, imaged and then removed. The sequence of each new DNA strand is determined by collating the images of the illuminated bases from each cycle of highly specific incorporation and imaging. The raw sequencing data is then analyzed by computer algorithms.

The series of figures below outlines an example of how our tSMS technology operates to sequence single molecules from genomic DNA. The actual process our HeliScope™ Single Molecule Sequencer will utilize to sequence DNA molecules will depend on the application.

Figure 1

To prepare the sample for sequencing, the genomic DNA is first cut into small pieces of about 100 bases. The enzyme called terminal transferase is then used to add a string of "A" nucleotides to one end of each strand. Then, a nucleotide labeled with a single fluorescent dye molecule is added to the end of the strand.

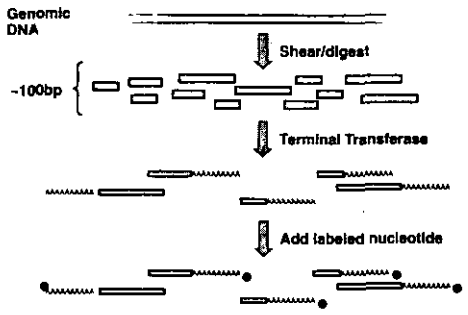


Figure 2

Inside the flow cell, short strands of "T" nucleotides, called primers, have already been attached to the surface.

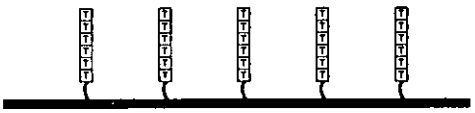


Figure 3

When the DNA sample is added, the strings of "As" on each DNA strand hybridize with the strands of "Ts" on the surface, anchoring the sample strands to be sequenced. The sample strands will act as a template and the strand of Ts as a "primer" for DNA synthesis. A laser subsystem illuminates the flow cell and the camera records the location of each captured sample strand. A mechanical stage moves the flow cell in sequential steps to allow the camera to image the entire active area of the flow cell. The dye molecules are then cleaved and washed away.

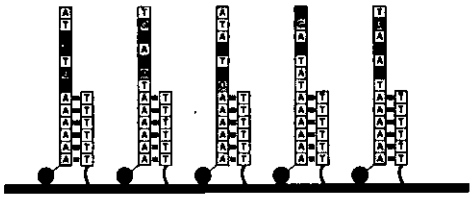


Figure 4

An enzyme called DNA polymerase and the first of the four types of our proprietary fluorescently labeled nucleotides are added. If the nucleotide is complementary to the next base in the template strand, the polymerase will add it to the primer strand. The nucleotides are designed to inhibit the polymerase from incorporating more than one base at a time on the same strand. Excess polymerase and unincorporated nucleotides are then washed away.

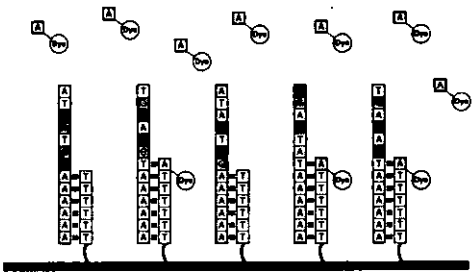


Figure 5

The laser subsystem illuminates the flow cell and the camera records the locations where fluorescently labeled nucleotides were added. The fluorescent dye molecules are then cleaved from the labeled nucleotides and washed away.

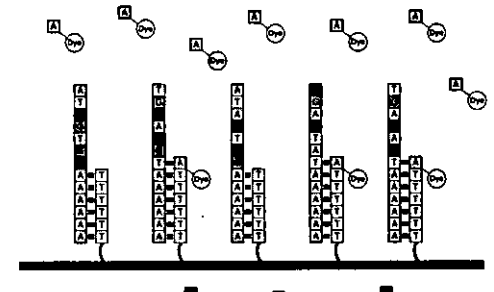


Figure 6

The process outlined in Figures 4 and 5 is repeated with each of the four types of labeled nucleotides. Repeating this cycle for a total of 120 times adds an average of more than 29 nucleotides to the primer strand. The number of bases added to a primer is the "read length."

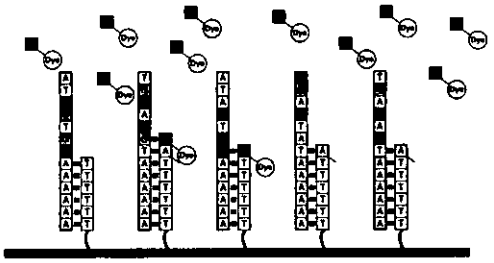
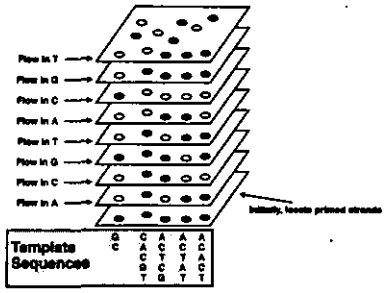


Figure 7

The system's computer analyzes the series of images from each cycle and determines the sequence of bases in the template strand. The sequence is "read" by correlating the position of a fluorescent molecule in its vertical track with the knowledge of which base was added at that cycle. Finally, the sequence data is exported to another computer system for further analysis depending on the application.



The Helicos™ Genetic Analysis Platform

The Helicos™ Genetic Analysis Platform consists of the following components:

- **Helicos™ Genetic Analysis System**—The instrument component of the Helicos Genetic Analysis Platform which consists of three major components:
  - *The HeliScope™ Single Molecule Sequencer* which performs the True Single Molecule Sequencing (tSMS)™ chemistry and directly analyzes images of single molecules, producing accurate sequences of billions of templates at a time. The HeliScope Sequencer consists of a high-speed mechanical stage and a laser illumination subsystem, an image acquisition subsystem, a fluid handling subsystem and computer subsystems that control and analyze the sequencing reactions. To operate the instrument, a user loads a prepared sample of DNA or complementary DNA (cDNA) onto our flow cell using the HeliScope™ Sample Loader, places the flow cell on the mechanical stage and inserts our consumable reagent pack into the fluid handling system. From that point onward, all sequencing reactions are conducted automatically by the instrument. After each base is added, the mechanical stage moves the flow cells under a microscope lens. Four lasers illuminate the fluorescent tags of the bases, and a camera images the flow cells through the microscope lens.
  - *HeliScope™ Analysis Engine* which provides computing power for near real-time image analysis and on-board data storage. The on-board data storage is appropriately sized to support two complete runs, enabling flexibility of operation and maximizing uptime. The Analysis Engine operates downstream from the HeliScope™ Sequencer in the data pipeline. It consists of the System Server, Object Finders, and an uninterruptible power supply (UPS). Components are mounted in a single enclosure for locating convenience and installation ease. Data communication between the HeliScope Sequencer and Analysis Engine is accomplished across Gigabit Ethernet (GigE) lines, providing high reliability and allowing for considerable physical distance between components.
  - *HeliScope™ Sample Loader* speeds the loading of samples into the Helicos™ flow cells. It provides 25 discreet loading ports to ensure proper separation of samples and ease of loading.

- **Helicos True Single Molecule Sequencing (tSMS)™ Kits.** Application specific reagent kits for sequencing which consists of proprietary formulations of a DNA polymerase enzyme, our proprietary fluorescently tagged bases, our proprietary imaging reagent, a proprietary formulation of a cleavage reagent and our proprietary application specific flow cells that have a proprietary surface coating with the chemical and optical properties needed for single molecule sequencing.

Consumable reagents. The biochemical sequencing reactions that occur in the HeliScope Sequencer involve the use of a proprietary formulation of a DNA polymerase enzyme, proprietary fluorescently tagged bases and proprietary imaging reagents. We have developed proprietary nucleotide triphosphates, called Virtual Terminator™ Nucleotides, that allow us to add only one base at a time to each DNA strand. Our proprietary imaging reagents improve the stability of our fluorescent tags and increase their brightness. Our cleavage reagents are used to remove the fluorescent tags from our proprietary bases.

Disposable supplies. The HeliScope™ Single Molecule Sequencer is designed to perform sequencing reactions inside two glass flow cells. The system alternates between the flow cells, performing sequencing reactions in one flow cell while recording images from the other. Each flow cell has an active area of about 16 square centimeters and contains 25 separate channels. Our flow cells are designed to allow researchers to sequence separate samples in each channel, which will enable the simultaneous sequencing of at least 50 different DNA samples. The initial version of our flow cell is designed to permit binding of DNA strands at an average density of approximately 100 million strands of DNA per square centimeter, equaling an average of approximately 2.8 billion strands of DNA for both flow cells.

Development Status

On February 8, 2008 we received our first order for the first Helicos™ Genetic Analysis System from Expression Analysis, of Durham, North Carolina, a market leader in genomic analysis services. Following completion of our internal verification and validation process on the system, we shipped the system to Expression Analysis on March 5, 2008. In anticipation of future orders and shipments, we have other Helicos Systems in various stages of completion on our manufacturing floor. In addition, we maintain a number of production prototypes which are being used to generate supporting data. These prototypes will also be used for help in performance refinement and assist in any sustaining engineering efforts that are required to support our instrument placements and commercialization efforts.

We will continue our development work on our True Single Molecule Sequencing (tSMS)™ chemistries and applications and generate genetic analysis data using a combination of Helicos Systems and our prototype instruments. Our focus will be on improving chemistry efficiency and performance as well as application specific reagents, consumables and protocols.

Early Market Focus

Our target market consists of approximately 300 institutions across pharmaceutical and biotechnology companies, the large academic health centers and the private research institutes and genome centers. Our 2008 goal is to focus on the 30 to 40 early adopters that form the beachhead of our commercial strategy. Our early marketing efforts focus on two categories of analysis: DNA sequencing of specific regions of the genome and gene expression analysis of known genes of interest.

For DNA sequencing, we expect the HeliScope™ Sequencer's initial sequencing reaction efficiency and accuracy will lead to an average throughput of approximately 25 million analyzable bases per hour. At this expected throughput, we intend to focus our marketing efforts on customers interested in sequencing specific regions of the genome on large numbers of samples. These customers are primarily involved in the conduct of disease association studies, cancer research and pharmaceutical development.

For gene expression, we expect the HeliScope Sequencer's initial sequencing reaction efficiency and accuracy will lead to an average throughput of 90 million analyzable bases per hour. At this throughput, we intend to focus our marketing efforts on customers interested in applying gene expression analysis to drug discovery and to the identification of prognostic indicators of disease.

APPLICATIONS

The Helicos™ Genetic Analysis System provides new opportunities for large scale genomic studies which encompass many areas of research, development and diagnostic use. The areas where we believe Helicos offers significant opportunity include:

- *Studying the Human Genome.* The ENCODE studies published in 2007 provided new insights into the complexity of the human genome. These initial studies, which examined only 1% of the genome architecture revealed a much more dynamic and complex genome state at every level including organization, sequence, expression and regulation. New approaches which allow a window into the genome allowing unbiased interrogation are clearly required to fully understand the genome. The need for new approaches was further validated in 2007 with the publication of two complete human genome sequences which demonstrated levels of human genome variation far exceeding initial expectations. The Helicos System provides the platform to allow such studies to proceed.
- *Disease association studies.* 2007 represented a landmark year in the search for genes involved in common disease. As we have known common diseases and conditions involve complex genetic factors and environmental interactions to produce the visible measurements or features of disease. In 2007, large scale genetic association studies including the Welcome Trust Case Control Consortium and the Genetic Association Information Network (GAIN) identified multiple genes and gene regions associated with diseases such as coronary artery disease, Type I and Type II diabetes, obesity, Crohn's Disease, rheumatoid arthritis, and bipolar disorder. Yet the common variants associated with these diseases only begin to scratch the surface of the underlying individual variation contributing to these associations. By sequencing the genomes or selected genes from many individuals with a given condition, it may be possible to identify the causative mutations underlying the disease. This research may lead to breakthroughs in disease diagnosis, prevention and treatment.
- *Cancer research.* Cancer genetics involves understanding the effects of the inherited genome as well as the tumor genome including acquired mutations and other genetic alterations. Diagnosing and treating cancer therefore requires a more comprehensive understanding of the individual patient tumor genome to better-predict responses to drug therapy. We believe the availability of low-cost genome sequencing on small samples or tumor cell biopsies to characterize acquired changes of the genome that contribute to cancer would enable improved diagnosis and treatment of cancer.
- *Pharmaceutical research and development.* Genomics touches every phase of the drug discovery and development process to varying degrees. This includes early target discovery, through candidate selection, clinical trial design and interpretation and ultimately into the marketplace with diagnostics linking genomic information with therapeutic intervention. In early discovery, single molecule sequencing could enable high-throughput screening in a cost-effective manner using large scale gene expression analysis, allowing the study of disease and target pathways to better identify promising drug leads. As lead matter is refined into preclinical candidates, expression profiling may allow a better understanding of compound toxicity and allow those candidates with minimal toxicity profiles to proceed to the clinic. The broad application of genomics in the later phase of drug development has been hampered by the lack of high throughput, cost effective methods to link patient variation with genomic information. In clinical

development, our technology could potentially be used to generate individual gene profiles that can provide valuable information on likely response to therapy, both efficacy and adverse events, and provide insight into genomic biomarkers that may provide signatures for patient screening and individualization of therapy.

- *Infectious disease.* All viruses, bacteria and fungi contain DNA or RNA. The detection and sequencing of DNA or RNA from pathogens at the single molecule level would provide medically and environmentally useful information for the diagnosis, treatment and monitoring of infections and to predict potential drug resistance. Such sequencing would not require the growth or purification of organisms that can be difficult to culture or work with.
- *Autoimmune conditions.* Autoimmune conditions, such as multiple sclerosis, Type I diabetes and lupus, have important genetic components which can be reflected at both the DNA and RNA level. Monitoring the underlying genetic background of patients as well as monitoring RNA expression changes associated with these diseases and corresponding treatment may enable better patient management.
- *Clinical diagnostics.* Patients who present with the same disease symptoms often have different prognoses and responses to drugs based on their underlying genetic differences. We believe that delivering patient-specific genetic and genomic information at a reasonable cost represents a multi-billion dollar potential market waiting to be fully realized. Commercial markets for molecular diagnostics include gene- or expression-based diagnostic kits and services, companion diagnostic products for selecting and monitoring particular therapies, as well as patient screening for early disease detection and disease monitoring. Creating more effective and targeted molecular diagnostics and screening tests requires a better understanding of genes, regulatory factors and other disease- or drug-related factors, which we believe our single molecule sequencing technology has the potential to enable.
- *Agriculture.* Agricultural research has increasingly turned to genomics for the discovery, development and design of genetically superior animals and crops. The agribusiness industry has been a large consumer of genetic technologies—particularly microarrays—to identify relevant genetic variations across varieties or populations which will be especially useful in species not well studied in the past. Our sequencing technology may provide a more powerful, direct and cost-effective approach to gene expression analysis and population studies for this industry.

OUR BUSINESS STRATEGY

Our goal is to become the leading global provider of high-throughput genetic analysis systems. To achieve this objective, our strategy is to:

- *Define the future of genetic analysis based on single molecule sequencing.* We believe the Helicos™ Genetic Analysis System will be the world's first system based on single molecule sequencing technology, and that its capabilities will enable much larger scale genetic analysis applications and fundamentally change the way in which genetic analysis is performed. We are demonstrating the benefits and advantages of single molecule sequencing through our science and commercial and marketing activities.
- *Penetrate the genetic analysis market through an initial set of key early adopter customers.* Our initial customer focus initially is on early adopters who routinely purchase cutting-edge technologies. Typical early adopters include genome sequencing centers focused on establishing the technology infrastructure for medical genetics studies, pharmaceutical companies conducting gene expression based drug discovery efforts—from primary screening of millions of compounds to detailed mechanism of action studies of preclinical candidates, and clinical research institutions.

- *Create a specialized sales, marketing and service force.* We continue to recruit and are training a specialized sales, marketing and service force focused on customers interested in large scale genetic analysis applications. Because the market for genetic analysis instruments is relatively concentrated at this time, we believe that we will be able to better access and support our customers through well-trained and experienced personnel under our direct control.
- *Generate a recurring revenue stream through the sale of proprietary reagents and disposable supplies.* We expect that each installed Helicos System will generate substantial ongoing revenue from the sale of proprietary reagents and disposable supplies. Our plan is to focus a portion of our sales force on maximizing sales of these products.
- *Continually enhance product performance to increase both market share and market size.* We intend to focus our research and development and engineering efforts on continually developing our Helicos™ Genetic Analysis System with the goal of enabling DNA sequencing equivalent to the full sequencing of an individual human genome at a price approaching $1,000 for reagents and disposable supplies. If we achieve this goal, we believe we will expand the market for genetic analysis tools and increase our market share.
- *Apply our True Single Molecule Sequencing (tSMS)™ technology to enable future molecular diagnostic applications.* We intend to devote some of our research effort to developing diagnostic applications of our tSMS technology. Although this is not our near term focus, we believe that a very large market opportunity awaits those who can deliver patient-specific genomic information to clinicians at an attractive price. Our commercialization strategy for this market may include collaborating with established clinical diagnostic companies.
- *Apply our tSMS technology in other key areas of biology.* We believe that our tSMS technology has applications beyond genetic analysis. Specifically, we expect that areas of biology, such as protein-protein interactions, single molecule protein identification, analyzing antibody-antigen binding, and performing single molecule protein sequencing assays, may be attractive fields for future application of our tSMS technology.

RESEARCH AND DEVELOPMENT

The wide variety of technical disciplines required for the development of a commercial single molecule sequencing system is represented within our research and development organization, which includes the following functional groups: research, methods development, chemical development, organic synthesis, engineering, sequencing development and scientific informatics. Our research and development staff includes PhD scientists and PhD engineers.

We have rapidly advanced the development of our True Single Molecule Sequencing (tSMS)™ technology since we began operations in 2003. In 2004, we began to produce sequence data from single molecules of DNA and in 2005, we sequenced genomic DNA from a small virus called M13 using our tSMS technology. Also in 2005, we began to design the Helicos™ Genetic Analysis System. In 2006, we received a $2 million grant from the National Human Genome Research Institute. Also in 2006, we completed the design of the critical components of the Helicos System. During 2007, we assembled two additional pre-production prototypes which are used for a variety of sub-system testing. In 2007, we substantially finished the assembly of five commercial grade Helicos Systems in advance of our first shipment of the Helicos System to our initial customer on March 5, 2008. Prior to shipment, our commercial grade systems are subject to extensive verification and validation testing with reagents and flow cells produced by our Operations group in order to validate the performance that will be achieved by the customer. A part of our engineering effort has gone into assisting our Operations group in establishing the documentation, test plans, and infrastructure required for scale-up of the manufacturing of additional Helicos Systems.

We will continue to invest in research and development to further improve the performance of our Helicos System beyond its performance characteristics at commercial launch. Our goal is to achieve a further reduction of DNA sequencing cost per base of approximately 100 fold without requiring major modifications to the HeliScope™ Single Molecule Sequencer. We describe below some of the ways in which we have improved the performance of the tSMS technology for use in the HeliScope Sequencer and ways in which we believe we can further improve performance on an ongoing basis.

- *Improved flow cell surface stability.* By optimizing the surface coating of the flow cell and the reagents used in the HeliScope Sequencer, we have increased the stability of DNA attachment to the flow cell surface. We are working on further increases in stability in order to increase the number of strands that remain present at the end of a run and thus the amount of sequence data produced.
- *Increased sequencing reaction efficiency and accuracy.* In the course of developing our proprietary sequencing process and reagents, we have significantly increased the efficiency with which new bases are added to a growing DNA strand and the accuracy with which they are detected. We are working to further increase efficiency and accuracy at each step of the sequencing process to continue to increase the number of DNA strands that are useful for genetic analysis.
- *Increased density of DNA strands.* We have successfully developed the flow cells in our HeliScope Sequencer to permit binding of DNA strands at an average density of approximately 100 million strands per square centimeter. We are performing additional development work in the area of surface chemistry in an effort to increase the number of DNA strands that can be anchored to the surface of the flow cells up to four hundred million per square centimeter.
- *Enhanced speed of image processing subsystem.* We have developed high speed image processing that enables analysis of the images produced by the HeliScope Sequencer. We continue to enhance the speed of the image processing subsystem in order to enable reduction in the server hardware included as a part of the cost of a Helicos System.

We believe that each of the above improvements, if successful, would increase the throughput of the HeliScope Sequencer and reduce the cost per base of sequencing. We are also planning other improvements, such as reducing reagent consumption, reducing image acquisition time, and enhancing the performance of the system's mechanical components, with the goal of further increasing throughput and reducing cost.

Recognizing the important role that genomic research will play in the future of our company, in 2007 we formed a new research group within the company to focus on forward thinking areas of genomic and measurement sciences. The research group will investigate new areas where single molecule sequencing offers potential advantage with respect to scale, sensitivity and specificity. Opportunities which represent important new potential products for our business will then be developed internally by Product Research and Development. This group will also be responsible for extending our research portfolio through establishing world class collaborations with external scientific leaders in the field of genomic and measurement sciences.

Our early research areas include:

- *Transcriptome analyses:* Digital gene expression provides a hypothesis free, global, and quantitative analysis of the entire transcriptome. Our research focuses on developing the single molecule sequencing method to allow the quantitative measurement of virtually all genes in a sample by counting the number of individual mRNA molecules produced from each gene. This allows one to examine all the genes present in a cell or tissue in a hypothesis independent manner with no bias as to those genes believed to be expressed. We believe the end result will be a highly sensitive and quantitative measurement which will allow not only for the detection of

highly expressed transcripts but also for the detection of very rare transcripts represented by only a few molecules of RNA per cell.

- *miRNA measurements:* microRNA (miRNA) represent important regulators of gene expression and are becoming increasingly important in disease studies, especially cancer. We are using single molecule sequencing to investigate the ability to quantitatively measure miRNAs from human samples as well as identify novel miRNAs which have been limited by previous requirements for amplification of miRNAs and limited depth of coverage.
- *Candidate region sequencing:* Currently the cost of sequencing an entire human genome remains too high to enable routine whole genome sequencing. New methods are currently under development to allow a simplified, highly multiplexed candidate region capture method to facilitate large-scale studies of genomic regions of interest.
- *Paired end reads:* A paired end read strategy is critical for single molecule sequencing to enable whole genome sequencing. Our research focuses on reading both ends of a DNA molecule of selected sizes to accurate recapitulate the structural context of the genome to be sequenced. Optimizing the size of inserts for our paired end strategy to allow both short fragments (250-500 base pairs) and longer fragments (1 to 10 kb) remains our focus.
- *Exploratory surface research:* Proprietary flow cell surfaces are a hallmark of our technology platform. We continue to innovate by conducting experimentation aimed at improved our surface densities as well as surface stability to allow diverse chemistry to occur within the flow cells.

In the years ended December 31, 2005, 2006, and 2007 we incurred $8.4 million, $14.4 million and $24.8 million respectively, of research and development expenses.

COLLABORATIONS

Our strategy is to establish the Helicos™ Genetic Analysis Platform as the platform of choice for analyzing large quantities of genetic information and to expand the applications of our technology. Accordingly, we have entered into and intend to enter into additional collaborative agreements to further this strategy. For example, in January 2008, we announced a collaboration with Dr. Ambros at the University of Massachusetts Medical School (UMMS) to apply the quantitative power of True Single Molecule Sequencing (tSMS)™ to develop a single assay to characterize known species of miRNA as well as discover new non-coding RNAs. Dr. Victor Ambros, an elected member of the National Academy of Sciences and a recent addition to the UMMS Program of Molecular Medicine, discovered the existence of miRNA's by finding the Lin-4, a miRNA found during a study of developmental timing in ringworms. Dr. Ambros continues his research on microRNA function and gene regulation during development, focusing on understanding the genetic and molecular mechanisms that control cell division, differentiation and morphogenesis in animals. Results from the collaboration were presented at the Advances in Genome Biology and Technology meeting, held in Marco Island in February 2008.

MANUFACTURING AND RAW MATERIALS

We have recruited and staffed a fully integrated operations group to enable the planning, procurement, production, quality control and distribution of our products. We manufacture our products using a combination of outsourced components and subassemblies. In addition to in-house production capability we utilize subcontractors for parts of the manufacturing process where we have determined it is in our best interest to do so. We have purchased and are in the process of qualifying and installing production tooling, scale-up equipment and automation equipment for the production of our products. We are focused on increasing our manufacturing process capability and capacity as needed to produce products in sufficient quantity to meet all of our business plan objectives.

Our manufacturing operations require a wide variety of raw materials, electronic and mechanical components, chemical and biochemical, and other supplies. Certain of these raw materials are currently available only from a single source or limited sources. Where this is the case, we take such steps as we deem appropriate to ensure that materials and components from these suppliers are not materially delayed or interrupted. We have deployed a fully integrated Enterprise Planning Requirements, or ERP, System to assist in the planning, procurement, and control of our manufacturing operations and those of our subcontractors.

MARKETING, SALES, SERVICE AND SUPPORT

The market for high-performance genetic analysis tools is relatively concentrated among large genome sequencing centers, major biotechnology and pharmaceutical companies and major academic medical centers and research institutions. To address this market, we have recruited an initial specialized sales, marketing and service force in the United States, Canada and Europe. In December 2007, we established a branch office in the United Kingdom and will develop the appropriate infrastructure to provide a high level of support to our European customers. In connection with our commercialization efforts, we intend to expand this commercial organization to add additional personnel in North America, Europe and parts of Asia. We believe that we will be able to better access the market for genetic analysis instruments and support our customers through well-trained and experienced personnel under our direct control.

OUR SCIENTIFIC ADVISORY BOARD

We have established a scientific advisory board consisting of individuals whom we have selected for their particular expertise in the fields of genomics, physics, molecular biology, chemistry and engineering. We anticipate that our scientific advisory board members will consult with us on matters relating to:

- our sales and marketing strategy;
- our research and development efforts;
- opportunities for strategic collaborations;
- new technologies relevant to our research and development efforts; and
- scientific and technical issues relevant to our business.

All of our advisors are employed by organizations other than us and may have commitments to or consulting or advisory agreements with other entities that may limit their availability to us. Our scientific advisory board currently consists of the following members:

SAB Member	Current Affiliations
Stephen R. Quake, DPhil ..... *Chairman of the Scientific Advisory Board*	Professor of Bioengineering at Stanford University and Investigator of the Howard Hughes Medical Institute
George Church, PhD	Professor of Genetics at Harvard Medical School
Steven Chu, PhD	Nobel Laureate in Physics (1997), Director of the Lawrence Berkeley National Laboratory and Professor of Physics and Professor of Molecular and Cellular Biology at the University of California, Berkeley

SAB Member	Current Affiliations
Donald M. Crothers, PhD	Sterling Professor Emeritus of Chemistry and Professor Emeritus of Molecular Biophysics and Biochemistry at Yale University
Leroy Hood, PhD	President and co-founder of the Institute for Systems Biology in Seattle, Washington
David R. Liu, PhD	Professor of Chemistry and Chemical Biology at Harvard University; Investigator of the Howard Hughes Medical Institute and Associate Member of the Broad Institute of MIT and Harvard
Eugene W. Myers, PhD	Group Leader at the Janelia Farm Research Campus of the Howard Hughes Medical Institute
Milan Mrksich, PhD	Professor of Chemistry at the University of Chicago and Investigator of the Howard Hughes Medical Institute
John Quackenbush, PhD	Faculty Member at the Dana-Farber Cancer Institute and Professor of Biostatistics and Computational Biology and Professor of Computational Biology and Bioinformatics at the Harvard School of Public Health
Floyd Romesberg, PhD	Associate Professor of Chemistry at The Scripps Research Institute in La Jolla, California
Jeffrey Trent, PhD	President and Scientific Director of the Translational Genomics Research Institute (TGen)
Victor E. Velculescu, MD, PhD	Assistant Professor of Oncology at The Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins

COMPETITION

Competition among entities developing or commercializing instruments, research tools or services for Genomic analysis is intense. A number of companies offer DNA sequencing equipment or consumables, including the Applied Biosystems division of Applera Corporation, Beckman Coulter, Inc., the Life Sciences Division of GE Healthcare, Illumina, Inc., Complete Genomics, Inc. and Roche Applied Science. Furthermore, a number of other companies and academic groups are in the process of developing novel techniques for DNA sequencing. These companies include, among others, Genizon BioSciences, Genovoxx, Intelligent Bio-Systems, LI-COR Biosciences, Lucigen, Microchip Biotechnologies, Pacific Biosciences, Perlegen Sciences, Shimadzu Biotech, VisiGen Biotechnologies and ZS Genetics. For RNA analysis and/or genotyping there are a number of companies that offer equipment and supplies including Affymetrix, Inc., Agilent Technologies, Applera Corporation, and Bio-Rad Laboratories. Three companies provide a wide range of products that span both DNA and RNA analysis—Applied Biosystems division of Applera Corporation, Affymetrix, Inc. and Illumina, Inc. However, the solutions that are provided are separate applications that require different sample preparation techniques, consumables, analysis software and instrumentation with limited correlation between platforms. In order to successfully compete against existing and future technologies, we will need to demonstrate to potential customers that the price and performance of our technologies and products and our customer support capabilities are superior to those of our competitors. In addition, we will have to demonstrate the scalability of the platform in both through its application versatility and simplicity of sample preparation.

Many of our competitors have substantially greater capital resources, research and product development capabilities and greater financial, scientific, manufacturing, marketing, and distribution experience and resources, including human resources, than we do. These competitors may develop or commercialize genetic analysis technologies before us or that are more effective than those we are developing. Moreover, our competitors may obtain patent protection or other intellectual property rights that could limit our rights to offer genetic analysis products or services.

INTELLECTUAL PROPERTY

Developing and maintaining a strong intellectual property position is an important element of our business strategy. We have developed an extensive patent strategy. Our patent portfolio relating to our proprietary technology is comprised, on a worldwide basis, of various patents and pending patent applications, which, in either case, we own directly or for which we are the exclusive or semi-exclusive licensee. A number of these patents and patent applications are foreign counterparts of U.S. patents or patent applications. Among other things, our patent estate includes patents and/or patent applications having claims directed to:

- the overall True Single Molecule Sequencing (tSMS)™ method;
- certain components of the Helicos™ Genetic Analysis Platform, including our laser illumination subassembly, our flow cells and various methods for using our HeliScope Sequencer;
- methods for focusing our lasers and imaging our flow cell surfaces, and our use of combinations of laser optical paths;
- our Virtual Terminator™ Nucleotides and other nucleotides;
- various aspects of our sample preparation processes;
- algorithms for analysis of our data; and
- reagent formulations for imaging and for sequencing.

Patent law relating to the scope of claims in the technology field in which we operate is still evolving. The degree to which we will be able to protect our technology with patents, therefore, is uncertain. Others may independently develop similar or alternative technologies, duplicate any of our technologies and, if patents are licensed or issued to us, design around the patented technologies licensed to or developed by us. In addition, we could incur substantial costs in litigation if we are required to defend ourselves in patent suits brought by third parties or if we initiate such suits.

We regard as proprietary any technology that we or our exclusive licensors have developed or discovered, including technologies disclosed in our patent estate, and that was not previously in the public domain. Aspects of our technology that we consider proprietary may be placed into the public domain by us or by our licensors, either through publication or as a result of the patent process. We may choose for strategic business reasons to make some of our proprietary technology publicly available whether or not it is protected by any patent or patent application.

With respect to proprietary know-how that is not patentable and for processes for which patents are difficult to obtain or enforce, we may rely on trade secret protection and/or confidentiality agreements to protect our interests. While we require all employees, consultants, collaborators, customers and licensees to enter into confidentiality agreements, we cannot be certain that proprietary information will not be disclosed or that others will not independently develop substantially equivalent proprietary information.

In addition to our patents, patent applications, confidential know-how, and potential trade secrets, we license technology that we consider to be material to our business.

Roche License Agreement. In June 2004, we entered into an agreement with Roche Diagnostics GmbH, or Roche, in which Roche granted us a worldwide, semi-exclusive royalty-bearing license, with the right to grant sublicenses under a patent relating to sequencing methods. In exchange for the rights licensed from Roche, we initially paid Roche an upfront license fee and are obligated to pay Roche certain additional annual minimum license fees. We have an option to convert our license to non-exclusive beginning in 2008, in which case our annual minimum license fees would be reduced. We are also required to pay royalties to Roche based on net product sales by us and our affiliates, against which we are entitled to credit our annual minimum license fee payments for the same year. We are also obligated to pay Roche a portion of specified sublicense income amounts that we receive based on sublicenses that we grant to third parties. Our royalty obligation, if any, under this agreement extends until the expiration of the last-to-expire of the licensed patents.

AZTE License Agreement. In March 2005, we entered into an agreement with Arizona Technology Enterprises, or AZTE, in which AZTE granted us a worldwide, exclusive, irrevocable, royalty-bearing license, with the right to grant sublicenses, under specified patents and patent applications exclusively licensed by AZTE from Arizona State University and the University of Alberta. Our license from AZTE grants us rights to patents and patent applications claiming technology for determining DNA or RNA nucleotide sequences. In exchange for the rights licensed from AZTE, we initially paid AZTE an upfront license fee, committed to an annual license fee, committed to pay a three-year maintenance fee, and issued 88,888 shares of restricted common stock, which vest in two equal installments upon the achievement of separate milestones relating to the successful issuance of patents. We are also required to pay royalties to AZTE based on net product sales by us and our affiliates, against which we are entitled to credit the annual license payments described above. We are obligated to pay AZTE a portion of specified sublicense income amounts that we receive based on sublicenses that we grant to third parties. Our royalty obligation, if any, under this agreement extends until the expiration of the last-to-expire of the licensed patents. We are obligated to use our reasonable commercial efforts to develop, manufacture and commercialize licensed products. In addition, if we fail to meet specified development and commercialization deadlines, our license converts from exclusive to non-exclusive.

Caltech License Agreement. In November 2003, we entered into an agreement with California Institute of Technology, or Caltech, in which Caltech granted us a worldwide, exclusive, royalty-bearing license, with the right to grant sublicenses, under specified patents and patent applications, and a worldwide, non-exclusive, royalty bearing license, with the right to grant sublicenses, under specified technology outside the scope of the licensed patents. Our license from Caltech grants us rights to patents, patent applications, and technology relating to sequencing methods. In March 2007, we amended the Caltech License Agreement to provide rights under an additional patent application under the terms of the existing license, but with an additional one-time payment. In exchange for the rights licensed from Caltech, we issued Caltech 46,514 shares of our common stock. We are also obligated to pay Caltech annual minimum royalty payments. We are also required to pay royalties to Caltech based on net product sales by us and our affiliates, which we are entitled to credit against our annual minimum royalty payments for such year. We are also obligated to pay Caltech a portion of specified license and sublicense income, proceeds from sales of specified intellectual property and specified service revenue amounts that we receive based on licenses and sublicenses that we grant, sales of intellectual property and services that we provide to third parties. Our royalty obligation with respect to any licensed product extends until the later of the expiration of the last-to-expire of the licensed patents covering the licensed product and three years after the first commercial sale of the licensed product in any country for non-patented technology covered under the agreement. We are obligated to use commercially reasonable efforts to commercialize licensed products.

PerkinElmer License Agreement. In April 2007, we entered into an agreement with PerkinElmer LAS, Inc., or PerkinElmer, in which PerkinElmer granted us a worldwide, non-exclusive, non-transferable, non-sublicensable, royalty bearing license under specified patents. Our license from

PerkinElmer grants us rights under certain patents to produce and commercialize certain of the reagents used in some applications on the Helicos™ Genetic Analysis System, which contain chemicals purchased by PerkinElmer, and further provides our customers with an implied license to use such reagents. In exchange for the rights licensed from PerkinElmer, we are obligated to pay PerkinElmer a portion of our net revenue from the sale of our reagents that contain chemicals covered by the patents licensed under the PerkinElmer agreement.

See Note 8 to the Consolidated Financial Statements contained in this Form 10-K for additional information on license agreements.

CORPORATE INFORMATION

We were incorporated in Delaware in May 2003. In 2003, one of our co-founders, Professor Stephen R. Quake, who was then at the California Institute of Technology, demonstrated, we believe for the first time, that sequence information could be obtained from a single strand of DNA. Shortly thereafter, Noubar Afeyan, Chief Executive Officer of Flagship Ventures, and Stanley Lapidus, then a Venture Partner at Flagship Ventures, met with Professor Quake and agreed to found a company to develop and commercialize technology based on Professor Quake's single molecule approach. Combining the experience of Professor Quake in single molecule methods, Dr. Afeyan in the sequencing technology and life sciences businesses, and Mr. Lapidus in diagnostics and entrepreneurship, we focused exclusively on the technical and commercial development of technology based on Professor Quake's approach. Professor Eric Lander, Director of the Broad Institute of MIT and Harvard, and a leader in the DNA sequencing field, provided helpful guidance and advice during our founding stages.

LEGAL PROCEEDINGS

We are not party to any material pending or threatened litigation.

FACILITIES

In conjunction with our ramp up of our manufacturing operations we have leased an additional 16,782 square feet in the current facility in Cambridge, Massachusetts. Our corporate, research and development and manufacturing functions are all located at the 53,782 square foot leased facility in Cambridge, Massachusetts. The lease for our Cambridge facility expires in 2009 with respect to the 27,000 square feet of our facility and in early 2010 with respect to the remaining 26,782 square feet. While we believe our current facilities are adequate to meet our needs for at least the next two years, we may need to lease additional space.

EMPLOYEES

We had 114 full time employees at December 31, 2007. We have never had a work stoppage and none of our employees are covered by collective bargaining agreements. We believe our employee relations are good. Our success depends in large part on our ability to attract and retain skilled and experienced employees.

AVAILABLE INFORMATION

Our annual reports on Form 10-K, quarterly reports on Form 10-Q, definitive proxy statements on Form 14A, current reports on Form 8-K, and any amendments to those reports are made available free of charge on our website, *www.helicosbio.com,* as soon as reasonably practicable after such reports are electronically filed with or furnished to the Securities and Exchange Commission (SEC). Statements of changes in beneficial ownership of our securities on Form 4 by our executive officers and directors are made available on our website by the end of the business day following the submission to the SEC of such filings. In addition, the SEC's website, *www.sec.gov,* contains reports, proxy statements, and other information regarding reports that we file electronically with the SEC.

Item 1A. RISK FACTORS

The following important factors could cause our actual business and financial results to differ materially from those contained in forward-looking statements made in this Annual Report on Form 10-K or elsewhere by management from time to time.

RISKS RELATED TO OUR BUSINESS

Although we have shipped one Helicos™ Genetic Analysis System to our first customer, we may not be able to successfully scale the manufacturing process necessary to build and test multiple Helicos Genetic Analysis Systems on a full commercial basis, in which event our business would be materially harmed.

To ship multiple Helicos Systems on a full production scale, we need to continue the testing and performance validation of the system. In order to sustain our commercial launch involving multiple shipments of the Helicos Systems, we need to take other steps to scale the manufacturing process of the system, including improvements to our manufacturing yields and cycle times, manufacturing documentation and quality assurance and quality control procedures. We also need to scale our manufacturing process of the proprietary reagents and disposable supplies that are part of the system. If we are unable to successfully complete these tasks, we may not be able to ship multiple Helicos Systems on a full production scale which would materially harm our business. In addition, although we believe that we have already incurred the substantial majority of the costs related to the development of the initial version of our Helicos System, if we experience unanticipated problems with our initial system placements, these costs could substantially increase, which would materially harm our business.

We have a history of operating losses, expect to continue to incur substantial losses, and might never achieve or maintain profitability.

We are a development-stage company with limited operating history. We have incurred significant losses in each fiscal year since our inception, including net losses of $10.9 million, $20.6 million and $54.9 million in the years ended December 31, 2005, 2006, and 2007, respectively. As of December 31, 2007, we had an accumulated deficit of $94.1 million. These losses have resulted principally from costs incurred in our research and development programs and from our general and administrative expenses. In 2006, we used cash in operating activities of $16.5 million and had capital expenditures totaling $2.8 million. In 2007, we used cash in operating activities of $32.8 million and had capital expenditures totaling $2.2 million. We expect our cash expenditures to increase significantly in the near term.

Accordingly, we will need to generate significant revenue to achieve profitability. Because our products will be subject to acceptance testing by our customers we do not expect to have any recognizable revenue from the sales of our instruments until at least the second half of 2008. As of March 17, 2008, we have shipped one Helicos System. Moreover, even after we begin selling our products on a commercial scale, we expect our losses to continue for at least the next two years as a result of ongoing research and development expenses, as well as increased manufacturing, sales and marketing expenses. These losses, among other things, have had and will continue to have an adverse effect on our working capital, total assets and stockholders' equity. Because of the numerous risks and uncertainties associated with our product development and commercialization efforts, we are unable to predict when we will become profitable, and we may never become profitable. Even if we do achieve profitability, we may not be able to sustain or increase profitability on a quarterly or annual basis. If we are unable to achieve and then maintain profitability, the market value of our common stock will decline.

If our technology fails to achieve and sustain sufficient market acceptance, we will not generate expected revenue.

Our success depends, in part, on our ability to develop products that displace current technology, as well as expand the market for genetic analysis to include new applications that are not practical with current technology. To accomplish this, we must develop and successfully commercialize our Helicos System for use in a variety of life science applications. In particular, while our early market focus is on DNA sequencing and gene expression applications, there can be no assurances that we will be successful at inducing potential customers to purchase our Helicos System. Furthermore, we cannot guarantee that the design of the Helicos System, including the initial specifications and any enhancements or improvements to those specifications, will be satisfactory to potential customers in the markets we seek to reach. These markets are new and emerging and there can be no assurances that they will develop as quickly as we expect or that they will reach their full potential. As a result, we may be required to refocus our marketing efforts from time to time and we may have to make changes to the specifications of our system to enhance our ability to more quickly enter particular markets. There is no guarantee, even if our technology is able to successfully reduce the cost and improve the performance of genetic analysis relative to existing products, that we will be able to induce customers with installed bases of conventional genetic analysis instruments to purchase our systems or to expand the market for genetic analysis to include new applications. Even if we are able to successfully implement our technology, we may fail to achieve or sustain market acceptance of our Helicos System by academic and government research laboratories and pharmaceutical, biotechnology and agriculture companies, among others, across the full range of our intended life science applications. Any such failure would materially harm our future sales and revenue. The price of the Helicos System is significantly greater than the instrument cost of current market-leading sequencers, which may adversely affect our ability to penetrate or grow the market for genetic analysis. In addition, if our products are only utilized as a replacement for existing DNA sequencing technology, we may face a much smaller market than we currently anticipate.

We are aware of other companies that have developed, or are developing, emerging sequencing technologies. Even if our product demonstrates dramatic cost and throughput improvements over current market-leading technologies, we may fail to achieve market acceptance due to adoption of those emerging technologies by our potential customers, thereby reducing our market opportunity.

We have limited experience in selling and marketing and, as a result, may be unable to successfully commercialize our Helicos Genetic Analysis System.

We have limited sales experience and limited marketing experience. Our ability to achieve profitability depends on attracting customers for our Helicos System. Although members of our sales and marketing team have considerable industry experience and have engaged in pre-launch marketing activities for our Helicos System, we must expand our sales, marketing, distribution and customer support capabilities with the appropriate technical expertise to effectively market our system. To successfully perform sales, marketing, distribution and customer support functions ourselves, we will face a number of risks, including:

- our ability to attract and retain the specialized sales, marketing and service force necessary to commercialize and gain market acceptance for our technology;
- the time and cost of establishing a specialized sales, marketing and service force for a particular application, which might not be justifiable by the revenues generated by our technology; and
- the ability of our specialized sales, marketing and service force to initiate and execute successful commercialization activities.

In addition to the recruitment of our specialized sales, marketing and service force, we may seek to enlist one or more third parties to assist with sales, distribution and customer support globally or in certain regions of the world. There is no guarantee, if we do seek to enter into such arrangements, that we will be successful in attracting desirable sales and distribution partners, or that we will be able to enter into such arrangements on favorable terms. If our sales and marketing efforts, or those of any third-party sales and distribution partners, are not successful, our technologies and products may not gain market acceptance, which could materially impact our business operations.

If we are unable to timely establish manufacturing capacity by ourselves or with partners, commercialization of our products would be delayed, which could result in lost revenues and harm our business.

To commercialize our Helicos™ Genetic Analysis System, we need to either build internal manufacturing capacity or contract with one or more manufacturing partners, or both. We currently intend to manufacture our products using a combination of internal manufacturing resources and outsourced components and subassemblies. We have recently begun to manufacture our instruments, reagents and disposable supplies on a commercial scale. We may encounter difficulties in manufacturing our products and, due to the complexity of our technology and our manufacturing process, we cannot be sure we fully understand all of the factors that affect our manufacturing processes or product performance. There is no assurance that we will be able to continue to build manufacturing capacity internally or find one or more suitable manufacturing partners, or both, to meet the volume and quality requirements necessary to be successful in the market. Manufacturing and product quality issues may arise as we increase production rates of our Helicos System and associated proprietary reagents and disposable supplies. If our products do not consistently meet our customers' performance expectations, we may be unable to generate sufficient revenues to become profitable. Any delay in establishing or inability to expand our manufacturing capacity 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.

Future product sales will depend, in part, on research and development spending levels of academic, clinical and governmental research institutions and pharmaceutical, biotechnology and agriculture companies, and any reduction in such spending levels could limit our ability to sell our product.

We expect that our revenues in the foreseeable future will be derived primarily from sales of instruments, reagents and disposable supplies to a relatively small number of academic, clinical, governmental and other research institutions and pharmaceutical, biotechnology and agriculture companies that conduct large-scale genetic analyses. Our success will depend upon their demand for and use of our products. Accordingly, the spending policies of these customers could have a significant effect on the demand for our technology. These policies are based on a wide variety of factors, including the resources available to make purchases, the spending priorities among various types of equipment, policies regarding spending during recessionary periods and changes in the political climate. In addition, academic, governmental and other research institutions that fund research and development activities may be subject to stringent budgetary constraints that could result in spending reductions, reduced allocations or budget cutbacks, which could jeopardize the ability of these customers to purchase our system. 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 instrument sales and similarly, reductions in operating expenditures by these customers could result in lower than expected sales of reagents and disposable supplies. 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 research institutions and companies;

- 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.

Any decrease in our customers' budgets or expenditures or in the size, scope or frequency of capital or operating expenditures as a result of the foregoing or other factors could materially adversely affect our operations or financial condition.

If the suppliers we rely on fail to supply the materials we use in the manufacturing of our products, we would be unable to satisfy product demand, which would negatively affect our business.

Some components used in the manufacturing of our Helicos™ Genetic Analysis System and certain raw materials used in the manufacturing of our reagents and disposable supplies are available from only a few suppliers. We acquire some of these components and raw materials on a purchase-order basis, which means that the supplier is not required to supply us with specified quantities of these components or raw materials over a certain period of time or to set aside part of its inventory for our anticipated requirements. If supplies from these vendors were delayed or interrupted for any reason, we may not be able to manufacture and sell our Helicos System and associated reagents and disposable supplies in a timely fashion or in sufficient quantities or under acceptable terms. Additionally, for certain of these components and raw materials, we currently purchase from sole-source suppliers and have not yet arranged for alternative suppliers. It might be difficult to find alternative suppliers in a timely manner and on terms acceptable to us. Consequently, as we begin our commercialization efforts, if we do not forecast properly, or if our suppliers are unable or unwilling to supply us in sufficient quantities or on commercially acceptable terms, we might not have access to sufficient quantities of these materials on a timely basis and might not be able to satisfy product demand. Moreover, if any of these components and raw materials becomes unavailable in the marketplace, we will be forced to further develop our technologies to incorporate alternate components or raw materials.

Our inability to continually enhance our product performance, including our planned improvements to the Helicos Genetic Analysis System, to keep pace with rapidly changing technology and customer requirements, would adversely affect our ability to compete effectively.

The success of any products utilizing our True Single Molecule Sequencing (tSMS)™ technology will depend on our ability to continue to increase the performance and decrease the price of sequencing using this technology. New technologies, techniques or products could emerge which might allow the analysis of genomic information with similar or better price-performance than our Helicos Genetic Analysis System and could exert pricing pressures on or take market share from our products. It is critical to our success for us to anticipate changes in technology and customer requirements and to successfully introduce new, enhanced and competitive technology to meet our customers' and prospective customers' needs on a timely basis. While we have planned substantial improvements to the Helicos System, including enhancing the performance of the system's reagents and disposable supplies and image processing subsystem and reducing the consumption of reagents, we may not be able to successfully implement these improvements. Even if we successfully implement some or all of these planned improvements, we could incur substantial development costs. We may not have adequate resources available to develop new technologies or be able to successfully introduce enhancements to our system. There can be no guarantee that we will be able to maintain technological advantages over emerging technologies in the future, and we will need to respond to technological innovation in a rapidly changing industry. If we fail to keep pace with emerging technologies, our system will become uncompetitive, our market share will decline and our business, revenue, financial condition and operating results could suffer materially.

We operate in a highly competitive industry and if we are not able to compete effectively, our business and operating results will likely be harmed.

Some of our current competitors, as well as many of our potential competitors, have greater name recognition, more substantial intellectual property portfolios, longer operating histories, significantly greater resources to invest in new technologies and more substantial experience in new product development, regulatory expertise, manufacturing capabilities and the distribution channels to deliver products to customers than we do. For example, companies such as Affymetrix, Inc., Agilent Technologies, the Applied Biosystems division of Applera Corporation, the Life Sciences Division of GE Healthcare, Illumina, Inc., and Roche Diagnostics have products for genetic analysis which compete in certain segments of the market in which we plan to sell our Helicos Genetic Analysis System. Pharmaceutical and biotechnology companies have significant needs for genomic information and may also choose to develop or acquire competing technologies to meet these needs. In addition, a number of other companies and academic groups are in the process of developing novel techniques for genetic analysis, many of which have also received grants from the National Human Genome Research Institute, a branch of the National Institutes of Health, for the development of technologies that can achieve substantially lower costs, referred to as a "$100,000 genome" or a "$1,000 genome." These competitors may be able to respond more quickly and effectively than we can to new or changing opportunities, technologies, standards or customer requirements. Further, in light of these advantages, even if our technology is more effective than the product or service offerings of our competitors, current or potential customers might accept competitive products and services in lieu of purchasing our technology. We may not be able to compete effectively against these organizations. Increased competition is likely to result in pricing pressures, which could harm our sales, profitability or market share. Our failure to compete effectively could materially adversely affect our business, financial condition or results of operations.

In addition, to the extent that, in the long term, we commercialize any products utilizing our tSMS technology for use in future life science applications, such as clinical diagnostic or protein analysis applications, we will face additional competition. In the event that we develop new technology and products that compete with existing technology and products of well established companies, the marketplace might not adopt our technology and products.

Failure to manage our rapid growth effectively would harm our business.

We will need to add a significant number of new personnel and expand our capabilities to successfully pursue our commercialization strategy for our Helicos Genetic Analysis System as well as our research and development efforts. To manage our anticipated future growth effectively, we must enhance our manufacturing capabilities and operations, information technology infrastructure, and financial and accounting systems and controls. For instance, certain aspects of our operations, such as our manufacturing capabilities, must be scaled up to increase the number of Helicos Systems we can manufacture per quarter. We also must attract, train and retain a significant number of qualified sales, marketing and service personnel, engineers, scientists and other technical personnel and management personnel. Our failure to manage our rapid growth effectively could have a material adverse effect on our business, operating results or financial condition. Organizational growth and scale-up of operations could strain our existing managerial, operational, financial and other resources. Our growth could require significant capital expenditures and may divert financial resources from other projects, such as the development of new products or enhancements. If our management is unable to effectively manage our growth, our expenses may increase more than expected, our revenue could grow more slowly than expected and we may not be able to achieve our research and development and commercialization goals.

Our business would be harmed if we are not successful in entering into large contracts for the sale and installation of our Helicos Genetic Analysis Systems.

Our business may depend upon securing and maintaining large contracts for the sale and installation of our Helicos Genetic Analysis Systems to a limited number of customers each year. We expect the sales cycle for these large contracts to be longer than for other contracts because we will need to educate potential customers regarding the benefits of our system to a variety of constituencies within such customer organizations. Moreover, even after a purchase decision is made, these contracts may be delayed by factors outside our control, including financial and budget constraints of the customers purchasing our product. Accordingly, we may expend substantial funds and management effort with no assurance that an agreement will be reached with a potential customer. Our business, results of operations and financial condition could be materially adversely affected if we are unable to obtain major contracts for the sale and installation of our Helicos Systems, or if we experience delays in the performance of such contracts.

We expect that our sales cycle will be lengthy and unpredictable, which will make it difficult for us to forecast revenue and increase the magnitude of quarterly fluctuations in our operating results.

Potential customers for our Helicos Genetic Analysis System typically commit significant resources to evaluate genetic analysis technologies. The complexity of our product will require us to spend substantial time and effort to assist potential customers in evaluating our Helicos System and in benchmarking it against available technologies. Because our Helicos System requires a significant investment of time and cost by our customers, we must target those senior managers within the customer's organization who are able to make these decisions on behalf of such organizations. We may face difficulty identifying and establishing contact with such decision makers. Even after initial acceptance, the negotiation and documentation processes can be lengthy. We expect our sales cycle to typically range between six and twelve months, but it may be longer. Any delay in completing sales in a particular quarter could cause our operating results to fall below expectations.

Our customers may purchase replacements for the reagents and disposable supplies that are a part of our Helicos Genetic Analysis System from third parties or discover a method that allows them to use less than the expected amounts of such products, which would materially and adversely affect our revenues.

The success of our business depends, in part, on the recurring sales of the proprietary reagents and disposable supplies for our system. Because we have not yet commercialized our Helicos Genetic Analysis System, we do not have the experience to predict the percentage of our revenues that we will derive from sales of proprietary reagents and disposable supplies. Nevertheless, we expect such sales to represent a material source of our future revenues. Our customers or competitors could potentially produce reagents and disposable supplies that are compatible with our Helicos System at a lower cost, which could exert pricing pressures on, or take market share from, our reagents and disposable supplies. Similarly, our customers or competitors may discover a method of utilizing smaller quantities of our proprietary reagents and disposable supplies while achieving satisfactory results, which could reduce the amount of reagents and supplies we are able to sell. In either case, there could be a material adverse effect on our revenues and harm to our business, financial condition and results of operations.

If we are unable to recruit and retain key executives and scientists, we may be unable to achieve our goals.

We are substantially dependent on the performance of our senior management and key scientific and technical personnel. We do not maintain employment contracts with any of our employees. The loss of the services of any member of our senior management or our scientific or technical staff may

significantly delay or prevent the development of our products and other business objectives by diverting management's attention to transition matters and identification of suitable replacements, if any, and could have a material adverse effect on our business, operating results and financial condition.

In addition, our product development and marketing efforts could be delayed or curtailed if we are unable to attract, train and retain highly skilled employees and scientific advisors, particularly our management team, senior scientists and engineers and sales, marketing and service personnel. To expand our research, product development and sales efforts we need additional people skilled in areas such as bioinformatics, manufacturing, sales, marketing and technical support. Because of the complex and technical nature of our system and the dynamic market in which we compete, any failure to attract and retain a sufficient number of qualified employees could materially harm our ability to develop and commercialize our technology. Competition for these people is intense. Further, our inability to attract, train and retain sales, marketing and service personnel could have a material adverse affect on our ability to generate sales or successfully commercialize our technology. Each of our executive officers and other key employees could terminate his or her relationship with us at any time. These persons' expertise would be difficult to replace and could have a material adverse effect on our ability to achieve our business goals. 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 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 technology.

One of the potential uses for our product is genetic testing for predisposition to certain conditions. Genetic testing has raised ethical, legal and social issues regarding privacy and the appropriate uses of the resulting information. Governmental authorities could, for social or other purposes, 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. These and other ethical, legal and social concerns about genetic testing may limit market acceptance of our technology for certain applications or reduce the potential markets for our technology, either of which could have a material adverse effect on our business, financial condition and results of operations.

Our products could in the future be subject to regulation by the U.S. Food and Drug Administration or other regulatory agencies, which could increase our costs and delay our commercialization efforts, thereby materially and adversely affecting our business and results of operations.

Our products are not currently subject to U.S. Food and Drug Administration ("FDA") clearance or approval if they are not used for the diagnosis or treatment of disease. However, in the future, certain of our products or related applications could be subject to FDA regulation; the FDA's regulatory jurisdiction could be expanded to include our products, or both. 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 regulation and restrictions may materially and adversely affect our business, financial condition and results of operations.

Laws and regulations are also in effect in many countries that could affect our products. 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.

Our products could have unknown defects or errors, which may give rise to claims against us or divert application of our resources from other purposes.

Any product utilizing our True Single Molecule Sequencing (tSMS)™ technology will be complex and may develop or contain undetected defects or errors. We cannot assure you that a material performance problem will not arise. Despite testing, defects or errors may arise in our system, which could result in a failure to achieve market acceptance or expansion, diversion of development resources, injury to our reputation and increased service and maintenance costs. Defects or errors in our products might also discourage customers from purchasing our system. The costs incurred in correcting any defects or errors may be substantial and could adversely affect our operating margins. In addition, such defects or errors could lead to the filing of product liability claims, which could be costly and time-consuming to defend and result in substantial damages. Although we plan to obtain product liability insurance prior to the commercial launch of our Helicos System, any future product liability insurance that we procure may not protect our assets from the financial impact of a product liability claim. Moreover, we may not be able to obtain adequate insurance coverage on acceptable terms. Any insurance that we do obtain will be subject to deductibles and coverage limits. A product liability claim could have a serious adverse effect on our business, financial condition and results of operations.

We will incur significant increased costs as a result of operating as a public company, and our management will be required to devote substantial time to new compliance initiatives.

We have limited history operating as a public company. As a public company, we will incur significant legal, accounting and other expenses that we did not incur as a private company. In addition, the Sarbanes-Oxley Act of 2002, as well as new rules subsequently implemented by the Securities and Exchange Commission and the NASDAQ Global Market, have imposed various new requirements on public companies, including requiring changes in corporate governance practices. Our management and other personnel will need to devote a substantial amount of time to these new compliance initiatives. Moreover, these rules and regulations will increase our legal and financial compliance costs and will make some activities more time-consuming and costly. For example, we expect these new rules and regulations to make it more difficult and more expensive for us to obtain director and officer liability insurance and we may be required to incur substantial costs to maintain the same or similar coverage.

In addition, the Sarbanes-Oxley Act requires, among other things, that we maintain effective internal control over financial reporting and disclosure controls and procedures. In particular, commencing in 2008, we must perform system and process evaluation and testing of our internal control over financial reporting to allow management and our independent registered public accounting firm to report on the effectiveness of our internal control over financial reporting, as required by Section 404 of the Sarbanes-Oxley Act. Our testing, or the subsequent testing by our independent registered public accounting firm, may reveal deficiencies in our internal control over financial reporting that are deemed to be material weaknesses. Our compliance with Section 404 will require that we incur substantial accounting expense and expend significant management time on compliance-related issues. We currently do not have an internal audit group and we will evaluate the need to hire additional accounting and financial staff with appropriate public company experience and technical accounting knowledge. Moreover, if we are not able to comply with the requirements of Section 404 in a timely manner, or if we or our independent registered public accounting firm identifies deficiencies in our internal control over financial reporting that are deemed to be material weaknesses, the market price of our stock could decline and we could be subject to sanctions or investigations by the NASDAQ Global Market, the Securities and Exchange Commission or other regulatory authorities, which would require additional financial and management resources.

We may need to raise additional funding, which may not be available on favorable terms, if at all, or without dilution to our stockholders. If we do not raise any necessary funds, we may need to cut back or terminate some or all aspects of our operations which would materially adversely affect our business prospects.

Because our Helicos System is complex and will be new to the market and involve significant capital expenditures by customers and a long sales cycle, it is very difficult to predict the actual rate of product sales. We may need additional financing to execute on our current or future business strategies. We expect capital outlays and operating expenditures to increase over the next several years as we expand our infrastructure, commercialization, manufacturing and research and development activities. The amount of additional capital we may need to raise depends on many factors, including:

- the level of research and development investment required to maintain and improve our technology position;
- the amount and growth rate of our revenues;
- changes in product development plans needed to address any difficulties in manufacturing or commercializing our Helicos System and enhancements to our system;
- the costs of filing, prosecuting, defending and enforcing patent claims and other intellectual property rights;
- competing technological and market developments;
- our need or decision to acquire or license complementary technologies or acquire complementary businesses; and
- changes in regulatory policies or laws that affect our operations.

We cannot be certain that additional capital will be available when and as needed or that our actual cash requirements will not be greater than anticipated. If we require additional capital at a time when investment in biotechnology or life sciences companies or in the marketplace in general is limited due to the then prevailing market or other conditions, we may not be able to raise such funds at the time that we desire or any time thereafter. In addition, if we raise additional funds through the issuance of equity or convertible debt securities, the percentage ownership of our stockholders could be significantly diluted, and these newly-issued securities may have rights, preferences or privileges senior to those of existing stockholders. If we obtain additional debt financing, a substantial portion of our operating cash flow may be dedicated to the payment of principal and interest on such indebtedness, and the terms of the debt securities issued could impose significant restrictions on our operations. If we raise additional funds through collaborations and licensing arrangements, we might be required to relinquish significant rights to our technologies or products, or grant licenses on terms that are not favorable to us. If we are unable to obtain financing on terms favorable to us, we may be unable to execute our business plan and we may be required to cease or reduce development or commercialization of our technology, sell some of all of our technology or assets or merge with another entity.

We use hazardous chemicals and biological materials in our business. Any claims relating to improper handling, storage or disposal of these materials could be time consuming and costly.

Our research and development processes involve the controlled use of hazardous materials, including chemicals and biological materials. Our operations produce hazardous waste products. We cannot eliminate the risk of accidental contamination or discharge and any resultant injury from these materials. We may be sued for any injury or contamination that results from our use or the use by third parties of these materials. We do not currently maintain separate environmental liability coverage. Federal, state and local laws and regulations govern the use, manufacture, storage, handling and disposal of hazardous materials. Compliance with environmental laws and regulations may be expensive,

and current or future environmental regulations may impair our research, development and production efforts.

Because we are subject to existing and potential additional governmental regulation, we may become subject to burdens on our operations, and the markets for our products may be narrowed.

We are subject, both directly and indirectly, to the adverse impact of existing and potential future government regulation of our operations and markets. For example, export of our instruments is subject to strict regulatory control in a number of jurisdictions. The failure to satisfy export control criteria or obtain necessary clearances could delay or prevent shipment of products, which could adversely affect our revenues and profitability. Moreover, the life sciences industry, which is the market for our technology, has historically been heavily regulated. There are, for example, laws in several jurisdictions restricting research in genetic engineering, which can operate to narrow our markets. Given the evolving nature of this industry, legislative bodies or regulatory authorities may adopt additional regulation that adversely affects our market opportunities. Additionally, if ethical and other concerns surrounding the use of genetic information, diagnostics or therapies become widespread, we may have less demand for our products. Our business is also directly affected by a wide variety of government regulations applicable to business enterprises generally and to companies operating in the life science industry in particular. Failure to comply with these regulations or obtain or maintain necessary permits and licenses could result in a variety of fines or other censures or an interruption in our business operations which may have a negative impact on our ability to generate revenues and could increase the cost of operating our business.

If we make acquisitions in the future, we may encounter a range of problems that could harm our business.

We may acquire technologies, products or companies that we feel could accelerate our ability to compete in our core markets. Acquisitions involve numerous risks, including:

- difficulties in integrating operations, technologies, accounting and personnel;
- difficulties in supporting and transitioning customers of our acquired companies;
- diversion of financial and management resources from existing operations;
- risks of entering new markets;
- potential loss of key employees; and
- inability to generate sufficient revenue to offset acquisition costs.

Acquisitions also frequently result in the recording of goodwill and other intangible assets which are subject to potential impairments in the future that could harm our financial results. In addition, if we finance acquisitions by issuing convertible debt or equity securities, our existing stockholders may be diluted, which could affect the market price of our stock. As a result, if we fail to properly evaluate acquisitions or investments, we may not achieve the anticipated benefits of any such acquisitions, and we may incur costs in excess of what we anticipate.

RISKS RELATED TO OUR INTELLECTUAL PROPERTY

Our failure to establish a strong intellectual property position and enforce our intellectual property rights against others would enable competitors to develop similar or alternative technologies.

Our success depends in part on our ability to obtain and maintain intellectual property protection for our products, processes and technologies. Our policy is to seek to protect our intellectual property

by, among other methods, filing U.S. patent applications related to our proprietary technology, inventions and improvements that are important to the development of our business.

Our patent portfolio relating to our proprietary technology is comprised of issued patents and pending patent applications which, in either case, we own directly or for which we are the exclusive or semi-exclusive licensee. Some of these patents and patent applications are foreign counterparts of U.S. patents or patent applications. We may not be able to maintain and enforce existing patents or obtain further patents for our products, processes and technologies. Even if we are able to maintain our existing patents or obtain further patents, these patents may not provide us with substantial protection or be commercially beneficial. The issuance of a patent is not conclusive as to its validity or enforceability, nor does it provide the patent holder with freedom to operate unimpeded by the patent rights of others. 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 patent applications that are similar in scope to ours, and in the future are likely to file patent applications that are similar or identical in scope to ours or those of our licensors. We cannot predict whether any of our competitors' pending patent applications will result in the issuance of valid patents. Moreover, we cannot assure investors that any such patent applications will not have priority or dominate over our patents or patent applications. The invalidation of key patents owned by or licensed to us or non-approval of pending patent applications could increase competition, and materially adversely affect our business, financial condition and results of operations. Furthermore, there can be no assurance that others will not independently develop similar or alternative technologies, duplicate any of our technologies, or, if patents are issued to us, design around the patented technologies developed by us.

We may be involved in lawsuits to protect or enforce our patents and proprietary rights and to determine the scope and validity of others' proprietary rights, which could result in substantial costs and diversion of resources.

Litigation may be necessary to enforce our patent and proprietary rights and/or to determine the scope and validity of others' proprietary rights. Litigation on these matters has been prevalent in our industry and we expect that this will continue. To determine the priority of inventions, we may have to initiate and participate in interference proceedings declared by the U.S. Patent and Trademark Office that could result in substantial costs in legal fees and could substantially affect the scope of our patent protection. Also, our intellectual property may be subject to significant administrative and litigation proceedings such as invalidity, opposition, reexamination, or reissue proceedings against our patents. The outcome of any litigation or administrative proceeding might not be favorable to us, and, in that case, we might require licenses from others that we may not be able to obtain. Even if such licenses are obtainable, they may not be available at a reasonable cost. We may also be held liable for money damages to third parties and could be enjoined from manufacturing or selling our products or technologies. In addition, if we resort to legal proceedings to enforce our intellectual property rights or to determine the validity and scope of the intellectual property or other proprietary rights of others, the proceedings could be burdensome and expensive, even if we were to prevail. Any litigation that may be necessary in the future could result in substantial costs and diversion of resources and could have a material adverse effect on our business, operating results or financial condition.

We depend upon our ability to license technologies, and the failure to license or otherwise acquire necessary technologies could harm our ability to commercialize our products or defend our intellectual property position.

We hold various licenses to use certain technologies that we consider to be material to our business. Each of these licenses imposes a range of obligations on us and may be terminated if we breach the terms of any of the respective agreements. We may also be required to enter into additional

licenses with third parties for other technologies that we consider to be necessary for our business. If we are unable to maintain our existing licenses or obtain additional technologies on acceptable terms, we could be required to develop alternative technologies, either alone or with others, in order to avoid infringing the intellectual property to which we no longer hold a license. This could require our product to be re-configured which could negatively impact its availability for commercial sale and increase our development costs. Failure to license or otherwise acquire necessary technologies would harm our ability to commercialize our products, which could materially adversely affect our business, financial condition and results of operations. In addition, any licenses we obtain from federally-funded institutions are subject to the march-in rights of the U.S. government.

We may be the subject of costly and time-consuming lawsuits brought by third parties for alleged infringement of their proprietary rights, which could limit our ability to use certain technologies in the future, force us to redesign or discontinue our products, or pay royalties to continue to sell our products.

Our success depends, in part, on us neither infringing patents or other proprietary rights of third parties nor breaching any licenses to which we are a party. We may be the subject of legal claims by third-parties that we infringe their patents or otherwise violate their intellectual property rights. In addition, the technology that we license from third parties for use in our system could become subject to similar infringement claims. Infringement claims asserted against us or our licensors may have a material adverse effect on our business, results of operations or financial condition. Any claims, either with or without merit, could be time-consuming and expensive to defend, and could divert our management's attention away from the execution of our business plan. Moreover, any settlement or adverse judgment resulting from the claim could require us to pay substantial amounts of money or obtain a license to continue to use the technology that is the subject of the claim, or otherwise restrict or prohibit our use of the technology. There can be no assurance that we would be able to obtain a license on commercially reasonable terms, if at all, from third parties asserting an infringement claim; that we would be able to develop alternative technology on a timely basis, if at all; or that we would be able to obtain a license to use a suitable alternative technology to permit us to continue offering, and our customers to continue using, our affected products. Accordingly, an adverse determination could prevent us from offering our instruments, reagents or disposable supplies to others. In addition, we may be required to indemnify our customers for third-party intellectual property infringement claims, which would increase the cost to us of an adverse ruling for such a claim. We believe that there may be significant litigation in the industry regarding patent and other intellectual property rights. If we become involved in such litigation, it could consume a substantial portion of our managerial and financial resources.

Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure during this type of litigation. In addition, during the course of this kind of litigation, there could be public announcements of the results of hearings, motions or other interim proceedings or developments. If securities analysts or investors perceive these results to be negative, it could have a substantial adverse effect on the price of our common stock.

The measures that we use to protect the security of our intellectual property and other proprietary rights may not be adequate, which could result in the loss of legal protection for, and thereby diminish the value of, such intellectual property and other rights.

Our success depends in part on our ability to protect our intellectual property and other proprietary rights. In addition to patent protection, we also rely upon a combination of trademark, trade secret, copyright and unfair competition laws, as well as license agreements and other contractual provisions, to protect our intellectual property and other proprietary rights. In addition, we attempt to

protect our intellectual property and proprietary information by requiring our employees, consultants and certain academic collaborators to enter into confidentiality and assignment of inventions agreements. There can be no assurance, however, that such measures will provide adequate protection for our patents, 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. To the extent that our intellectual property and other proprietary rights are not adequately protected, third parties might gain access to our proprietary information, develop and market genetic analysis systems similar to our tSMS technology, or use trademarks similar to ours, each of which could materially harm our business. Existing U.S. federal and state intellectual property laws offer only limited protection. Moreover, the laws of other countries in which we may market our technology may afford little or no effective protection of our intellectual property. The failure to adequately protect our intellectual property and other proprietary rights could materially harm our business.

RISKS RELATED TO OWNERSHIP OF OUR COMMON STOCK

Our directors and management will exercise significant control over our company, which will limit your ability to influence corporate matters.

Certain of our directors and executive officers and their affiliates collectively control approximately 72.9% of our outstanding common stock. As a result, these stockholders, if they act together, will be able to influence our management and affairs and all matters requiring stockholder approval, including the election of directors and approval of significant corporate transactions. This concentration of ownership may have the effect of delaying or preventing a change in control of our company and might negatively affect the market price of our common stock.

The market price of our common stock may be volatile, which could result in substantial losses for our stockholders and subject us to securities class action litigation.

Market prices of technology and healthcare companies have been particularly volatile. Some of the factors that may cause the market price of our common stock to fluctuate include:

- fluctuations in our quarterly operating results or the operating results of companies perceived to be similar to us;
- changes in estimates of our financial results or recommendations by securities analysts;
- failure of our technology to achieve or maintain market acceptance or commercial success;
- changes in market valuations of similar companies;
- success of competitive products and services;
- changes in our capital structure, such as future issuances of securities or the incurrence of additional debt;
- announcements by us or our competitors of significant products, contracts, acquisitions or strategic alliances;
- regulatory developments in the United States, foreign countries or both;
- litigation involving our company, our general industry or both;
- additions or departures of key personnel;

- investors' general perception of us; and
- changes in general economic, industry and market conditions.

In addition, if the market for biotechnology and life sciences stocks or the stock market in general experiences a loss of investor confidence, the trading price of our common stock could decline for reasons unrelated to our business, financial condition or results of operations. If any of the foregoing occurs, it could cause our stock price to fall and may expose us to class action lawsuits that, even if unsuccessful, could be costly to defend and a distraction to management.

If equity research analysts do not publish research reports about our business or if they issue unfavorable commentary or downgrade our common stock, the price of our common stock could decline.

The trading market for our common stock may rely in part on the research and reports that equity research analysts publish about us and our business. We do not control the opinions of these analysts. The price of our stock could decline if one or more equity analysts downgrade our stock or if those analysts issue other unfavorable commentary or cease publishing reports about us or our business.

A significant portion of our total outstanding shares may be sold into the public market in the near future, which could cause the market price of our common stock to drop significantly, even if our business is doing well.

If our existing stockholders sell substantial amounts of our common stock in the public market, the market price of our common stock could decrease significantly. The perception in the public market that our stockholders might sell shares of common stock could also depress the market price of our common stock. Although, substantially all of our stockholders prior to the initial public offering were subject to lock-up agreements with the underwriters that restricted their ability to transfer their stock for 180 days following our initial public offering, these lock-ups have expired on November 20, 2007. Accordingly, approximately 11 million shares of our common stock became eligible for sale in the public market. The market price of shares of our common stock may drop significantly upon resale of shares held prior to our initial public offering by our existing stockholders into the market. A decline in the price of shares of our common stock might impede our ability to raise capital through the issuance of additional shares of our common stock or other equity securities, and may cause you to lose part or all of your investment in our shares of common stock.

In addition, the holders of an aggregate of approximately of 13.5 million shares of our common stock, as of December 31, 2007, have rights, subject to some conditions, to require us to file registration statements covering their shares or to include their shares in registration statements that we may file for ourselves or other stockholders. We also have registered the issuance of all shares of common stock that we have issued and may issue under our employee option plans. Having registered the issuance of these shares, they can be freely sold in the public market upon issuance, subject to lock-up agreements. In addition, as of December 31, 2007, there were 277,777 shares of common stock reserved for future issuance as charitable contribution to the Broad Institute of MIT and Harvard that will become eligible for sale in the public market to the extent permitted by Rule 144 under the Securities Act of 1933, as amended.

Due to these factors, sales of a substantial number of shares of our common stock in the public market could occur at any time. These sales, or the perception in the market that the holders of a large number of shares intend to sell shares, could reduce the market price of our common stock.

Provisions in our certificate of incorporation and by-laws or Delaware law might discourage, delay or prevent a change of control of our company or changes in our management and, therefore, depress the trading price of our common stock.

Provisions of our certificate of incorporation and by-laws and Delaware law may discourage, delay or prevent a merger, acquisition or other change in control that stockholders may consider favorable, including transactions in which you might otherwise receive a premium for your shares of our common stock. These provisions may also prevent or frustrate attempts by our stockholders to replace or remove our management. These provisions include:

- a staggered board of directors;
- limitations on the removal of directors;
- advance notice requirements for stockholder proposals and nominations;
- the inability of stockholders to act by written consent or to call special meetings; and
- the ability of our board of directors to make, alter or repeal our by-laws.

The affirmative vote of the holders of at least 75% of our shares of capital stock entitled to vote is necessary to amend or repeal the above provisions of our certificate of incorporation. In addition, our board of directors has the ability to designate the terms of and issue new series of preferred stock without stockholder approval. Also, absent approval of our board of directors, our by-laws may only be amended or repealed by the affirmative vote of the holders of at least 75% of our shares of capital stock entitled to vote. Accordingly, given that our executive officers, directors and their affiliates collectively own approximately 72.9% of our outstanding common stock, certain of these persons acting together will have the ability to block any such amendment.

In addition, Section 203 of the Delaware General Corporation Law prohibits a publicly-held Delaware corporation from engaging in a business combination with an interested stockholder, generally a person which together with its affiliates owns, or within the last three years has owned, 15% of our voting stock, for a period of three years after the date of the transaction in which the person became an interested stockholder, unless the business combination is approved in a prescribed manner.

The existence of the foregoing provisions and anti-takeover measures could limit the price that investors might be willing to pay in the future for shares of our common stock. They could also deter potential acquirers of our company, thereby reducing the likelihood that you could receive a premium for your common stock in an acquisition.

We do not currently intend to pay dividends on our common stock and, consequently, your ability to achieve a return on your investment will depend on appreciation in the price of our common stock.

We have never declared or paid any cash dividends on our common stock and do not currently intend to do so for the foreseeable future. We currently intend to invest our future earnings, if any, to fund our growth. Therefore, you are not likely to receive any dividends on your common stock for the foreseeable future and the success of an investment in shares of our common stock will depend upon any future appreciation in its value. There is no guarantee that shares of our common stock will appreciate in value or even maintain the price at which our stockholders have purchased their shares.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

Our principal U.S. facilities that we lease consist of a global headquarters, research and development facility and manufacturing plant in Cambridge, Massachusetts, comprising 53,782 square feet.

For additional information regarding obligations under operating leases see Note 8 to the Consolidated Financial Statements contained in this Form 10-K.

ITEM 3. LEGAL PROCEEDINGS

We are not party to any material pending or threatened litigation.

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

None.

PART II

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

Market Information

Our common stock has traded publicly under the symbol "HLCS" since our initial public offering in May 2007 on the NASDAQ Global Market. The following table sets forth the range of quarterly high and low sales prices for our common stock.

	2007		2006	
	High	Low	High	Low
First quarter	NA	NA	NA	NA
Second quarter	$ 9.82	$8.01	NA	NA
Third quarter	$ 9.21	$7.45	NA	NA
Fourth quarter	$15.00	$8.28	NA	NA

Holders

As of February 29, 2008, there were approximately 69 holders of record of our common stock, one of which is Cede & Co., a nominee for Depository Trust Company ("DTC"). All of the shares of common stock held by brokerage firms, banks and other financial institutions as nominees for beneficial owners are deposited into participant accounts at DTC and therefore are considered to be held of record by Cede & Co. as one shareholder.

Dividends

We have never declared or paid any cash dividends on our capital stock and do not expect to pay any cash dividends for the foreseeable future. We intend to use future earnings, if any, in the operation and expansion of our business. Any future determination relating to our dividend policy will be made at the discretion of our board of directors, based on our financial condition, results of operations, contractual restrictions, capital requirements, business properties, restrictions imposed by applicable law and other factors our board of directors may deem relevant.

Issuer Purchases of Equity Securities

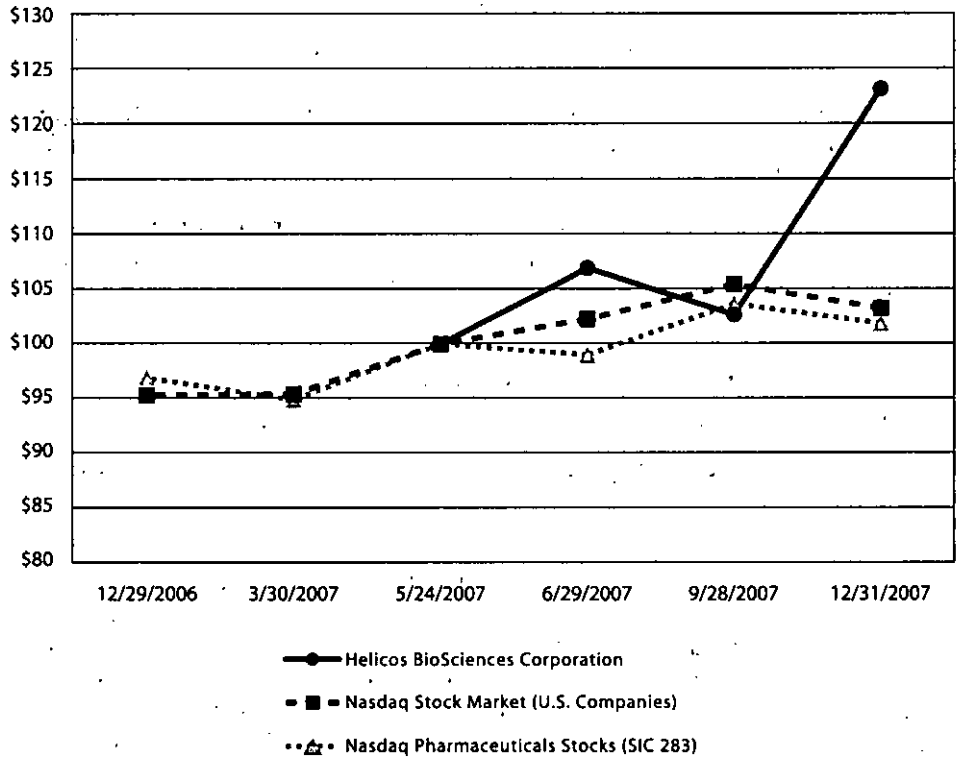
None.

STOCK PERFORMANCE GRAPH

The graph set forth below compares the cumulative total stockholder return on our common stock between May 24, 2007 (the date of our common stock began trading on NASDAQ) and December 31, 2007, compared to the CRSP Total Return Index for the Nasdaq Stock Market (U.S. companies) and the CRSP Total Return Index for the Nasdaq Pharmaceutical Stocks (SIC 283) over the same period. This graph assumes the investment of $100 on May 24, 2007 in our common stock and in each index and assumes the reinvestment of dividends, if any. The comparison in the graph below is based on historical data and is not necessarily indicative of future performance of the Company's common stock.

The performance graph and related information shall not be deemed filed with the Securities and Exchange Commission, nor shall such information be incorporated by reference into any filing under the Securities Act of 1933 or Securities Exchange Act of 1934, each as amended, whether made before or after this Form 10-K and irrespective of any incorporation language in such filings.

Comparison of Cumulative Total Returns



	12/29/2006	3/30/2007	5/24/2007	6/29/2007	9/28/2007	12/31/2007
Helicos BioSciences Corporation			100.0	107.0	102.7	123.3
Nasdaq Stock Market (U.S. Companies)	95.3	95.4	100.0	102.3	105.5	103.3
Nasdaq Pharmaceuticals Stocks (SIC 283)	96.9	94.9	100.0	99.0	103.7	101.9

Use of Proceeds from Initial Public Offering of Common Stock

On May 24, 2007, we completed our initial public offering of 5,400,000 shares of our common stock at a price to the public of $9.00 per share for an aggregate offering price of $48.6 million. We received aggregate net proceeds of approximately $43.9 million, after deducting underwriting discounts and commissions of $2.9 million, and $1.8 million of additional expenses, including legal, accounting and printing costs and various other fees associated with the registration and listing of our common stock. None of the underwriting discounts and commissions or offering expenses were incurred or paid, directly or indirectly, to directors or officers of ours or their associates or to persons owning 10% or more of our common stock or to any affiliates of ours. The offer and sale of all of the shares in the initial public offering were registered under the Securities Act of 1933, as amended, pursuant to a registration statement on Form S-1 (File No. 333-140973), which was declared effective by the Securities and Exchange Commission on May 24, 2007. UBS Investment Bank, JP Morgan, Leerink Swann & Company, and Pacific Growth Equities, LLC were the underwriters of the initial public offering. The offering commenced on May 24, 2007 and did not terminate until after the sale of all of the securities registered in the registration statement.

On June 27, 2007, we sold an additional 397,000 shares of our common stock at $9.00 per share pursuant to the over-allotment option granted to the underwriters of our initial public offering. The net proceeds after deducting underwriters' discounts and commissions related to the offering were approximately $3.3 million. UBS Securities, J.P. Morgan Securities, Inc., Leerink Swann & Co., Inc. and Pacific Growth Equities, LLC acted as representatives of the underwriters.

Of the $52.2 million of gross proceeds we received in our initial public offering, including the exercise of the over-allotment options, through December 31, 2007, we have spent approximately $3.2 million on underwriting discounts and commissions and approximately $1.8 million for payment of expenses related to our initial public offering. Additionally, we have spent $6.2 million on pre-production research and development expenses and $1.6 million on inventory. None of these expenses were incurred or paid, directly or indirectly, to directors or officers of ours or their associates or to persons owning 10% or more of our common stock or to any affiliates of ours.

The proceeds remaining after paying the costs noted above are invested in interest bearing bank accounts.

We expect to use the remaining proceeds from our initial public offering for general corporate purposes which include ongoing research and development activities, funding the additional recruitment of our specialized sales, marketing and services force and marketing initiatives and funding manufacturing expenses associated with the commercial version of our Helicos System. Our management has broad discretion as to the use of the net proceeds. We may use a portion of the net proceeds for the acquisition of, or investment in, technologies or products that complement our business. As required by the Securities Commission regulations, we will provide further detail on our use of the net proceeds from our initial public offering in future periodic reports.

ITEM 6. SELECTED FINANCIAL DATA

The information set forth below is not necessarily indicative of results of future operations and should be read in conjunction with Management's Discussion and Analysis of Financial Condition and Results of Operations and the consolidated financial statements and notes to those statements included in Items 7 and 8 of Part II of this Form 10-K, as well as Risk Factors included in Item 1A of Part I of this Form 10-K.

Consolidated statement of operations data:
(in thousands)

	Period from May 9, 2003 (date of inception) through December 31, 2003	Year Ended December 31, 2004	2005	2006	2007	Period from May 9, 2003 (date of inception) through December 31, 2007
Grant revenue	$ —	$ —	$ —	$ 159	$ 582	$ 741
Operating expenses						
Research and development	—	4,194	8,411	14,382	24,758	51,745
General and administrative	553	3,164	2,870	6,917	14,312	27,816
Total operating expenses	553	7,358	11,281	21,299	39,070	79,561
Operating loss	(553)	(7,358)	(11,281)	(21,140)	(38,488)	(78,820)
Interest income	6	294	363	766	1,960	3,389
Interest expense	—	—	—	(206)	(277)	(483)
Net loss	(547)	(7,064)	(10,918)	(20,580)	(36,805)	(75,914)
Beneficial conversion feature related to Series B redeemable convertible preferred stock	—	—	—	—	(18,140)	(18,140)
Net loss attributable to common stockholders	$ (547)	$ (7,064)	$(10,918)	$ (20,580)	$ (54,945)	$(94,054)
Net loss attributable to common stockholders per share—basic and diluted	$(25.20)	$ (15.48)	$ (12.62)	$ (16.35)	$ (4.23)	
Weighted average number of common shares used in computation—basic and diluted	21,707	456,256	865,355	1,258,438	12,989,889	

Balance sheet data:
(in thousands)

	As of December 31, 2003	2004	2005	2006	2007
Cash, cash equivalents and short-term investments	$26,522	$19,379	$ 8,566	$ 11,384	$ 52,683
Working capital	26,315	18,790	7,621	8,669	50,687
Total assets	26,533	20,235	9,665	15,300	59,209
Long-term debt, net of current portion	—	—	—	1,843	10,786
Redeemable convertible preferred stock warrants	—	—	—	204	—
Redeemable convertible preferred stock	26,819	26,869	26,869	46,761	—
Deficit accumulated during development stage	(547)	(7,611)	(18,529)	(39,109)	(94,054)
Total stockholders' equity (deficit)	(502)	(7,435)	(18,243)	(37,339)	43,439

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

The following "Management's Discussion and Analysis of Financial Condition and Results of Operations", as well as disclosures included elsewhere in this Form 10-K, include "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. This Act provides a safe harbor for forward-looking statements to encourage companies to provide prospective information about themselves so long as they identify these statements as forward-looking and provide meaningful cautionary statements identifying important factors that could cause actual results to differ from the projected results. All statements other than statements of historical fact we make in this Form 10-K are forward-looking. In particular, the statements herein regarding future sales and operating results; Company and industry growth and trends; growth of the markets in which the Company participates; international events; product performance; the generation, protection and acquisition of intellectual property, and litigation related to such intellectual property; new product introductions; development of new products, technologies and markets; the acquisition of or investment in other entities; the construction of new or refurbishment of existing facilities by the Company; and statements preceded by, followed by or that include the words "intends", "estimates", "plans", "believes", "expects", "anticipates", "should", "could" or similar expressions, are forward-looking statements. Forward-looking statements reflect our current expectations and are inherently uncertain. Our actual results may differ significantly from our expectations. We assume no obligation to update this forward-looking information. The section entitled "Risk Factors" describes some, but not all, of the factors that could cause these differences.

The following discussion and analysis should be read in conjunction with our historical financial statements and the notes to those financial statements which are included in Item 8 of Part II of this Form 10-K.

BUSINESS OVERVIEW

We are a life sciences company focused on innovative genetic analysis technologies for the research, drug discovery and clinical diagnostics markets. We have developed our True Single Molecule Sequencing (tSMS)™ technology to enable the rapid analysis of large quantities of genetic material by directly sequencing single molecules of DNA or single DNA copies of RNA. By enabling direct sequencing of single DNA molecules, we believe our technology represents a fundamental breakthrough in genetic analysis.

Our Helicos™ Genetic Analysis System is comprised of an instrument, its associated reagents and disposable supplies. We shipped our first Helicos System on March 5, 2008 following assembly and completion of our verification and validation process. As a result, we believe that we have incurred the substantial majority of the costs related to the development of the initial version of our Helicos System. In anticipation of future orders and shipments, we are assembling and are testing multiple production units of our Helicos System, and are purchasing the subassemblies and components for future systems. In addition, we are taking other steps to scale the commercial manufacturing process of the system, including improvements to our manufacturing documentation and quality assurance and quality control procedures. We also are manufacturing the proprietary reagents and disposable supplies that are part of the system.

Because of the dynamic nature of the market for genetic analysis instruments, we expect to expend significant amounts of research and development expense on an ongoing basis to improve the performance of our HeliScope™ Sequencer and tSMS technology. The goals of these performance improvements are to increase the throughput of the HeliScope Sequencer and to achieve a further approximate 100-fold reduction in the cost per base of sequencing. We also plan to explore other markets for the Helicos System in the longer term, such as diagnostics.

Although we shipped our first Helicos System on March 5, 2008 and plan to ship additional Helicos Systems during fiscal 2008, the initial shipments of this product will be subject to various customer evaluation periods with acceptance criteria, and we expect the customer evaluation period to extend beyond the fiscal quarters in which commercial units are shipped. We do not expect to recognize any revenue from product shipments until at least the second half of 2008 and future revenues from sales of proprietary reagents and disposable supplies will depend on the timing of system placements, customers' use of the system and our ability to maintain our proprietary position on the reagents and disposable supplies. Because we have limited experience in the commercialization of our Helicos System, we cannot predict the percentage of our revenues that we will derive from sales of proprietary reagents and disposable supplies. However, over time we would expect the sales of the reagents and disposable supplies to increase as our installed base of instruments grows and usage of these instruments increases.

We were incorporated in May 2003, and our activities to date have consisted primarily of conducting research and development. Accordingly, we are considered to be in the development stage at December 31, 2007, as defined by the Financial Accounting Standards Board ("FASB") in Statement of Financial Accounting Standards ("SFAS") No. 7, "Accounting and Reporting by Development Stage Enterprises." Our fiscal year ends on December 31, and we operate as one reportable segment.

We expect to continue to incur operating losses for at least the next two years, and are likely to need additional financing to support our activities. If required, we will seek to fund our operations through public or private equity or debt financings or other sources, such as collaborations. Adequate additional funding may not be available to us on acceptable terms, or at all. Our failure to raise capital as and when needed would have a negative impact on our financial condition and our ability to pursue business strategies. If adequate funds are not available to us, we may be required to delay, reduce or eliminate research and development programs, reduce or eliminate commercialization efforts, obtain funds through arrangements with collaborators or others on terms unfavorable to us or pursue merger or acquisition strategies.

In May 2007, we completed an initial public offering ("IPO") of our common stock in which we sold and issued 5.4 million shares of our common stock at an issue price of $9.00 per share. We raised a total of $48.6 million in gross proceeds from the IPO, or $43.9 million in net proceeds after deducting underwriting discounts and commissions of $2.9 million and other offering costs of $1.8 million. In June 2007, we sold an additional 397,000 shares of our common stock at $9.00 per share resulting in net proceeds of $3.3 million after deducting underwriting discounts and commissions of $250,000, pursuant to the over-allotment option granted by us to the underwriters of our IPO. Upon the closing of our IPO, all outstanding shares of our preferred stock were converted into common stock.

FINANCIAL OVERVIEW

Grant revenue

In September 2006, we were awarded a grant from the National Human Genome Research Institute, a branch of the National Institutes of Health, pursuant to which we are eligible to receive reimbursement of our research expenses of up to $2.0 million through August 2009. We recognized revenue during the year ended December 31, 2007 of $582,000, in connection with this award. We will continue to recognize revenue under this grant as the related expenses are incurred.

Research and development expenses

Research and development expenses consist of costs associated with scientific research activities, and engineering development efforts. Such costs primarily include salaries, benefits and stock-based

compensation; lab and engineering supplies; investment in equipment; consulting fees; and facility related costs, including rent and depreciation.

During 2007, we were focused on preparing for the launch of the initial version of the Helicos™ Genetic Analysis System. All research and development expenses since our inception have been in connection with this project and we believe that we have incurred the substantial majority of the development costs associated with the commercial launch of the first generation of the Helicos System prior to our first shipment on March 5, 2008. However, additional costs will be incurred to both maintain and enhance the initial version of the Helicos System in addition to development of new and different genetic analysis assays which will extend the capability of the initial version.

Research and development expenses for the years ended December 31, 2007 and 2006 were $24.8 million and $14.4 million, respectively. From 2006 to 2007, expenses increased as our research progressed and we built infrastructure and hired additional employees with the requisite expertise to execute the next steps in the development process.

In 2007, in addition to our ongoing research and development efforts, we have incurred start-up manufacturing costs related to the assembly, testing and performance validation of the Helicos System. These costs were accounted for as research and development expenses in our pre-commercialization phase as we prepared to ship the first Helicos System which occurred on March 5, 2008. We reached technological feasibility of the Helicos System in December 2007 and, as a result we began to record the cost of components for the Helicos System in inventory.

We believe that the Helicos System can potentially access a wide range of genetic analysis tests useful to the basic, pharmaceutical, and biomedical research and development markets. In addition, we have envisioned a series of performance enhancements to the chemistries and consumables used on the initial Helicos System which potentially serve to greatly enhance the sequencing throughput. Each of these research and development projects is dependent upon achieving technical objectives, which are inherently uncertain. As a result of these uncertainties, we are unable to predict to what extent we will receive additional cash inflows from the commercialization and sale of these future tests or from the future enhanced throughput. Our inability to complete these new research and development projects in a timely manner could significantly increase our capital requirements and could adversely impact our liquidity. These uncertainties could force us to seek additional, external sources of financing from time to time in order to continue with our strategy. Our inability to raise additional capital, or to do so on terms reasonably acceptable to us, would jeopardize the future success of our business.

General and administrative expenses

General and administrative expenses consist principally of salaries, benefits and stock-based compensation, consulting and professional fees, including patent related costs, general corporate costs and facility costs not otherwise included in research and development expenses.

General and administrative expenses for the years ended December 31, 2007 and 2006 were $14.3 million and $6.9 million, respectively. We expect that these expenses will continue to increase significantly in 2008 and beyond as we hire our specialized sales, marketing and service personnel and increase our finance and administrative staff to support the requirements of being a public company. We also anticipate that we will incur increased expenses for the costs associated with Sarbanes-Oxley compliance, continued ERP system enhancements, directors' and officers' insurance, investor relations programs and directors' fees.

RESULTS OF OPERATIONS

Year ended December 31, 2007 compared to year ended December 31, 2006

Grant revenue. We recognized $582,000 of grant revenue during the year ended December 31, 2007, and $159,000 of grant revenue during the year ended December 31, 2006. Grant revenue recognized during the years ended December 31, 2007 and 2006 related to the reimbursement of expenses in connection with our government research grant.

Research and development expenses. Research and development expenses during the years ended December 31, 2006 and 2007 were as follows:

	Year ended December 31,			
($ in thousands)	2006	2007	Change	
Research and development	$14,382	$24,758	$10,376	72%

Research and development expenses increased by $10.4 million from the year ended December 31, 2006 to the year ended December 31, 2007. The increase was primarily due to a $4.9 million increase in product development costs in support of pre-production activity, which included lab expenses, materials, supplies, temporary help and prototype expenses. Our salary and benefit expenses increased by $3.5 million and our stock-based compensation expense increased by $925,000 due primarily to the hiring of additional personnel to support the pre-production activity. Increased headcount and pre-production activity required additional space, raising occupancy costs by $856,000.

Prior to reaching technological feasibility, our start-up manufacturing costs, such as those relating to the assembly, testing and performance validation of the Helicos System, were expensed to research and development expense as the costs were incurred. When management determined that the Helicos System was ready for commercial launch in December 2007, we began capitalizing our manufacturing costs to inventory.

General and administrative expenses. General and administrative expenses during the years ended December 31, 2006 and 2007 were as follows:

	Year ended December 31,			
($ in thousands)	2006	2007	Change	
General and administrative	$6,917	$14,312	$7,395	107%

The increase in general and administrative expenses of $7.4 million from the year ended December 31, 2006 to the year ended December 31, 2007 was primarily due to an increase of $2.9 million related to becoming a public company, including legal expenses, investor relations expenses, accounting fees, dues and fees and consulting fees. In addition, our salary and benefit expenses increased by $1.7 million and our stock-based compensation expense increased by $1.2 million. These increases were primarily due to the hiring of additional personnel. The increase also included $289,000 related to initiating a marketing program and $174,000 for patent filings. We expect our general and administrative expenses to increase as we expand our sales and marketing functions, and incur additional administrative costs associated with the requirements of being a public company. We also anticipate that we will incur increased expenses for the costs associated with Sarbanes-Oxley compliance, continued ERP system enhancements, directors' and officers' insurance, investor relations programs and directors' fees.

Interest income. Interest income for the years ended December 31, 2006 and 2007 was as follows:

($ in thousands)	Year ended December 31, 2006	2007	Change	
Interest income	$766	$1,960	$1,194	156%

The increase in interest income from the year ended December 31, 2006 compared to the year ended December 31, 2007 was due primarily to higher cash and cash equivalents during the year ended December 31, 2007 in connection with the receipt of proceeds from the IPO.

Interest expense. Interest expense was $206,000 for the year ended December 31, 2006, compared to $277,000 during the year ended December 31, 2007, respectively. The interest expense was related to interest paid on a term loan under a line of credit facility and security agreement entered into in June 2006, and interest expense related to the Series B redeemable convertible preferred stock warrants that were issued in connection with the line of credit facility.

Year ended December 31, 2006 compared to year ended December 31, 2005

Grant revenue. We recognized $159,000 of grant revenue during the year ended December 31, 2006, and no revenue during the year ended December 31, 2005. Grant revenue recognized during the year ended December 31, 2006 related to the reimbursement of expenses in connection with our government research grant.

Research and development expenses. Research and development expenses during the years ended December 31, 2005 and 2006 were as follows:

($ in thousands)	Year ended December 31, 2005	2006	Change	
Research and development	$8,411	$14,382	$5,971	71%

The increase in research and development expenses from the year ended December 31, 2005 to the year ended December 31, 2006 was primarily due to a $3.3 million increase in salary and benefit expenses and a $87,000 increase in stock-based compensation expense, both of which are associated with increased headcount. Product development costs, which include lab expenses, materials, supplies and equipment depreciation expense, increased by $1.7 million in support of increased personnel. In addition, facility related expenses, consisting of additional rent, utilities and telephone costs, increased by $726,000 due to our relocation in July 2006.

General and administrative expenses. General and administrative expenses during the years ended December 31, 2005 and 2006 were as follows:

($ in thousands)	Year ended December 31, 2005	2006	Change	
General and administrative	$2,870	$6,917	$4,047	141%

The increase in general and administrative expenses from the year ended December 31, 2005 to the year ended December 31, 2006 was primarily due to an increase of $1.6 million in salary and benefit expense associated with the hiring of additional administrative staff, including our Senior Vice President of Marketing and Chief Financial Officer. Stock-based compensation expense increased by $1.1 million from $43,000 in 2005 to $1.2 million in 2006; and legal, accounting and consulting fees increased by $496,000; marketing related expenses increased by $266,000. The combination of increased

occupancy costs, travel and other employee-related expense accounts for the remaining increase of $505,000.

Interest income. Interest income for the years ended December 31, 2005 and 2006 was as follows:

($ in thousands)	Year ended December 31, 2005	2006	Change	
Interest income	$363	$766	$403	111%

The increase in interest income from the year ended December 31, 2005 to the year ended December 31, 2006 was due primarily to higher cash and cash equivalents during 2006 in connection with the receipt of proceeds of our Series B redeemable convertible preferred stock financing in March 2006 of $19.9 million, net of issuance costs.

Interest expense. Interest expense was $206,000 during the year ended December 31, 2006. We did not incur any interest expense in the year ended December 31, 2005. The interest expense during the year ended December 31, 2006 was related to interest paid on a term loan under a line of credit facility and security agreement entered into in June 2006, and interest expense related to the Series B redeemable convertible preferred stock warrants that were issued in connection with the line of credit facility.

LIQUIDITY AND CAPITAL RESOURCES

We have incurred losses since our inception in May 2003 and, as of December 31, 2007 we had an accumulated deficit of $94.1 million. We have financed our operations to date principally through the sale of preferred stock and common stock, including our IPO, debt financing and interest earned on investments. Through December 31, 2007, we have received net proceeds of $66.8 million from the issuance of preferred stock, $47.5 million through the issuance of common stock, including our IPO, $2.5 million in debt financing from a lender to finance equipment purchases, and $9.9 million in debt financing from a lender for working capital, capital expenditures and general corporate purposes. Working capital as of December 31, 2007 was $50.7 million, consisting of $55.4 million in current assets and $4.7 million in current liabilities. Working capital as of December 31, 2006 was $8.7 million, consisting of $12.0 million in current assets and $3.4 million in current liabilities. Our cash and cash equivalents are held in interest-bearing cash accounts. Cash in excess of immediate requirements is invested in accordance with our investment policy, primarily to achieve liquidity and capital preservation.

The following table summarizes our net increase in cash and cash equivalents for the years ended December 31, 2005, 2006, 2007 and for the period from May 9, 2003 (date of inception) through December 31, 2007:

($ in thousands)	Year ended December 31, 2005	2006	2007	Period from May 9, 2003 (date of inception) through December 31, 2007
Net cash provided by (used in):				
Operating activities	$(10,014)	$(16,532)	$(32,803)	$(66,085)
Investing activities	11,704	(3,998)	(1,388)	(7,053)
Financing activities	27	22,553	76,285	125,821
Net increase in cash and cash equivalents	$ 1,717	$ 2,023	$ 42,094	$ 52,683

Net cash used in operating activities. Net cash used in operating activities was $10.0 million for the year ended December 31, 2005 compared to $16.5 million for the year ended December 31, 2006. The $6.5 million increase was primarily due to an increase in the net loss of $9.7 million, partially offset by an increase in the changes of accounts payable, accrued expenses and other current liabilities of $1.4 million, an increase in non-cash stock-based compensation expense of $1.2 million, and an increase in non-cash depreciation and amortization expense of $471,000.

Net cash used in operating activities was $16.5 million for the year ended December 31, 2006 compared to $32.8 million for the year ended December 31, 2007. The $16.3 million increase was primarily due to an increase in the net loss of $16.2 million and an increase in inventory purchases of $1.6 million, partially offset by an increase in non-cash stock-based compensation expense of $2.1 million and an increase in non-cash depreciation and amortization expense of $635,000.

Net cash used in investing activities. Net cash provided by investing activities was $11.7 million for the year ended December 31, 2005, compared to net cash used in investing activities of $4.0 million for the year ended December 31, 2006. The $15.7 million decrease was primarily due to an $11.3 million decrease in cash provided by the maturities of short-term investments, a $2.0 million increase in the cash used in the purchases of short-term investments, a $1.9 million increase in cash used in the purchase of property and equipment and an increase in restricted cash of $450,000 used for a security deposit.

Net cash used in investing activities was $4.0 million for the year ended December 31, 2006 compared to $1.4 million for the year ended December 31, 2007. The $2.6 million decrease was primarily due to a $7.4 million decrease in the cash used in the purchases of short-term investments, a $570,000 decrease in purchases of property and equipment, and the increase in restricted cash of $450,000 during the year ended December 31, 2006, partially offset by a $5.8 million decrease in cash provided by maturities of short-term investments.

Net cash provided by financing activities. Net cash provided by financing activities was $27,000 and $22.6 million for the years ended December 31, 2005 and 2006, respectively. Net cash provided by financing activities during the year ended December 31, 2006 consisted primarily of $19.9 million provided by the net proceeds of the Series B redeemable convertible preferred stock financing in March 2006 and $2.5 million provided by the proceeds from long-term debt borrowings.

Net cash provided by financing activities was $22.6 million and $76.3 million for the years ended December 31, 2006 and 2007, respectively. The $53.7 million increase was primarily due to $49.0 million of cash proceeds from the initial public offering and a $7.5 million increase of cash proceeds from the issuance of debt, partially offset by a $1.7 million increase of IPO costs and a $685,000 increase of cash payments on debt.

Operating Capital and Capital Expenditure Requirements

To date, we have only shipped one Helicos™ Genetic Analysis System and have not achieved profitability. We anticipate that we will continue to incur substantial net losses for at least two years as we develop and prepare for the commercial launch of our HeliScope system and develop the corporate infrastructure required to manufacture and sell our products and operate as a publicly traded company.

We do not expect to generate product revenue until at least the second half of 2008. We believe that our existing cash, cash equivalents and investment balances, and interest income we earn on these balances will be sufficient into the first quarter of 2009. It is difficult to predict the actual rate of product sales as a result of the complex nature of the Helicos System and its expected long sales cycle. If our available cash balances are insufficient to satisfy our liquidity requirements, we may seek to sell additional equity or debt securities or enter into another credit facility. The sale of additional equity and debt securities may result in dilution to our stockholders. If we raise additional funds through the

issuance of debt securities, these securities would likely have rights senior to those of our common stock and could contain covenants that would restrict our operations. We may require additional capital beyond our currently anticipated amounts. Any such required additional capital may not be available on reasonable terms, if at all. If we are unable to obtain additional financing, we may be required to reduce the scope of, delay, or eliminate some or all of, our planned research, development and commercialization activities, which could materially harm our business.

Our forecast of the period of time through which our financial resources will be adequate to support our operations, the costs to complete development of products and the cost to commercialize our future products are forward-looking statements and involve risks and uncertainties, and actual results could vary materially and negatively as a result of a number of factors, including the factors discussed in the "Risk Factors" section of this report. We have based these estimates on assumptions that may prove to be wrong, and we could utilize our available capital resources sooner than we currently expect.

Because of the numerous risks and uncertainties associated with the development of our product, we are unable to estimate the exact amounts of capital outlays and operating expenditures necessary to complete the development of our future products and successfully deliver any such products to the market. Our future capital requirements will depend on many factors, including, but not limited to, the following:

- the rate of progress and cost of our commercialization activities;
- the success of our research and development efforts;
- the expenses we incur in marketing and selling our products;
- the revenue generated by future sales of our products;
- the timeliness of payments from our customers;
- the emergence of competing or complementary technological developments;
- the costs of filing, prosecuting, defending and enforcing any patent claims and other intellectual property rights;
- the terms and timing of any collaborative, licensing or other arrangements that we may establish; and
- the acquisition of businesses, products and technologies, although we currently have no commitments or agreements relating to any of these types of transactions.

Working capital as of December 31, 2007 was $50.7 million, consisting of $55.4 million in current assets and $4.7 million in current liabilities. Working capital as of December 31, 2006 was $8.7 million, consisting of $12.0 million in current assets and $3.4 million in current liabilities.

Contractual Obligations

The following table summarizes our outstanding obligations as of December 31, 2007 and the effect those obligations are expected to have on our liquidity and cash flows in future periods:

Contractual obligations	Total	Less than 1 year	1-3 years	3-5 years	More than 5 years
			($ in thousands)		
Operating leases	$ 2,944	$1,500	$ 1,444	$ —	$ —
Long-term debt (including interest)	14,424	1,943	11,620	861	—
License agreements(1)	1,787	183	332	332	940
Total	$19,155	$3,626	$13,396	$1,193	$940

(1) Consists of fixed payments that we believe we are reasonably likely to make under the license agreements with AZTE, Roche and Caltech over the lives of the underlying existing patents.

The table above does not include possible royalties payable under our license agreements. Our commitments for operating leases relate to the lease for our corporate headquarters in Cambridge, Massachusetts.

License agreements and patents

We have fixed annual costs associated with license agreements into which we have entered. In addition we may have to make contingent payments in the future upon realization of certain milestones or royalties payable under these agreements.

Line of credit facility and security agreement

In June 2006, we entered into a line of credit facility and security agreement with General Electric Capital Corporation ("GE Capital"). The credit facility provided that we may borrow up to $8.0 million at an interest rate based on the Federal Reserve's three year Treasury Constant Maturities Rate. The advance period ended on December 31, 2007. The proceeds of the credit facility may be used for the purchase of equipment and are collateralized by specific equipment assets. Payments are required to be made on a monthly basis. For the first six months interest-only payments were required. Thereafter, for the following 30 months, payments of principal and interest will be due for each advance. The outstanding balance is collateralized by the equipment purchased with the proceeds from each equipment advance. As of December 31, 2007, advances on the credit facility were $2.5 million at a weighted-average interest rate of 10.1%.

Loan and security agreement

In December 2007, we entered into a loan and security agreement with GE Capital. The loan agreement provides that we may borrow up to $20.0 million at an interest rate equal to the sum of (i) the greater of (A) an interest rate based on the Federal Reserve's three year Treasury Constant Maturities Rate or (B) 3.84% plus (ii) 6.11%. The initial term loan was made on the closing date in an aggregate principal amount equal to $10.0 million. We may request one additional term loan in an amount equal to $10.0 million no later than June 30, 2008. The credit facility contains both conditions precedent that must be satisfied prior to any borrowing and affirmative and negative covenants to which we and our subsidiaries must adhere. The proceeds of the loan agreement may be used for working capital, capital expenditures and general corporate purposes and are collateralized by essentially all of our assets. Payments are required to be made on a monthly basis. For the initial term loan, interest-only payments are required for the first twelve months. Thereafter, for the following 24 months, payments of principal and interest will be due. For any subsequent term loan, interest-only

payments will be required for the first nine months. Thereafter, for the following 27 months, payments of principal and interest will be due. As of December 31, 2007, advances on the loan agreement were $10.0 million at 9.95%.

OFF-BALANCE SHEET ARRANGEMENTS

We currently do not have any special purpose entities or off-balance sheet financing arrangements.

CRITICAL ACCOUNTING POLICIES AND ESTIMATES

Our management's discussion and analysis of our financial condition and results of operations is based upon our financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States. The preparation of these financial statements requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements as well as the reported expenses during the reporting periods. We evaluate our estimates and judgments on an ongoing basis. Actual results may differ materially from these estimates under different assumptions or conditions.

Stock-based compensation

Prior to January 1, 2006, we accounted for employee stock-based compensation arrangements in accordance with the provisions of Statement of Financial Accounting Standards No. 123 "Accounting for Stock-Based Compensation," or SFAS No. 123. Under the fair value recognition provisions of SFAS No. 123, stock-based compensation cost is measured at the grant date based on the fair value of the award and is recognized as expense over the vesting period.

Effective January 1, 2006, we adopted the fair value recognition provisions of SFAS No. 123(R), "Share-Based Payment," or SFAS No. 123(R), using the modified prospective transition method. Under the modified prospective transition method, compensation cost recognized in the year ended December 31, 2006 included: (a) the pro rata compensation cost for all share-based compensation granted prior to, but not yet vested as of December 31, 2005, based on the grant-date fair value estimated in accordance with the original provisions of SFAS No. 123, and (b) the pro rata compensation cost for all share-based payments granted on or subsequent to January 1, 2006, based on the grant-date fair value estimated in accordance with the provisions of SFAS No. 123(R). In accordance with the modified prospective transition method of SFAS No. 123(R), results for prior periods have not been restated, and the impact of adopting SFAS No. 123(R) was not material to the net loss or cash flows. For all grants, the amount of share-based compensation expense recognized has been adjusted for estimated forfeitures of awards for which the requisite service was not expected to be provided. Estimated forfeiture rates are developed based on our analysis of historical forfeiture data. Prior to the adoption of the fair value recognition provisions of SFAS No. 123(R), share-based payment expense was adjusted for actual forfeitures as they occurred. The cumulative effect of the change in accounting for forfeitures was immaterial.

We account for stock-based compensation issued to non-employees in accordance with SFAS 123(R) and EITF No. 96-18, "Accounting for Equity Instruments that are Issued to Other Than Employees for Acquiring, or in Conjunction with, Selling Goods or Services." We record the expense of such services based on the estimated fair value of the equity instrument using the Black-Scholes option pricing model. The value of the equity instrument is charged to earnings over the term of the service agreement.

For stock-based compensation awards granted to both employees and non-employees, we use the fair value method of calculating stock-based compensation in accordance with SFAS No. 123 for awards prior to January 1, 2006 and SFAS No. 123(R) for awards after December 31, 2005. Calculating the fair

value of stock-based awards requires the input of highly subjective assumptions. We use the Black-Scholes option pricing model to value our stock option awards. Stock-based compensation expense is significant to our financial statements and is calculated using our best estimates which involve inherent uncertainties and the application of management's judgment. Significant estimates include the expected life of the stock option, stock price volatility, risk-free interest rate and forfeiture rates.

The expected life represents the weighted-average period that our stock options are expected to be outstanding. The expected life assumption is based on the expected life assumptions of similar entities. As we have been operating as a public company for a short period of time, it is not possible to use actual price volatility data. Therefore, we estimated the volatility of our common stock based on the historical volatility of entities in our industry that have been public for a period of time that approximates our expected life of our stock options and that are comparable to us in terms of market capitalization and financial position. Using an expected volatility based on the average historical volatility of other entities may result in variability when compared to actual historical volatility of our common stock since our May 2007 IPO. We base the risk-free interest rate that we use in the option pricing model on U.S. Treasury zero-coupon issues with terms equal to the expected lives of the stock options. We have never and do not anticipate paying any cash dividends in the foreseeable future and therefore use an expected dividend yield of zero in the option pricing model. In order to properly attribute compensation expense, we are required to estimate pre-vesting forfeitures at the time of grant and revise those estimates in subsequent periods if actual forfeitures differ from those estimates. We use historical data to estimate pre-vesting forfeitures and record stock-based compensation expense only for those awards that are expected to vest. If the actual forfeiture rate is materially different from the estimate, stock-based compensation expense could be significantly different from what has been recorded. For stock options granted to employees, we allocate expense on a straight-line basis over the requisite service period. For stock options granted to nonemployees, we allocate expense using an accelerated recognition method as prescribed in FIN 28 "Accounting for Stock Appreciation Rights and Other Variable Stock Option or Award Plans—an Interpretation of APB Opinion No. 15 and 25."

There are significant differences among option valuation models, and this may result in a lack of comparability with other companies that use different models, methods and assumptions. If factors change and we employ different assumptions in the application of SFAS No. 123(R) in future periods, or if we decide to use a different valuation model, the stock-based compensation expense that we record in the future under SFAS No. 123(R) may differ significantly from what we have recorded and could materially affect our operating results.

In the absence of a public trading market for our common stock prior to our May 2007 IPO, our board of directors determined the fair market value of our common stock in good faith based upon consideration of a number of relevant factors including:

- our stock option grants involved illiquid securities in a private company;
- prices of our Series A and Series B redeemable convertible preferred stock issued primarily to outside investors in arms-length transactions, and the rights, preferences and privileges of our preferred stock relative to those of our common stock;
- our results of operations, financial status and the status of our research and product development efforts;
- our stage of development and business strategy;
- the composition of and changes to our management team; and
- the likelihood of achieving a liquidity event for the shares of our common stock underlying stock options, such as an initial public offering of our common stock or our sale to a third-party, given prevailing market conditions.

We retrospectively analyzed the fair value of our common stock at option grant dates from January 1, 2006 to December 31, 2006. As part of our retrospective analysis, we considered the status and progress of a number of company-specific business and financial conditions and milestones during 2006, including our results of operations, research and development activities, product and operational milestones, the lack of liquidity in our common stock, the increasing likelihood we would pursue an initial public offering, preliminary pricing indications in connection with this offering and industry trends in the market for life sciences issuers. In accordance with the fair market value concepts within the AICPA's Practice Aid titled "Valuation of Privately-Held Company Equity Securities Issued as Compensation," we also considered arms-length cash transactions with unrelated parties for issuances of our equity securities as an indicator of an observable market price, namely, the established per share fair market value of our Series B preferred stock issuances of $1.29 per share in March 2006, and considered the rights, preferences and conversion ratio of our preferred stock in relation to our common stock. In addition, we considered the results of a contemporaneous valuation of our common stock on January 19, 2007 and two retrospective valuations of our common stock dated March 31, 2006 and October 31, 2006. During 2006, we did not perform a contemporaneous valuation because prior to November 2006, we deemed it unlikely that an initial public offering would occur in the near term. In January 2007, we subsequently deemed it appropriate to reassess the fair value of our common stock with respect to 2006 and performed two retrospective valuations on our common stock as of March 31, 2006 and October 31, 2006. After considering each of the above factors, our board of directors determined the fair value of our common stock to be $11.97 per share on February 28, 2007, $11.07 on January 19, 2007, $8.87 per share on October 31, 2006 and $1.80 per share on March 31, 2006, all on a post-reverse stock split basis. The difference between the fair value of our common stock during the period from January 1, 2006 to May 24, 2007 (the date of our IPO) and $9.00, which was the initial public offering price, was attributable to the superior rights and preferences of our preferred stock that would convert into common stock upon consummation of an offering, the continued demand for initial public offerings during the period, the achievement of corporate milestones and the illiquid nature of our common stock. We recorded stock-based compensation expense to the extent that the fair value of our common stock at the date of the grant exceeded the exercise price of the equity awards.

With respect to the contemporaneous valuation on January 19, 2007 and the retrospective valuation on October 31, 2006, a combination of the income approach and the market approach were used, which were equally weighted. With respect to the retrospective valuation on March 31, 2006, a market approach was used because at that time we were still in the early stages of development without a specific product to introduce into the market. Therefore, we did not have financial projections available for a discounted cash flow approach.

The income approach involves applying appropriate discount rates to estimated cash flows that are based on forecasts of revenue and costs. Key assumptions associated with the income approach include: projected cash flows which reflect management's best estimates of our future operations; a terminal value, which attributes value to cash flows for the years beyond the projection period; and a discount rate, which reflects the nature of the company and the risks associated with the business.

The market approach, specifically the guideline company analysis, provides indications of our value by comparison to similar publicly traded companies. Stocks of these companies are actively traded in a free and open market, either on an exchange or over the counter. Although it is clear that no two companies are entirely alike, the only restrictive requirement imposed by this approach is that the companies selected as guideline companies be engaged in the same or similar line of business. Specifically, we identified several companies as guideline companies in our industry that are comparable to us in terms of market capitalization and financial position.

The enterprise value was then allocated to preferred and common stock using the Probability Weighted Expected Return Method, or PWERM, for the January 19, 2007 and October 31, 2006 valuations, and the Option Pricing Method, or OPM, for the March 31, 2006 valuation. The respective

allocation methodologies were used that best match the ability of an investor at the date of value to project future values. In January 2007 and October 2006, we had the ability to extrapolate future initial public offering values due to the development effort toward commercialization of the Helicos™ Genetic Analysis System and subsequent interest from investment banks. Therefore, the PWERM, which employs specific future liquidation values, is the most appropriate allocation methodology. In March 2006, we did not have a clear path to a liquidity event and thus a more general volatility calculation is appropriate to project future values, which coincides with the OPM analysis.

Under the PWERM method, the value of the common stock is estimated based upon an analysis of future values for the enterprise assuming various future outcomes. Share value is based upon the probability-weighted present value of expected future investment returns, considering each of the possible future outcomes available, as well as the rights of each share class. The future outcomes we considered were: initial public offering; merger or sale; liquidation; and continuing operations as a viable private company.

The OPM method involves making estimates of the anticipated timing of a potential liquidity event and estimates the volatility of our equity securities. The anticipated timing was based on our plans toward the liquidity event and on our board of directors' judgment. Estimating the volatility of the share price of a privately-held company is complex because there is no readily available market for the shares. We estimated the volatility of our stock based on available information on volatility of stocks of publicly traded companies in the industry.

During the year ended December 31, 2007, we recognized approximately $3.4 million of stock-based compensation expense related to equity awards granted to employees and non-employees. Total unrecognized share-based compensation expense for all stock-based awards was approximately $10.0 million at December 31, 2007, of which $3.4 million will be recognized in 2008, $3.0 million in 2009, $2.7 million in 2010 and $907,000 thereafter. This results in these amounts being recognized over a weighted-average period of 1.6 years.

Information on employee and non-employee stock options granted in 2006 and 2007 is summarized as follows:

Grants made during year ended	Number of stock options granted	Weighted average exercise price	Weighted average fair value per share	Average intrinsic value per share
December 31, 2006	588,421	$ 0.59	$ 3.06	$2.47
December 31, 2007	1,586,081	$10.40	$10.57	$0.17

In March 2007, we modified the exercise price of 493,888 unvested stock option grants made from January through October 2006 from $0.59 per share to $1.80 per share, and 84,666 unvested stock option grants made in November and December 2006 from $0.59 per share to $8.87 per share. The above table reflects the weighted average exercise prices at the time of initial grant. The increase in option exercise prices did not have a material impact on our financial position, statement of operations or cash flows.

Information on employee and non-employee restricted stock grants in 2006 and 2007 is summarized as follows:

Grants made during year ended	Shares of restricted stock granted	Cash paid per share	Weighted average fair value per share	Average intrinsic value per share
December 31, 2006	395,555	$0.59	$5.67	$5.08
December 31, 2007	58,979	$ —	$8.03	$8.03

We recognized stock-based compensation expense on all employee and non-employee awards as follows (in thousands):

	Year Ended December 31,			Period from May 9, 2003 (date of inception) through December 31, 2007
	2005	2006	2007	
General and administrative expense	$43	$1,180	$2,372	$3,754
Research and development expense	12	99	1,024	1,137
Total	$55	$1,279	$3,396	$4,891

Revenue recognition

We plan to recognize revenue in accordance with Staff Accounting Bulletin No. 104, "Revenue Recognition in Financial Statements," or SAB No. 104 and Emerging Issues Task Force No. 00-21, "Accounting for Multiple Element Revenue Arrangements." SAB No. 104 requires that persuasive evidence of a sales arrangement exists; delivery of goods occurs through transfer of title and risk and rewards of ownership, the selling price is fixed or determinable and collectibility is reasonably assured. In instances where we will sell instruments with a related installation obligation, we will allocate the revenue between the instrument and the installation based on relative fair value at the time of the sale. The instrument revenue will be recognized when title and risk of loss passes. The installation revenue will be recognized when the installation is performed. If fair value is not available for any undelivered element, revenue for all elements is deferred until delivery is complete.

In instances where we sell an instrument with specified acceptance criteria, we will defer revenue recognition until such acceptance has been obtained.

The customer may also purchase a service contract. Revenue from service contracts will be recognized ratably over the service period.

Inventory

Prior to reaching technological feasibility, our start-up manufacturing costs, such as those relating to the assembly, testing and performance validation of the Helicos™ Genetic Analysis System, were expensed to research and development as the costs were incurred. When management determined that the Helicos System was ready for commercial launch during December 2007, we began capitalizing our manufacturing costs to inventory. We value our inventory at the lower of cost or market on a first-in, first-out basis. As necessary, we will write down the value of our inventory to its net realizable value, or for estimated obsolescence if inventory is deemed unmarketable.

Allowance for doubtful accounts

We plan to perform ongoing evaluations of our customers and continuously monitor collections and payments to estimate an allowance for doubtful accounts based on the aging of the underlying receivables and our experiences of specific collection issues.

Net operating losses and tax credit carryforwards

We record income taxes using the asset and liability method. Deferred income tax assets and liabilities are recognized for the future tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective income tax bases and operating loss and tax credit carryforwards. Our consolidated financial statements contain certain deferred tax assets, which have arisen primarily as a result of operating losses, as well as other

temporary differences between financial and tax accounting. SFAS No. 109 "Accounting for Income Taxes," requires us to establish a valuation allowance if the likelihood of realization of the deferred tax assets is reduced based on an evaluation of objective verifiable evidence. Significant management judgment is required in determining our provision for income taxes, deferred tax assets and liabilities and any valuation allowance recorded against those net deferred tax assets. We evaluate the weight of all available evidence to determine whether it is more likely than not that some portion or all of the net deferred income tax assets will not be realized.

Impairment of long-lived assets

Long-lived assets primarily include property and equipment. In accordance with SFAS No. 144, "Accounting for the Impairment or Disposal of Long-Lived Assets," we periodically review long-lived assets for impairment whenever events or changes in business circumstances indicate that the carrying amount of the assets may not be fully recoverable or that the useful lives are no longer appropriate. Each impairment test is based on a comparison of the undiscounted cash flows expected to result from the use and eventual disposition of the asset to the carrying amount of the asset. If an impairment is indicated, the asset is written down to its estimated fair value based on a discounted cash flow analysis. Determining the fair value of long-lived assets includes significant judgment by management, and different judgments could yield different results.

RECENT ACCOUNTING PRONOUNCEMENTS

In September 2006, the FASB issued SFAS No. 157, "Fair Value Measurements," or SFAS No. 157. This Statement defines fair value as used in numerous accounting pronouncements, establishes a framework for measuring fair value in GAAP and expands disclosure related to the use of fair value measures in financial statements. SFAS No. 157 does not expand the use of fair value measures in financial statements, but standardizes its definition and guidance under generally accepted accounting principles ("GAAP"). The Standard emphasizes that fair value is a market-based measurement and not an entity-specific measurement based on an exchange transaction in which the entity sells an asset or transfers a liability (exit price). SFAS No. 157 establishes a fair value hierarchy from observable market data as the highest level to fair value based on an entity's own fair value assumptions as the lowest level. SFAS No. 157 is effective for our financial statements issued in 2008; however, earlier application is encouraged. We are currently evaluating the impact that the adoption of SFAS No. 157 will have on our financial position, results of operations or cash flows.

On January 1, 2007, we adopted the provisions of FASB Interpretation No. 48, "Accounting for Uncertainty in Income Taxes—an interpretation of FASB Statement No. 109," or FIN No. 48. FIN No. 48 requires that we recognize in our financial statements the impact of a tax position if that position is more likely than not of being sustained upon examination, based on the technical merits of the position. The provisions of FIN No. 48 were effective as of January 1, 2007. The adoption of FIN No. 48 did not have a material impact on our financial position, results of operations or cash flows. At the adoption date of January 1, 2007 and also at December 31, 2007, we had no unrecognized tax benefits.

In February 2007, the FASB issued SFAS 159, "The Fair Value Option for Financial Assets and Financial Liabilities—Including an amendment of FASB Statement No. 115". SFAS 159 expands the use of fair value accounting to many financial instruments and certain other items. The fair value option is irrevocable and generally made on an instrument-by-instrument basis, even if a company has similar instruments that it elects not to measure based on fair value. SFAS 159 is effective for fiscal years beginning after November 15, 2007. We are currently evaluating the impact that the adoption of SFAS No. 159 will have on our financial position, results of operations or cash flows.

In June 2007, the Emerging Issues Task Force ("EITF") issued EITF Issue 07-03, "Accounting for Nonrefundable Advance Payments for Goods or Services Received for Use in Future Research and Development Activities" ("EITF No. 07-03"). EITF No. 07-03 addresses the diversity which exists with respect to the accounting for the non-refundable portion of a payment made by a research and development entity for future research and development activities. Under EITF No. 07-03, an entity would defer and capitalize non-refundable advance payments made for research and development activities until the related goods are delivered or the related services are performed. EITF No. 07-03 is effective for fiscal years beginning after December 15, 2007 and interim periods within those years. We are calculating the impact that the adoption of EITF 07-03 will have on our financial position, results of operations or cash flows.

In November 2007, the EITF issued EITF Issue 07-01 "Accounting for Collaborative Arrangements" (EITF No. 07-01). EITF No. 07-01 requires collaborators to present the results of activities for which they act as the principal on a gross basis and report any payments received from (made to) other collaborators based on other applicable GAAP or, in the absence of other applicable GAAP, based on analogy to authoritative accounting literature or a reasonable, rational, and consistently applied accounting policy election. Further, EITF No. 07-01 clarified that the determination of whether transactions within a collaborative arrangement are part of a vendor-customer (or analogous) relationship subject to Issue 01-9, "Accounting for Consideration Given by a Vendor to a Customer". EITF No. 07-01 is effective for fiscal years beginning after December 15, 2007, and interim periods within those years. We are currently evaluating the impact that EITF 07-01 will have on our financial position, results of operations or cash flows.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURE OF MARKET RISK

Our exposure to market risk is limited to our cash. The goals of our investment policy are preservation of capital, fulfillment of liquidity needs and fiduciary control of cash and investments. We also seek to maximize income from our investments without assuming significant risk. To achieve our goals, we maintain our cash in interest-bearing cash accounts. As all of our investments are cash deposits in a global bank, it is subject to minimal interest rate risk.

EFFECT OF CURRENCY EXCHANGE RATES AND EXCHANGE RATE RISK MANAGEMENT

We conduct business operations outside of the United States primarily in Canada and Western Europe. These business operations are not material at this time and therefore, any currency fluctuations will not have a material impact on our financial position, results of operations or cash flows.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

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Helicos BioSciences Corporation (A development stage company)
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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Stockholders of
Helicos BioSciences Corporation:

In our opinion, the accompanying consolidated balance sheets and the related consolidated statements of operations, of redeemable convertible preferred stock and stockholders' equity (deficit) and of cash flows present fairly, in all material respects, the financial position of Helicos BioSciences Corporation and its subsidiary (a development stage enterprise) at December 31, 2006 and December 31, 2007, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2007 and, cumulatively, for the period from May 9, 2003 (date of inception) to December 31, 2007, in conformity with accounting principles generally accepted in the United States of America. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits of these statements 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, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

As discussed in Note 3 to the consolidated financial statements, the Company changed the manner in which it accounts for uncertain tax positions effective January 1, 2007, and share-based compensation effective January 1, 2006.

/s/ PricewaterhouseCoopers LLP
Boston, Massachusetts
March 17, 2008

Helicos BioSciences Corporation (a development stage company)

CONSOLIDATED BALANCE SHEETS

(in thousands, except share and per share data)

	December 31,	
	2006	2007
ASSETS		
Current assets		
Cash and cash equivalents	$ 10,589	$ 52,683
Short-term investments	795	—
Unbilled government grant receivable	159	117
Inventory	—	1,612
Prepaid expenses and other current assets	502	947
Total current assets	12,045	55,359
Property and equipment, net	2,805	3,400
Restricted cash	450	450
Total assets	$ 15,300	$ 59,209
LIABILITIES, REDEEMABLE CONVERTIBLE PREFERRED STOCK AND STOCKHOLDERS' EQUITY (DEFICIT)		
Current liabilities		
Accounts payable	$ 1,469	$ 1,691
Accrued expenses and other current liabilities	1,299	1,993
Current portion of long-term debt	608	988
Total current liabilities	3,376	4,672
Long-term debt, net of current portion	1,843	10,786
Redeemable convertible preferred stock warrants	204	—
Other long-term liabilities	455	312
Total liabilities	5,878	15,770
Redeemable convertible preferred stock: par value $0.001 per share; 59,314,030 and 5,000,000 shares authorized at December 31, 2006 and December 31, 2007, respectively; 43,686,122 and no shares issued and outstanding at December 31, 2006 and December 31, 2007, respectively	46,761	—
Commitments and contingencies (Notes 8, 9, and 10)		
Stockholders' equity (deficit)		
Common stock: par value $0.001 per share; 100,000,000 and 120,000,000 shares authorized at December 31, 2006 and December 31, 2007, respectively; 2,051,269 and 20,983,638 shares issued and outstanding at December 31, 2006 and December 31, 2007, respectively	2	21
Subscription receivable	(4)	—
Additional paid-in capital	1,772	137,472
Deficit accumulated during the development stage	(39,109)	(94,054)
Total stockholders' equity (deficit)	(37,339)	43,439
Total liabilities, redeemable convertible preferred stock and stockholders' equity (deficit)	$ 15,300	$ 59,209

The accompanying notes are an integral part of these consolidated financial statements

Helicos BioSciences Corporation (a development stage company)

CONSOLIDATED STATEMENTS OF OPERATIONS

(in thousands, except share and per share data)

	Year Ended December 31,			Period from May 9, 2003 (date of inception) through December 31, 2007
	2005	2006	2007	
Grant revenue	$ —	$ 159	$ 582	$ 741
Operating expenses				
Research and development	8,411	14,382	24,758	51,745
General and administrative	2,870	6,917	14,312	27,816
Total operating expenses	11,281	21,299	39,070	79,561
Operating loss	(11,281)	(21,140)	(38,488)	(78,820)
Interest income	363	766	1,960	3,389
Interest expense	—	(206)	(277)	(483)
Net loss	(10,918)	(20,580)	(36,805)	(75,914)
Beneficial conversion feature related to Series B redeemable convertible preferred stock	—	—	(18,140)	(18,140)
Net loss attributable to common stockholders	$(10,918)	$ (20,580)	$ (54,945)	$(94,054)
Net loss attributable to common stockholders per share—basic and diluted	$ (12.62)	$ (16.35)	$ (4.23)	
Weighted average number of common shares used in computation—basic and diluted	865,355	1,258,438	12,989,889	

The accompanying notes are an integral part of these consolidated financial statements

Helicos BioSciences Corporation (a development stage company)

CONSOLIDATED STATEMENTS OF REDEEMABLE CONVERTIBLE PREFERRED STOCK AND STOCKHOLDERS' EQUITY (DEFICIT)

Period from May 9, 2003 (date of inception) to December 31, 2007

(in thousands, except share and per share data)

	Series A redeemable convertible preferred stock		Series B redeemable convertible preferred stock		Common stock		Additional paid-in capital	Subscription receivable	Deficit accumulated during development stage	Other accumulated income (loss)	Total stockholders' equity (deficit)
	Shares	Amount	Shares	Amount	Shares	Amount					
Balance at inception	—	$ —	—	$ —	—	$—	$ —	$—	$ —	$ —	$ —
Issuance of Series A redeemable convertible preferred stock in December 2003 for cash at $0.9555 per share, net of issuance costs of $59	27,815,946	26,469	—	—	—	—	—	—	—	—	—
Conversion of promissory note for shares of Series A redeemable convertible preferred stock in December 2003 at $0.9555 per share	366,300	350	—	—	—	—	—	—	—	—	—
Issuance of restricted common stock in October 2003 to a founder for cash	—	—	—	—	444,444		2	—	—	—	2
Issuance of restricted common stock in November and December 2003 to nonemployees	—	—	—	—	618,126	1	2	(3)	—	—	—
Issuance of common stock in December 2003 at $0.45 per share in exchange for intellectual property	—	—	—	—	46,514	—	20	—	—	—	20
Stock-based compensation expense	—	—	—	—	—	—	23	—	—	—	23
Net loss	—	—	—	—	—	—	—	—	(547)	—	(547)
Balance at December 31, 2003	28,182,246	26,819	—	—	1,109,084	1	47	(3)	(547)	—	(502)
Exercise of a stock warrant to purchase shares of common stock in January 2004	—	—	—	—	120,123	—	—	—	—	—	—
Cash received from investors in January 2004 for previously issued shares of Series A redeemable convertible preferred stock	—	50	—	—	—	—	—	—	—	—	—
Cash received from nonemployee in January 2004 for previously issued shares of restricted common stock	—	—	—	—	—	—	—	3	—	—	3
Issuance of restricted common stock in February, March and April 2004 to employees for cash at $0.45 per share	—	—	—	—	155,555		1	—	—	—	1
Issuance of restricted common stock in September 2004 to nonemployees for cash at $0.45 per share	—	—	—	—	11,888	—	—	—	—	—	—
Exercise of nonemployee stock options in December 2004 for cash of $0.45 per share	—	—	—	—	15,200		6	—	—	—	6
Stock-based compensation expense	—	—	—	—	—	—	138	—	—	—	138
Unrealized short-term loss	—	—	—	—	—	—	—	—	—	(17)	(17)
Net loss	—	—	—	—	—	—	—	—	(7,064)	—	(7,064)
Balance at December 31, 2004	28,182,246	26,869	—	—	1,411,850	1	192	—	(7,611)	(17)	(7,435)

The accompanying notes are an integral part of these consolidated financial statements

Helicos BioSciences Corporation (a development stage company)

CONSOLIDATED STATEMENTS OF REDEEMABLE CONVERTIBLE PREFERRED STOCK AND STOCKHOLDERS' EQUITY (DEFICIT) (Continued)

Period from May 9, 2003 (date of inception) to December 31, 2007

(in thousands, except share and per share data)

	Series A redeemable convertible preferred stock		Series B redeemable convertible preferred stock		Common stock		Additional paid-in capital	Subscription receivable	Deficit accumulated during development stage	Other accumulated income (loss)	Total stockholders' equity (deficit)
	Shares	Amount	Shares	Amount	Shares	Amount					
Balance at December 31, 2004	28,182,246	26,869	—	—	1,411,850	1	192	—	(7,611)	(17)	(7,435)
Issuance of restricted common stock in March 2005 in exchange for intellectual property	—	—	—	—	88,888	—	—	—	—	—	—
Issuance of restricted common stock in July 2005 to employees for cash at $0.45 per share	—	—	—	—	55,555	1	—	—	—	—	1
Issuance of restricted common stock in April and December 2005 to nonemployees for cash at $0.45 per share	—	—	—	—	1,666	—	1	—	—	—	1
Exercise of employee stock options in June 2005 for cash at $0.45 per share	—	—	—	—	277	—	—	—	—	—	—
Exercise of nonemployee stock options in September 2005 for cash at $0.45 per share	—	—	—	—	444	—	—	—	—	—	—
Stock-based compensation expense	—	—	—	—	—	—	55	—	—	—	55
Vesting of previously issued shares of restricted common stock	—	—	—	—	—	—	36	—	—	—	36
Change in unrealized short-term loss	—	—	—	—	—	—	—	—	—	17	17
Net loss	—	—	—	—	—	—	—	—	(10,918)	—	(10,918)
Balance at December 31, 2005	28,182,246	26,869	—	—	1,558,680	2	284	—	(18,529)	—	(18,243)
Issuance of restricted common stock in January 2006 to nonemployees for cash at $0.45 per share	—	—	—	—	1,111	—	—	—	—	—	—
Issuances of Series B redeemable convertible preferred stock in March 2006 for cash at $1.29 per share, net of issuance costs of $108	—	—	15,503,876	19,892	—	—	—	—	—	—	—
Issuance of common stock in July 2006 to employees for cash at $0.585 per share	—	—	—	—	44,444	—	247	—	—	—	247
Issuance of restricted common stock in September, November and December 2006 to employees for cash at $0.585 per share	—	—	—	—	394,444	—	2	(4)	—	—	(2)
Exercise of nonemployee stock options in November 2006 for cash at $0.585 per share	—	—	—	—	4,444	—	2	—	—	—	2
Exercise of employee stock options in January and December 2006 for cash at $0.45 per share	—	—	—	—	48,146	—	22	—	—	—	22
Stock-based compensation expense	—	—	—	—	—	—	1,058	—	—	—	1,058
Vesting of previously issued shares of restricted common stock	—	—	—	—	—	—	157	—	—	—	157
Net loss	—	—	—	—	—	—	—	—	(20,580)	—	(20,580)
Balance at December 31, 2006	28,182,246	26,869	15,503,876	19,892	2,051,269	2	1,772	(4)	(39,109)	—	(37,339)

The accompanying notes are an integral part of these consolidated financial statements

Helicos BioSciences Corporation (a development stage company)
CONSOLIDATED STATEMENTS OF REDEEMABLE CONVERTIBLE PREFERRED STOCK AND STOCKHOLDERS' EQUITY (DEFICIT) (Continued)
Period from May 9, 2003 (date of inception) to December 31, 2007
(in thousands, except share and per share data)

	Series A redeemable convertible preferred stock		Series B redeemable convertible preferred stock		Common stock		Additional paid-in capital	Subscription receivable	Deficit accumulated during development stage	Other accumulated income (loss)	Total stockholders' equity (deficit)
	Shares	Amount	Shares	Amount	Shares	Amount					
Balance at December 31, 2006	28,182,246	26,869	15,503,876	19,892	2,051,269	2	1,772	(4)	(39,109)	—	(37,339)
Issuances of Series B redeemable convertible preferred stock in January 2007 for cash at $1.29 per share, net of issuance costs of $6	—	—	15,503,876	19,994	—	—	—	—	—	—	—
Exercise of employee stock options in January 2007 for cash at $0.585 per share	—	—	—	—	4,311	—	3	—	—	—	3
Exercise of employee stock options in June, August and December 2007 for cash at $0.45 per share	—	—	—	—	1,866	—	—	—	—	—	—
Exercise of employee stock options in June, July and November 2007 for cash at $1.80 per share	—	—	—	—	1,079	—	2	—	—	—	2
Exercise of non-employee stock options in June, October and November 2007 for cash at $0.45 per share	—	—	—	—	6,500	—	3	—	—	—	3
Issuance of restricted common stock in July and August 2007 to employees	—	—	—	—	56,757	—	—	—	—	—	—
Issuance of restricted common stock in April 2007 to a non-employee	—	—	—	—	2,222	—	—	—	—	—	—
Cash received from employee in January 2007 for previously issued shares of restricted common stock	—	—	—	—	—	—	—	4	—	—	4
Cancellation of shares of restricted common stock	—	—	—	—	(88,888)	—	—	—	—	—	—
Forfeiture of shares of unvested restricted common stock	—	—	—	—	(11,111)	—	—	—	—	—	—
Stock-based compensation expense	—	—	—	—	—	—	3,396	—	—	—	3,396
Vesting of previously issued shares of restricted common stock	—	—	—	—	—	—	85	—	—	—	85
Beneficial conversion feature related to Series B redeemable convertible preferred stock	—	—	—	—	—	—	18,140	—	(18,140)	—	—
Reclassification of amounts due to stockholders for fractional shares upon reverse stock split	—	—	—	—	(10)	—	—	—	—	—	—
Issuance of common stock in initial public offering ("IPO"), net of discounts, commissions and issuance costs of $4,750	—	—	—	—	5,400,000	5	43,845	—	—	—	43,850
Issuance of common stock in over-allotment to underwriters, net of discounts and commissions of $250	—	—	—	—	397,000	1	3,322				3,323
Conversion of preferred stock	(28,182,246)	(26,869)	(31,007,752)	(39,886)	13,153,293	13	66,742	—	—	—	66,755
Exercise of warrants to purchase common stock	—	—	—	—	9,350	—	162	—	—	—	162
Net loss	—	—	—	—					(36,805)		(36,805)
Balance at December 31, 2007	—	$ —	—	$ —	20,983,638	$21	$137,472	$—	$(94,054)	$ —	$ 43,439

The accompanying notes are an integral part of these consolidated financial statements

Helicos BioSciences Corporation (a development stage company)

CONSOLIDATED STATEMENTS OF CASH FLOWS

(in thousands)

	Year Ended December 31,			Period from May 9, 2003 (date of inception) through December 31, 2007
	2005	2006	2007	
Cash flows from operating activities:				
Net loss	$(10,918)	$(20,580)	$(36,805)	$(75,914)
Adjustments to reconcile net loss to cash used in operating activities:				
Depreciation and amortization	482	953	1,588	3,203
Amortization of lease incentive	—	(70)	(146)	(216)
Common stock issued for licenses	—	127	—	147
Stock-based compensation expense	55	1,279	3,396	4,891
Noncash interest expense related to warrants	—	137	11	148
Changes in operating assets and liabilities:				
Unbilled government grant receivable	—	(159)	42	(117)
Inventory	—	—	(1,612)	(1,612)
Prepaid expenses and other current assets	118	(274)	(338)	(706)
Accounts payable	398	825	222	1,691
Accrued expenses and other current liabilities	(149)	819	886	2,036
Other long-term liabilities	—	411	(47)	364
Net cash used in operating activities	(10,014)	(16,532)	(32,803)	(66,085)
Cash flows from investing activities:				
Purchases of property and equipment	(843)	(2,753)	(2,183)	(6,603)
Increase in restricted cash	—	(450)	—	(450)
Purchases of short-term investments	(5,438)	(7,433)	—	(34,709)
Maturities of short-term investments	17,985	6,638	795	34,709
Net cash provided by (used in) investing activities	11,704	(3,998)	(1,388)	(7,053)
Cash flows from financing activities:				
Proceeds from debt issuances	—	2,473	9,933	12,406
Payments on debt	—	—	(685)	(685)
Payments of debt issuance costs	—	—	(174)	(174)
Proceeds from initial public offering	—	—	49,011	49,011
Deferred initial public offering costs	—	(89)	(1,749)	(1,838)
Proceeds from issuance of redeemable convertible preferred stock, net of issuance costs	—	19,892	19,994	66,405
Proceeds from bridge loan	—	—	—	350
Proceeds from issuance of common stock	—	26	—	26
Proceeds from issuance of restricted common stock	27	227	4	339
Payments to employees for cancelled restricted common stock	—	—	(57)	(57)
Proceeds from exercise of stock options	—	24	8	38
Net cash provided by financing activities	27	22,553	76,285	125,821
Net increase in cash and cash equivalents	1,717	2,023	42,094	52,683
Cash and cash equivalents, beginning of period	6,849	8,566	10,589	—
Cash and cash equivalents, end of period	$ 8,566	$ 10,589	$ 52,683	$ 52,683
Supplemental disclosure of cash flow information				
Cash paid during the year for:				
Interest	$ —	$ 69	$ 234	$ 303
Noncash financing activities:				
Issuance of redeemable convertible preferred stock warrants	$ —	$ 95	$ —	$ 95
Conversion of bridge loan to equity	$ —	$ —	$ —	$ 350
Beneficial conversion feature related to Series B redeemable convertible preferred stock	$ —	$ —	$ 18,140	$ 18,140
Conversion of preferred stock to common stock	$ —	$ —	$ 66,755	$ 66,755
Reclassification of preferred stock warrants to common stock warrants	$ —	$ —	$ 162	$ 162

The accompanying notes are an integral part of these consolidated financial statements

1. Business Description

Helicos BioSciences Corporation ("Helicos" or the "Company") is a life sciences company focused on innovative genetic analysis technologies for the research, drug discovery and clinical diagnostics markets. Helicos has developed a proprietary technology to enable the rapid analysis of large volumes of genetic material by directly sequencing single molecules of DNA or single DNA copies of RNA. Helicos is a Delaware corporation and was incorporated on May 9, 2003.

The Company has had limited operations to date and its activities have consisted primarily of raising capital, conducting research and development and recruiting personnel. Accordingly, the Company is considered to be in the development stage at December 31, 2007, as defined by the Financial Accounting Standards Board ("FASB") in Statement of Financial Accounting Standards ("SFAS") No. 7, "Accounting and Reporting by Development Stage Enterprises." The Company's fiscal year ends on December 31. The Company operates as one reportable segment.

Since inception, the Company has incurred losses and has not generated positive cash flows from operations. The Company expects such losses to continue for at least two years as it continues to develop and commercialize its products. The Company will likely seek to raise additional funds through public or private equity or debt financings, collaborative or other arrangements with corporate sources, or through other sources of financing. However, additional financing may not be available on a timely basis on terms acceptable to the Company, or at all. The Company's failure to raise capital as and when needed could have a negative impact on its financial condition and its ability to pursue its business strategies. If adequate funds are not available, the Company may have to delay, reduce or eliminate development and commercialization efforts, and may have to obtain funds through arrangements with collaborators or others on terms unfavorable to the Company or pursue merger or acquisition strategies. If necessary, the Company will either raise capital or curtail its future spending to ensure it will continue its business operations.

On May 7, 2007, a 1 for 4.5 reverse split of the Company's common stock was made effective by the filing of a Certificate of Amendment of the Company's Second Amended and Restated Certificate of Incorporation. The split had been approved by the Company's Board of Directors and shareholders. All share and per share amounts have been retroactively adjusted to reflect the reverse stock split for all periods presented.

2. Initial Public Offering

On May 24, 2007, the Company completed its initial public offering ("IPO") of 5,400,000 shares of common stock at an initial public offering price of $9.00 per share. Net proceeds were approximately $43.9 million after deducting underwriting discounts and commissions and offering expenses paid by the Company. Total fees and expenses paid by the Company, excluding underwriting discounts and commissions were approximately $1.8 million which includes legal, accounting and printing costs and various other fees associated with registration and listing of the Company's common stock.

On May 24, 2007, upon completion of the Company's IPO, all of the Company's 59,189,998 shares of redeemable convertible preferred stock outstanding on that date were automatically converted into 13,153,293 shares of common stock. In addition, the outstanding warrants to purchase 81,184 shares of Series B redeemable convertible preferred stock were converted into warrants to purchase 18,040 shares of common stock. During the period January 1, 2007 through the date of the Company's IPO, the estimated fair value of the warrants to purchase 81,184 shares of Series B redeemable convertible preferred stock decreased by $42,000 to $162,000. Upon conversion on the date of the Company's IPO,

2. Initial Public Offering (Continued)

the warrants to purchase 18,040 shares of the Company's common stock were reclassified to additional paid-in capital.

On June 27, 2007, the underwriters exercised their over-allotment option and purchased an additional 397,000 shares of the Company's common stock, and the net proceeds after deducting underwriters' discounts and commissions related to the offering were approximately $3.3 million.

3. Summary of Significant Accounting Policies

Basis of presentation and consolidation

The accompanying consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America. The consolidated financial statements include the accounts of the Company and its wholly-owned subsidiary. All intercompany accounts and transactions have been eliminated. It is management's opinion that the accompanying consolidated financial statements reflect all adjustments (which are normal and recurring) that are necessary to present fairly the Company's financial position at December 31, 2006 and 2007 and results of operations and cash flows for the years ended December 31, 2005, 2006, 2007 and the period from May 9, 2003 (date of inception) through December 31, 2007.

Use of estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosures of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Although the Company regularly assesses these estimates, actual results could differ from those estimates. Changes in estimates are recorded in the period in which they become known.

Cash and cash equivalents

The Company considers all highly liquid investments with original maturities of generally three months or less at the time of acquisition to be cash equivalents. Cash equivalents are stated at cost, which approximates fair market value.

Short-term investments

The Company classifies marketable securities as available-for-sale in accordance with the provisions of SFAS No. 115, "Accounting for Certain Investments in Debt and Equity Securities." These securities are carried at fair market value with unrealized gains and losses reported, if material, as a component of other comprehensive gain or loss in stockholders' equity (deficit). There were no gross unrealized gains and losses at December 31, 2006 or 2007. Gains or losses on securities sold are based on the specific identification method.

Concentration of credit risk

The Company has no significant off-balance sheet concentrations of credit risk such as foreign currency exchange contracts, option contracts or other hedging arrangements. Financial instruments that subject the Company to credit risk consist primarily of cash, cash equivalents and short-term investments. The Company places its cash and cash equivalents in an accredited financial institution.

3. Summary of Significant Accounting Policies (Continued)

Fair value of financial instruments

The carrying amounts of the Company's financial instruments, which include cash and cash equivalents, accounts payable, accrued expenses, debt and redeemable convertible preferred stock warrants approximate their fair value at December 31, 2006 and 2007.

Inventory

When the Company determined that the Helicos™ Genetic Analysis System was ready for commercial launch in December 2007, the Company began capitalizing its manufacturing costs as inventory. The Company values all of its inventories at the lower of cost or market on a first-in, first-out basis ("FIFO"). Included in inventory are raw materials and work in process used in the production of the Company's first commercial product, the Helicos System and related reagents.

Property and equipment

Property and equipment are recorded at cost. Expenditures for maintenance and repairs are charged to expense while the costs of significant improvements are capitalized. Depreciation is provided using the straight-line method over the following estimated useful lives: Machinery and equipment—three years, office furniture and equipment—three years, leasehold improvements—the shorter of three years or the life of lease. Upon retirement or sale, the cost of the assets disposed of and the related accumulated depreciation are eliminated from the consolidated balance sheets and related gains or losses are reflected in the consolidated statements of operations. There have been no material retirements or sale of assets since May 9, 2003 (date of inception).

Long-lived assets

In accordance with SFAS No. 144, "Accounting for the Impairment or Disposal of Long-Lived Assets," the Company reviews the carrying values of its long-lived assets for possible impairment whenever events or changes in circumstances indicate that the carrying amounts of the assets may not be recoverable. Any long-lived assets held for disposal are reported at the lower of their carrying amounts or fair values less costs to sell.

Redeemable convertible preferred stock warrant

Freestanding warrants and other similar instruments related to shares that are redeemable are accounted for in accordance with SFAS No. 150, "Accounting for Certain Financial Instruments with Characteristics of both Liabilities and Equity" and FASB Staff Position ("FSP") FAS 150-5, "Issuer's Accounting under FASB Statement No. 150 for Freestanding Warrants and Other Similar Instruments on Shares that are Redeemable." Under FSP FAS 150-5, the freestanding warrant that was related to the Company's redeemable convertible preferred stock was classified as a liability on the balance sheet as of January 1, 2006. The warrant was subject to re-measurement at each balance sheet date and any change in fair value was recognized as a component of interest expense. Fair value was measured using the Black-Scholes option pricing model. The Company continued to adjust the liability for changes in fair value until the completion of its initial public offering on May 24, 2007, at which time all redeemable convertible preferred stock warrants were converted into warrants to purchase common stock and, accordingly, the liability was reclassified to equity.

3. Summary of Significant Accounting Policies (Continued)

Revenue recognition

Government research grants that provide for payments to the Company for work performed are recognized as revenue when the related expenses are incurred.

Research and development

Research and development expenditures are charged to the consolidated statement of operations as incurred. Research and development expenses are comprised of costs incurred in performing research and development activities, including salaries and benefits, facilities costs, clinical trial and related supply costs, contract services, depreciation and amortization expense and other related costs.

Income taxes

The Company records income taxes using the asset and liability method. Deferred income tax assets and liabilities are recognized for the future tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective income tax bases, and operating loss and tax credit carryforwards. The Company's consolidated financial statements contain certain deferred tax assets, which have arisen primarily as a result of operating losses, as well as other temporary differences between financial and tax accounting. SFAS No. 109 "Accounting for Income Taxes," requires the Company to establish a valuation allowance if the likelihood of realization of the deferred tax assets is reduced based on an evaluation of objective verifiable evidence. Significant management judgment is required in determining the Company's provision for income taxes, the Company's deferred tax assets and liabilities and any valuation allowance recorded against those net deferred tax assets. The Company evaluates the weight of all available evidence to determine whether it is more likely than not that some portion or all of the net deferred income tax assets will not be realized.

Effective January 1, 2007, the Company adopted FASB Interpretation ("FIN") No. 48, "Accounting for Uncertainty in Income Taxes—an Interpretation of FASB Statement No. 109." This Interpretation prescribes the methodology by which a company must measure, report, present and disclose in its financial statements the effects of any uncertain tax return reporting positions that a company has taken or expects to take. See Note 12, "Income Taxes" for additional disclosure.

Stock-based compensation

Prior to January 1, 2006, the Company accounted for employee stock-based compensation arrangements in accordance with the provisions of SFAS No. 123 "Accounting for Stock-Based Compensation." Under the fair value recognition provisions of SFAS No. 123, stock-based compensation cost is measured at the grant date based on the fair value of the award and is recognized as expense over the vesting period.

Effective January 1, 2006, the Company adopted the fair value recognition provisions of SFAS No. 123(R), "Share-Based Payment," using the modified prospective transition method. Under the modified prospective transition method, compensation cost recognized in the year ended December 31, 2006 included: (a) the pro rata compensation cost for all share-based compensation granted prior to, but not yet vested as of December 31, 2005, based on the grant-date fair value estimated in accordance with the original provisions of SFAS No. 123, and (b) the pro rata compensation cost for all share-based payments granted on or subsequent to January 1, 2006, based on the grant-date fair value

3. Summary of Significant Accounting Policies (Continued)

estimated in accordance with the provisions of SFAS No. 123(R). In accordance with the modified prospective transition method of SFAS No. 123(R), results for prior periods have not been restated, and the impact of adopting SFAS No. 123(R) was not material to the net loss or cash flows. For all grants, the amount of share-based compensation expense recognized has been adjusted for estimated forfeitures of awards for which the requisite service is not expected to be provided. Estimated forfeiture rates are developed based on the Company's analysis of historical forfeiture data. Prior to the adoption of the fair value recognition provisions of SFAS No. 123(R), share-based payment expense was adjusted for actual forfeitures as they occurred. The cumulative effect of the change in accounting for forfeitures is immaterial.

The Company accounts for stock-based compensation issued to non-employees in accordance with SFAS No. 123(R) and EITF No. 96-18, "Accounting for Equity Instruments that are Issued to Other Than Employees for Acquiring, or in Conjunction with, Selling Goods or Services." The Company records the expense of such services based on the estimated fair value of the equity instrument using the Black-Scholes option pricing model. The value of the equity instrument is charged to earnings over the term of the service agreement.

Net loss per share

Basic net loss per share is computed by dividing net loss by the weighted-average number of common shares outstanding during the period. The Company's potential dilutive shares, which include outstanding common stock options, unvested restricted stock, redeemable convertible preferred stock and warrants, have not been included in the computation of diluted net loss per share for all periods as the result would be antidilutive. Such potentially dilutive shares are excluded when the effect would be to reduce a net loss per share.

Other comprehensive income (loss)

SFAS 130, "Reporting Comprehensive Income," establishes standards for reporting and displaying comprehensive income and its components in a full set of general-purpose financial statements. For each of the years ended December 31, 2005, 2006 and 2007, and the period from May 9, 2003 (date of inception) to December 31, 2007, there was no material difference between the net loss and comprehensive loss.

Segment reporting

SFAS No. 131, "Disclosure about Segments of an Enterprise and Related Information," establishes standards for reporting information about operating segments in annual financial statement and in interim financial reports issued to stockholders. Operating segments are defined as components of an enterprise about which separate financial information is available that is evaluated on a regular basis by the chief operating decision-maker, or decision making group, in deciding how to allocate resources to an individual segment and in assessing performance of the segment. The Company believes that it operates in one segment.

Recent accounting pronouncements

In September 2006, the FASB issued SFAS No. 157, "Fair Value Measurements" ("SFAS No. 157"). This Statement defines fair value as used in numerous accounting pronouncements, establishes a framework for measuring fair value in GAAP and expands disclosure related to the use of

3. Summary of Significant Accounting Policies (Continued)

fair value measures in financial statements. SFAS No. 157 does not expand the use of fair value measures in financial statements, but standardizes its definition and guidance under generally accepted accounting principles ("GAAP"). The Standard emphasizes that fair value is a market-based measurement and not an entity-specific measurement based on an exchange transaction in which the entity sells an asset or transfers a liability (exit price). SFAS No. 157 establishes a fair value hierarchy from observable market data as the highest level to fair value based on an entity's own fair value assumptions as the lowest level. SFAS No. 157 is effective for the Company's financial statements issued in 2008; however, earlier application is encouraged. The Company is currently evaluating the impact that the adoption of SFAS No. 157 will have on its financial position, results of operations or cash flows.

On January 1, 2007, the Company adopted the provisions of FASB Interpretation No. 48, "Accounting for Uncertainty in Income Taxes—an interpretation of FASB Statement No. 109", ("FIN No. 48"). FIN No. 48 requires the Company to recognize in its financial statements the impact of a tax position if that position is more likely than not of being sustained upon examination, based on the technical merits of the position. The provisions of FIN No. 48 were effective as of January 1, 2007. The adoption of FIN 48 did not have a material impact on the Company's financial position, results of operations or cash flows. At the adoption date of January 1, 2007 and also at December 31, 2007, the Company had no unrecognized tax benefits.

In February 2007, the FASB issued SFAS 159, "The Fair Value Option for Financial Assets and Financial Liabilities—Including an amendment of FASB Statement No. 115". SFAS 159 expands the use of fair value accounting to many financial instruments and certain other items. The fair value option is irrevocable and generally made on an instrument-by-instrument basis, even if a company has similar instruments that it elects not to measure based on fair value. SFAS 159 is effective for fiscal years beginning after November 15, 2007. The Company is currently evaluating the impact that the adoption of SFAS No. 159 will have on its financial position, results of operations or cash flows.

In June 2007, the Emerging Issues Task Force ("EITF") issued EITF Abstract 07-03, "Accounting for Nonrefundable Advance Payments for Goods or Services Received for Use in Future Research and Development Activities" ("EITF No. 07-03"). EITF No. 07-03 addresses the diversity which exists with respect to the accounting for the non-refundable portion of a payment made by a research and development entity for future research and development activities. Under EITF No. 07-03, an entity would defer and capitalize non-refundable advance payments made for research and development activities until the related goods are delivered or the related services are performed. EITF No. 07-03 is effective for fiscal years beginning after December 15, 2007 and interim periods within those years. The Company is calculating the impact that the adoption of EITF No. 07-03 will have on its financial position, results of operations or cash flows.

In November 2007, the EITF issued EITF Issue 07-01 "Accounting for Collaborative Arrangements" (EITF No. 07-01). EITF No. 07-01 requires collaborators to present the results of activities for which they act as the principal on a gross basis and report any payments received from (made to) other collaborators based on other applicable GAAP or, in the absence of other applicable GAAP, based on analogy to authoritative accounting literature or a reasonable, rational, and consistently applied accounting policy election. Further, EITF No. 07-01 clarified that the determination of whether transactions within a collaborative arrangement are part of a vendor-customer (or analogous) relationship subject to Issue 01-9, "Accounting for Consideration Given by a Vendor to a Customer". EITF No. 07-01 is effective for fiscal years beginning after December 15, 2007, and interim

3. Summary of Significant Accounting Policies (Continued)

periods within those years. The Company is currently evaluating the impact of EITF No. 07-01 will have on its financial position, results of operations or cash flows.

4. Short-Term Investments

During the years ended December 31, 2006 and 2007, the Company maintained short-term investments in corporate obligations with a maturity date no greater than twelve months to help meet liquidity objectives. The Company's investments in these corporate obligations at December 31, 2006 and 2007 were $795,000 and $0, respectively, and were accounted for as available-for-sale. Accordingly, the Company recorded these investments at fair value which approximates the cost basis. There were no gross unrealized gains or losses at December 31, 2006. At December 31, 2007, the Company had no short-term investments.

5. Inventory

The components of inventory are as follows (in thousands):

	December 31,	
	2006	2007
Raw materials	$ —	$ 799
Work in process	—	813
Inventory	$ —	$1,612

6. Property and Equipment, net

Property and equipment, net consist of the following (in thousands):

	December 31,	
	2006	2007
Machinery and equipment	$ 3,184	$ 4,732
Office furniture and equipment	425	897
Leasehold improvements	747	910
	4,356	6,539
Less accumulated depreciation and amortization	(1,551)	(3,139)
Property and equipment, net	$ 2,805	$ 3,400

Depreciation and amortization charged to the consolidated statements of operations for the years ended December 31, 2005, 2006, 2007 and from May 9, 2003 (date of inception) to December 31, 2007 was $482,000, $953,000, $1.6 million and $3.2 million, respectively.

During the year ended December 31, 2006, the Company retired and disposed of $64,000 of property and equipment, which was fully depreciated and no longer in use. There were no gains or losses on the disposal.

7. Accrued Expenses and Other Current Liabilities

Accrued expenses and other current liabilities consist of the following (in thousands):

	December 31,	
	2006	2007
Compensation and benefits	$ 541	$ 513
Deferred rent and lease incentives	154	206
Professional fees	272	846
License fees	66	65
Other	266	363
Accrued expenses and other current liabilities	$1,299	$1,993

8. Commitments and Contingencies

License agreements and patents

In November 2003, the Company entered into a license agreement with California Institute of Technology (the "Caltech License Agreement") that granted the Company a worldwide, exclusive, royalty-bearing license, with the right to grant sublicenses, under specified patents and patent applications, and a worldwide, non-exclusive royalty bearing license, with the right to grant sublicenses, under specified technology outside the scope of the licensed patents. In connection with the Caltech License Agreement, the Company issued 46,514 shares of common stock, and recorded a charge of $20,000. In addition, the Company pays an annual license fee of $10,000 per year. The license fee payments are creditable against royalties based upon sales of products covered by patents licensed under the agreement. Royalties are calculated based on a percentage of defined net sales. The Company is also obligated to pay California Institute of Technology a portion of specified license and sublicense income, proceeds from sales of specified intellectual property and specified service revenue amounts that it receives based on licenses and sublicenses that the Company grants, sales of intellectual property and services that are provided to third parties. The royalty obligation with respect to any licensed product extends until the later of the expiration of the last-to-expire of the licensed patents covering the licensed product and three years after the first commercial sale of the licensed product in any country for non-patented technology covered under the agreement. Through December 31, 2007, no royalty payments have been made. In March 2007, the Company amended the Caltech License Agreement to provide rights under an additional patent application under the terms of the existing license in exchange for a one-time payment of $50,000 to the California Institute of Technology. All amounts paid to date and the value of the common stock issued have been expensed to research and development expense as technological feasibility had not been established and the technology had no alternative future use. The total expense recognized under the Caltech License Agreement for the years ended December 31, 2005, 2006 and 2007, and the period from May 9, 2003 (date of inception) through December 31, 2007 was $10,000, $10,000, $60,000, and $103,000, respectively.

In June 2004, the Company entered into a license agreement with Roche Diagnostics (the "Roche License Agreement") that granted the Company a worldwide, semi-exclusive royalty-bearing license, with the right to grant sublicenses under a patent relating to sequencing methods. In connection with the Roche License Agreement, the Company paid an upfront fee of 175,000 Euros and committed to pay an annual license fee ranging from 10,000 to 40,000 Euros. The Company has an option to convert the license to non-exclusive beginning in 2008, in which case the annual license fees would be reduced

8. Commitments and Contingencies (Continued)

to 10,000 Euros beginning in 2008. The Company has the right to terminate the Roche License Agreement at any time for convenience upon 90 days prior written notice to Roche Diagnostics. Both the Company and Roche Diagnostics have the right to terminate the Roche License Agreement upon breach by the other party, subject to notice and an opportunity to cure. The Roche License Agreement also terminates upon the occurrence of specified bankruptcy events. As part of the Roche License Agreement, the Company agrees to pay royalties based on a percentage of defined net sales. The Company also agrees to pay a portion of specified sublicense income amounts that are received based on sublicenses that the Company grants to third parties. The Company's royalty obligation, if any, extends until the expiration of the last-to-expire of the licensed patents. Through December 31, 2007, no royalty payments have been made. All amounts paid to date have been expensed to research and development expense as technological feasibility had not established and the technology had no alternative future use. The total expense recognized under the Roche License Agreement for the years ended December 31, 2005, 2006 and 2007, and the period from May 9, 2003 (date of inception) through December 31, 2007 was $16,000, $23,000, $39,000, and $305,000, respectively.

In March 2005, the Company entered into a license agreement with Arizona Technology Enterprises (the "AZTE License Agreement") that granted the Company a worldwide, exclusive, irrevocable, royalty-bearing license, with the right to grant sublicenses, under specified patents and patent applications exclusively licensed by AZTE from Arizona State University and the University of Alberta. In connection with the AZTE License Agreement, the Company paid an upfront fee of $350,000, committed to an annual license fee of $50,000, which will increase to $100,000 upon the successful issuance of a U.S. patent, committed to pay a three-year maintenance fee of $50,000, payable in equal annual installments beginning in March 2006, and issued 88,888 shares of restricted common stock, which vest in two equal installments upon the achievement of separate milestones. The Company is obligated to use reasonable commercial efforts to develop, manufacture and commercialize licensed products. In addition, if the Company fails to meet specified development and commercialization deadlines, the AZTE License Agreement converts from exclusive to non-exclusive. The AZTE License Agreement will remain in force until terminated. The Company has the right to terminate the AZTE License agreement at any time for convenience upon 60 days prior written notice to Arizona Technology Enterprises. Both the Company and Arizona Technology Enterprises have the right to terminate the agreement upon breach by the other party, subject to notice and an opportunity to cure. The AZTE License Agreement also terminates upon the occurrence of specified bankruptcy events.

As part of the AZTE License Agreement, the Company agrees to pay royalties based on a percentage of defined net sales. The Company also agrees to pay a portion of specified sublicense income amounts that are received based on sublicenses granted to third parties. The Company's royalty obligation, if any, extends until the expiration of the last-to-expire of the licensed patents. Through December 31, 2007, no royalty payments have been made. All amounts paid to date have been expensed to research and development expense as technological feasibility had not been established and the technology had no alternative future use. In May 2006, in accordance with the license agreement, due to the successful issuance of a U.S. patent, the committed annual license fee increased from $50,000 to $100,000 and 44,444 shares of the restricted common stock vested. The vesting of 44,444 shares of restricted common stock resulted in a charge to research and development expense of $127,000 based on the fair value of the Company's common stock at the time the milestone was achieved. The remaining 44,444 shares of restricted common stock will vest immediately upon the successful issuance of a second U.S. patent The total expense recognized under the AZTE License

8. Commitments and Contingencies (Continued)

Agreement for the years ended December 31, 2005, 2006 and 2007, and the period from May 9, 2003 (date of inception) through December 31, 2007 was $400,000, $229,000, $117,000, and $746,000, respectively.

In June 2006, the Company entered into an agreement to acquire certain U.S. and foreign patents and patent applications. In connection with the agreement, the Company paid an upfront fee of $350,000, committed to a one-time payment of $250,000 once technological feasibility has been established, and committed to a one-time payment of $400,000 upon the first commercial sale of product. As part of the agreement, the Company agrees to pay royalties based on a percentage of defined net sales. Through December 31, 2007, no royalty payments have been made. All amounts paid to date have been expensed to research and development expense as technological feasibility had not established and the technology had no alternative future use. The total expense recognized under this agreement for the years ended December 31, 2005, 2006 and 2007, and the period from May 9, 2003 (date of inception) through December 31, 2007 was $0, $350,000, $0, and $350,000, respectively.

In April 2007, the Company entered into an agreement with PerkinElmer LAS, Inc. ("PerkinElmer"), in which PerkinElmer granted the Company a worldwide, non-exclusive, non-transferable, non-sublicensable, royalty-bearing license under specified patents. The license from PerkinElmer grants the Company rights under certain patents to produce and commercialize certain of the reagents used in some applications on the HeliScope system, which contain chemicals purchased from PerkinElmer. In exchange for rights licensed from PerkinElmer, the Company is obligated to pay PerkinElmer a portion of the Company's net revenue from the sale of reagents that contain chemicals covered by the patents licensed under the PerkinElmer agreement. The Company has the right to terminate the agreement at any time upon 90 days written notice to PerkinElmer. Each party has the right to terminate the agreement upon breach by the other party subject to notice and an opportunity to cure. The agreement also terminates upon the occurrence of specified bankruptcy events. PerkinElmer has the sole right under the agreement to enforce the licensed patents. There has been no expense recorded for this agreement for any period from May 9, 2003 (inception) through December 31, 2007.

Operating leases

In January 2004, the Company entered into a sublease and a direct operating lease for office and laboratory space. The sublease expired on April 30, 2005. The direct lease commenced thereafter from May 1, 2005 and expired on December 31, 2005. As provided in the facility lease, the Company deposited $40,000 for the sublease and $30,000 for the direct lease in escrow for security. As of December 31, 2006 and 2007, the Company has $30,000 and $0, respectively, recorded in prepaid and other current assets for these security deposits. At December 31, 2007, the Company has no further obligations under this agreement.

In December 2005, the Company entered into an operating lease for new office and laboratory space. The lease expires in August 2009. In connection with this lease agreement, the Company entered into a letter of credit in the amount of $450,000, naming the Company's landlord as beneficiary. As of December 31, 2006 and 2007, the Company has classified the $450,000 letter of credit as restricted cash on the consolidated balance sheet. Additionally, in connection with the lease agreement, the Company received lease incentives from the landlord of certain leasehold improvements. The Company recorded the lease incentives as a liability and is amortizing them over the lease term as a reduction in rent

8. Commitments and Contingencies (Continued)

expense. For the years ended December 31, 2006 and 2007, the Company recorded $70,000 and $146,000, respectively, as a reduction in rent expense for this amortization. The Company has recorded a liability for these lease incentives at December 31, 2006 and 2007 of $354,000 and $258,000, respectively, of which $133,000 and $149,000 is recorded in accrued expenses and other current liabilities at December 31, 2006 and 2007, respectively, and $221,000 and $109,000 is recorded in other long-term liabilities at December 31, 2006 and 2007, respectively, on the accompanying consolidated balance sheet.

In February 2007 and December 2007, the Company amended its existing operating lease for office and laboratory space to include additional office space in the same building, which will result in additional cash payments of approximately $581,000, $656,000 and $164,000 for each of the years ending December 31, 2008, 2009 and 2010.

Future minimum lease payments under operating leases as of December 31, 2007 are as follows (in thousands):

2008	$1,500
2009	1,280
2010	164
Thereafter	—
Total minimum lease payments	$2,944

Total rent expense was $232,000, $939,000, $1.3 million and $2.8 million for the years ended December 31, 2005, 2006, and 2007, and the period from May 9, 2003 (date of inception) through December 31, 2007, respectively.

The Company records rent expense on a straight-line basis over the term. Accordingly, the Company has recorded a liability for deferred rent at December 31, 2006 and 2007 of $141,000 and $185,000, respectively, of which $21,000 and $57,000 is recorded in accrued expenses and other current liabilities at December 31, 2006 and 2007, respectively, and $120,000 and $128,000 is recorded in other long-term liabilities at December 31, 2006 and 2007, respectively, on the accompanying consolidated balance sheet.

9. Long-Term Debt

Line of credit facility and security agreement

In June 2006, the Company entered into a line of credit facility and security agreement (the "Credit Facility") with General Electric Capital Corporation ("GE Capital"). The Credit Facility provides that the Company may borrow up to $8.0 million at an interest rate based on the Federal Reserve's 3 year Treasury Constant Maturities Rate. The end of the advance period was December 31, 2007. The proceeds of the Credit Facility may be used for the purchase of equipment, and is collateralized by specific equipment assets. Payments are required to be made on a monthly basis, of which, the first 6 months will be interest-only payments and then 30 months of principal and interest for each advance. The outstanding balance is collateralized by the equipment purchased with the proceeds from each equipment advance. As of December 31, 2007, advances on the Credit Facility were $2.5 million at a weighted-average interest rate of 10.1%.

9. Long-Term Debt (Continued)

Loan and security agreement

In December 2007, the Company entered into a loan and security agreement with GE Capital. The loan agreement provides that the Company may borrow up to $20.0 million at an interest rate equal to the sum of (i) the greater of (A) an interest rate based on the Federal Reserve's three year Treasury Constant Maturities Rate or (B) 3.84% plus (ii) 6.11%. The initial term loan was made on the closing date in an aggregate principal amount equal to $10.0 million. After the initial term loan, through June 30, 2008, the Company may request one additional term loan in an amount equal to $10.0 million. The credit facility contains both conditions precedent that must be satisfied prior to any borrowing and affirmative and negative covenants to which the Company and its subsidiaries must adhere. The proceeds of the loan agreement may be used for working capital, capital expenditures and general corporate purposes and are collateralized by essentially all of the Company's assets. Payments are required to be made on a monthly basis. For the initial term loan, interest-only payments are required for the first twelve months. Thereafter, for the following 24 months, payments of principal and interest will be due. For any subsequent term loan, interest-only payments will be required for the first nine months. Thereafter, for the following 27 months, payments of principal and interest will be due. As of December 31, 2007, advances on the loan agreement were $10.0 million at 9.95%.

As of December 31, 2007, loan payable payments are due as follows (in thousands):

2008	$ 1,943
2009	6,085
2010	5,535
2011	861
Thereafter	—
Total future minimum payments	14,424
Less: amount representing interest	(2,663)
Less: debt discount	25
Add: amortization of debt discount	(12)
Carrying value of debt	11,774
Less: current portion	988
Long-term obligations	10,786

Redeemable convertible preferred stock warrant

In connection with the execution of the Credit Facility, the Company issued a warrant to GE Capital to purchase 62,016 shares of Series B redeemable convertible preferred stock. The warrants had an exercise price of $1.29 per share and expire on the earlier of (i) June 2013; or (ii) two years from the effective date of a Qualified IPO, as defined. In the event of a liquidation event, including the completion of an initial public offering, the warrants, if not exercised, will be converted into warrants to purchase common stock. The fair value of the warrants was estimated at $70,000 using the Black-Scholes valuation model with the following assumptions: expected volatility of 74%, risk free interest rate of 5.1%, expected life of seven years and no dividends. Expected volatility was based on the volatility of similar entities in the life sciences industry of comparable size of market capitalization and financial position that completed initial public offerings within the last ten years. The fair value of the

9. Long-Term Debt (Continued)

warrants was recorded as a liability. Debt issuance costs of $70,000 are amortized to interest expense over the advance period of eighteen months. A total of $25,000 and $45,000 was amortized to interest expense during the years ended December 31, 2006 and 2007, respectively.

In connection with the drawdowns under the Credit Facility in June and November 2006, the Company issued warrants to purchase 19,168 shares of Series B redeemable convertible preferred stock. The warrants had an exercise price of $1.29 per share and expire on the earlier of (i) dates ranging from June 2013 to November 2013; or (ii) two years from the effective date of a Qualified IPO, as defined. In the event of a liquidation event, including the completion of an initial public offering, the warrants, if not exercised, will be converted into warrants to purchase common stock. The fair value of the warrant was estimated at an aggregate of $25,000 using the Black-Scholes valuation model with the following assumptions: expected volatility ranging from 73-74%, risk free interest rate ranging from 4.6%-5.1%, expected life of seven years and no dividends. The fair value of the warrant was recorded as a liability and a debt discount and is being amortized to interest expense using the over the loan term. A total of $4,000 and $8,000 was amortized to interest expense during the years ended December 31, 2006 and 2007, respectively.

The warrants were classified as liabilities and revalued each reporting period, with the resulting gains and losses recorded in interest expense. The change in carrying value of the warrants resulted in a charge of $109,000 for the year ended December 31, 2006 and a credit of $42,000 for the year ended December 31, 2007. The Company continued to adjust the liability for changes in fair value until the completion of its initial public offering on May 24 2007, at which time all redeemable convertible preferred stock warrants were converted into warrants to purchase common stock and, accordingly, the liability of $162,000 was reclassified to equity. All of the outstanding warrants were exercised in November 2007 resulting in the purchase of 9,350 shares of common stock.

10. Redeemable Convertible Preferred Stock

As discussed in Note 2, on May 24, 2007, upon completion of the Company's IPO, 59,189,998 shares of redeemable convertible preferred stock were automatically converted into 13,153,293 shares of common stock.

As of December 31, 2006, the Company had 59,314,030 authorized shares of preferred stock, of which 28,182,246 are designated as Series A redeemable convertible preferred stock and 31,131,784 are designated as Series B redeemable convertible preferred stock. As of December 31, 2007, the Company has 5,000,000 authorized and no shares issued or outstanding.

As of December 31, 2006, redeemable convertible preferred stock consists of:

	Number of Shares Authorized	Number of shares issued and outstanding	Carrying value (in thousands)	Liquidation preference per share
Series A	28,182,246	28,182,246	$26,869	$0.9555
Series B	31,131,784	15,503,876	19,892	$ 1.29
	59,314,030	43,686,122	$46,761	

In October 2003, the Company entered into a $350,000, one-year promissory note with a co-founder of the Company ("Promissory Note"). Interest accrued on the Promissory Note at an

10. Redeemable Convertible Preferred Stock (Continued)

annual rate of 3%, compounding monthly. In December 2003, the Company sold 27,815,946 shares of Series A redeemable convertible preferred stock, at a price of $0.9555 per share, resulting in net proceeds of approximately $26.5 million, net of $59,000 of issuance costs. As part of the sale of Series A redeemable convertible preferred stock, in accordance with the agreement, the Promissory Note was converted into an additional 366,300 shares of Series A redeemable convertible preferred stock.

In March 2006, the Company sold 15,503,876 shares of Series B redeemable convertible preferred stock, at a price of $1.29 per share, resulting in net proceeds of approximately $19.9 million, net of $108,000 of issuance costs.

In January 2007, the Company sold an additional 15,503,876 shares of Series B redeemable convertible preferred stock, at a price of $1.29 per share, resulting in proceeds of approximately $20.0 million. This issuance of Series B redeemable convertible preferred stock contained a beneficial conversion feature as the estimated fair value of the Company's common stock on the date of issuance was in excess of the $1.29 per share conversion price. As the shares of Series B redeemable convertible preferred stock can be immediately converted into shares of common stock at the option of the holder, the beneficial conversion feature of $18.1 million is recorded as an immediate charge to the consolidated statement of operations and a corresponding credit to additional paid-in capital.

As of December 31, 2006, the rights, preferences and privileges of the Company's redeemable convertible preferred stock are listed below.

Conversion

Each share of redeemable convertible preferred stock was convertible, at the option of the holder, into common stock of the Company based on a defined conversion rate, adjustable for certain standard antidilution adjustments. At December 31, 2006, the conversion rate for the Series A and Series B redeemable convertible preferred stock would result in a 4.5 for 1 exchange. Each share of the redeemable convertible preferred stock would automatically convert into common stock at the then appropriate conversion rate upon the closing of an initial public offering of the Company's common stock from which aggregate net proceeds to the Company exceed $50.0 million and the per share offering price was at least $12.8993 for the Series A redeemable convertible preferred stock to automatically convert and at least $17.415 for the Series B redeemable convertible preferred stock to automatically convert. Additionally, at any time, the holders of at least two-thirds of the outstanding shares of redeemable convertible preferred stock could elect to convert all of the shares into common stock.

Dividends

The redeemable convertible preferred stockholders are entitled to receive 8% cumulative dividends. Dividends shall accrue and shall be cumulative, provided, however, that the Company shall be under no obligation to pay such dividends unless so declared by the Board of Directors or upon liquidation. Through May 24, 2007, the date of conversion, the Board of Directors did not declare a payment of dividends.

10. Redeemable Convertible Preferred Stock (Continued)

Voting rights

The redeemable convertible preferred stockholders generally voted together with all other classes and series of stock as a single class on all matters and are entitled to a number of votes equal to the number of shares of common stock into which each share of such preferred stock was convertible. With respect to the number of directors, the holders of the Series A and Series B redeemable convertible preferred stock were entitled to elect five directors of the Company.

Liquidation preferences

In the event of liquidation, dissolution, merger, sale or winding-up of the Company, the holders of the Series A and Series B redeemable convertible preferred stock were entitled to receive, prior to and in preference of the holders of common stock, an amount equal to the greater of (i) $0.9555 and $1.29 per share (subject to certain standard antidilution adjustments), respectively, plus any accrued but unpaid dividends; or (ii) such amount per share that would have been payable had each such share been converted to common stock.

If upon any such liquidation, dissolution, merger, sale or winding-up of the Company the remaining assets of the Company available for distribution to its stockholders should be insufficient to pay the holders of shares of preferred stock the full amount to which they were entitled, the assets of the Company should be distributed ratably amongst the holders of Series A and Series B redeemable convertible preferred stock.

After the payment of all preferential amounts required to be paid to the holders of Series A and Series B redeemable convertible preferred stock upon the liquidation, dissolution, merger, sale or winding-up of the Company, the holders of Series A and Series B redeemable convertible preferred stock would have no further participation in the distribution of assets of the Company and would have no further rights of conversion to common stock. All remaining net assets of the Company available for distribution would be distributed ratably among the holders of common stock.

The Series A and Series B redeemable convertible preferred stock were not subject to mandatory redemption; however, there were circumstances outside the control of the Company that could have resulted in the holders of the Series A or Series B redeemable convertible preferred stock being redeemed upon certain deemed liquidation events in limited circumstances. Accordingly, the Series A and Series B preferred stock had been classified as redeemable convertible preferred stock. The Series A and Series B redeemable convertible preferred stock was not being accreted and the dividends were not being accrued because the conditions to cause these deemed liquidation events were not considered to be probable.

11. Common Stock

As of December 31, 2006, the Company had 100,000,000 shares of common stock authorized. In June 2007, the Company filed its Fourth Amended and Restated Certificate of Incorporation which increased the number of authorized shares of common stock to 120,000,000.

11. Common Stock (Continued)

As of December 31, 2006 and 2007, the Company had 100,000,000 and 120,000,000 shares of common stock authorized, respectively. As of December 31, 2006 and 2007, the Company had 2,051,269 and 20,983,638 shares issued and outstanding, respectively. As of December 31, 2006, the Company had reserved 13,153,293 shares of common stock for issuance to redeemable convertible preferred stockholders upon the conversion of the redeemable convertible preferred stock, and 18,040 shares of common stock for future issuance upon exercise of redeemable convertible preferred stock warrants. As of December 31, 2006 and 2007, the Company has reserved 711,775 and 2,194,663 shares of common stock, respectively, for future issuance upon exercise of common stock options.

Each share of common stock entitles the holder to one vote on all matters submitted to a vote of the Company's stockholders. Common stockholders are not entitled to receive dividends unless declared by the Company's Board of Directors.

12. Income Taxes

There is no provision for income taxes because the Company has incurred operating losses since inception. The reported amount of income tax expense for the years differs from the amount that would result from applying domestic federal statutory tax rates to pretax losses primarily because of the changes in the valuation allowance. Significant components of the Company's deferred tax assets at December 31, 2006 and 2007 are as follows (in thousands):

	December 31,	
	2006	2007
Deferred tax assets:		
Net operating loss carryforwards	$ 14,029	$ 24,204
Research and development credit carryforwards	1,764	3,430
Depreciation and amortization	441	4,336
Allowances and reserves	449	328
	16,683	32,298
Less: Valuation allowance	(16,683)	(32,298)
Net deferred tax assets	$ —	$ —

As of December 31, 2007, the Company has federal and state net operating losses ("NOL") of approximately $60.1 million and $61.2 million, respectively, as well as federal and state research and development credits of approximately $2.3 million and $1.7 million, respectively, which may be available to reduce future taxable income and taxes. Federal NOLs and research and development credits each begin to expire in 2024. State NOLs and research and development credits begin to expire in 2009 and 2019, respectively. As required by SFAS No. 109 "Accounting for Income Taxes," the Company has evaluated the positive and negative evidence bearing upon the realizability of its deferred tax assets, which are comprised principally of NOLs. Management has determined that is it more likely than not that the Company will not recognize the benefits of the federal and state deferred tax assets and, as a result, a valuation allowance of $16.7 million and $32.3 million has been established at December 31, 2006 and 2007, respectively.

12. Income Taxes (Continued)

A reconciliation of income tax expense (benefit) at the statutory federal income tax rate and income taxes as reflected in the financial statements is as follows:

	Year ended December 31,		
	2005	2006	2007
Federal income tax at statutory rate	34.0%	34.0%	34.0%
Research and development credits	5.3%	4.4%	4.4%
State income tax, net of federal tax benefit	6.2%	6.0%	6.2%
Other	(0.3)%	(1.5)%	(2.1)%
Increase in valuation allowance	(45.2)%	(42.9)%	(42.5)%
Effective tax rate	0.0%	0.0%	0.0%

On January 1, 2007, the Company adopted the provisions of FIN No. 48. The Company has no amounts recorded for any unrecognized tax benefits as of January 1, 2007 or December 31, 2007. In addition, the Company did not record any amount for the implementation of FIN No. 48. The Company's policy is to record estimated interest and penalties related to the underpayment of income taxes as a component of its income tax provision. As of January 1, 2007 and December 31, 2007, the Company had no accrued interest or tax penalties recorded. Each of the Company's income tax return reporting periods since May 9, 2003 (date of inception) are open to income tax audit examination by the federal and state tax authorities.

Utilization of NOL and research and development credit carryforwards may be subject to a substantial annual limitation due to ownership changes that have occurred previously or that could occur in the future provided by Section 382 of the Internal Revenue Code of 1986, as well as similar state provisions. These ownership changes may limit the amount of NOL and research and development credit carryforwards that can be utilized annually to offset future taxable income and tax, respectively. In general, an ownership change, as defined by Section 382, results from transactions increasing the ownership of certain shareholders or public groups in the stock of a corporation by more than 50 percentage points over a three-year period. Since the Company's formation, the Company has raised capital through the issuance of common stock and preferred stock, which, combined with the purchasing shareholders' subsequent disposition of those shares, may have resulted in a change of control, as defined by Section 382, or could result in a change of control in the future upon subsequent disposition. The Company has not currently completed a study to assess whether a change of control has occurred or whether there have been multiple changes of control since the Company's formation due to the significant complexity and cost associated with such study and that there could be additional changes in control in the future. If we have experienced a change of control at any time since the Company's formation, utilization of NOL or research and development credit carryforwards would be subject to an annual limitation under Section 382. Any limitation may result in expiration of a portion of the NOL or research and development credit carryforwards before utilization. Further, until a study is completed and any limitation known, no amounts are being presented as an uncertain tax position under FIN No. 48.

13. Stock-Based Compensation

In 2003, the Company's Board of Directors adopted the 2003 Stock Option and Incentive Plan (the "2003 Stock Plan"). The 2003 Stock Plan provides for the granting of incentive and non-qualified stock

13. Stock-Based Compensation (Continued)

options, restricted stock and other equity awards to employees, officers, directors, consultants and advisors of the Company. Provisions such as vesting, repurchase and exercise conditions and limitations are determined by the Board of Directors on the grant date. The maximum number of shares of common stock that may be issued pursuant to the 2003 Stock Plan as of December 31, 2006 was 3,128,084. The Company's 2007 Stock Option and Incentive Plan ("2007 Stock Plan") was adopted by the Company's Board of Directors in April 2007 and approved by the Company's stockholders in May 2007. The 2007 Stock Plan permits the Company to make grants of incentive stock options, non-qualified stock options, stock appreciation rights, deferred stock awards, restricted stock awards, unrestricted stock awards and dividend equivalent rights. The 2007 Stock Plan provides that the number of shares reserved and available for issuance under the plan will be automatically increased each January 1, beginning in 2008, by 4.5% of the outstanding number of shares of common stock on the immediately preceding December 31 or such lower number of shares of common stock as determined by the Board of Directors. This number is subject to adjustment in the event of a stock split, stock dividend or other change in the Company's capitalization. Generally, shares that are forfeited or canceled from awards under the 2007 Stock Plan also will be available for future awards. In addition, available shares under the Company's 2003 Stock Plan, including as a result of the forfeiture, expiration, cancellation, termination or net issuances of awards, are automatically made available for issuance under the 2007 Stock Plan. The maximum number of shares of common stock that may be issued pursuant to the 2007 Stock Plan as of December 31, 2007 is 1,440,266. As of December 31, 2007, 684,732 shares of common stock are available for issuance under the 2007 Stock Plan.

Prior to January 1, 2006, the Company accounted for employee stock-based compensation arrangements in accordance with the provisions of SFAS No. 123 "Accounting for Stock-Based Compensation." Under the fair value recognition provisions of SFAS No. 123, stock-based compensation cost is measured at the grant date based on the fair value of the award and is recognized as expense over the vesting period.

Effective January 1, 2006, the Company adopted the fair value recognition provisions of SFAS No. 123(R), "Share-Based Payment," using the modified prospective transition method. Under the modified prospective transition method, compensation cost recognized in the year ended December 31, 2006 included: (a) the pro rata compensation cost for all share-based compensation granted prior to, but not yet vested as of December 31, 2005, based on the grant-date fair value estimated in accordance with the original provisions of SFAS No. 123, and (b) the pro rata compensation cost for all share-based payments granted on or subsequent to January 1, 2006, based on the grant-date fair value estimated in accordance with the provisions of SFAS No. 123(R).

The Company accounts for stock-based compensation issued to non-employees in accordance with SFAS No. 123(R) and EITF No. 96-18, "Accounting for Equity Instruments that are Issued to Other Than Employees for Acquiring, or in Conjunction with, Selling Goods or Services." The Company records the expense of such services based on the estimated fair value of the equity instrument using the Black-Scholes option pricing model. The value of the equity instrument is charged to earnings over the term of the service agreement.

Stock options

During the years ended December 31, 2005, 2006, 2007 and the period from May 9, 2003 (date of inception) to December 31, 2007, the Company granted 52,000, 581,755, 1,572,749 and 2,313,173 stock

13. Stock-Based Compensation (Continued)

options, respectively to certain employees and directors. The vesting of these awards is time-based and the restrictions typically lapse 25% after one year and monthly thereafter for the next 36 months.

During the years ended December 31, 2005, 2006, 2007 and the period from May 9, 2003 (date of inception) to December 31, 2007, the Company granted 13,444, 6,666, 13,332 and 97,530 stock options, respectively to certain nonemployees in exchange for certain consulting services. Vesting on these awards is time-based and the vesting periods range from immediate vesting on grant date to a four-year period. The Company recorded a stock-based compensation charge on these awards following the guidance of EITF No. 96-18, and the accelerated vesting method as described in FIN No. 28, "Accounting for Stock Appreciation Rights and Other Variable Stock Option or Award Plans—an Interpretation of APB Opinion No. 15 and 25."

The exercise price of each stock option shall be specified by the Board of Directors at the time of grant. The vesting period for each stock option is specified by the Board of Directors at the time of grant and is generally over a four-year period. The stock options expire ten years after the grant date.

The fair value of each stock option grant was estimated on the date of grant using the Black-Scholes option-pricing model. The expected life assumption is based on the expected life assumptions of similar entities. Expected volatility is based on volatility of similar entities in the life sciences industry of comparable size of market capitalization and financial position that have completed initial public offerings within the last ten years. The risk-free interest rate is the yield currently available on U.S. Treasury zero-coupon issues with a remaining term approximating the expected term used as the input to the Black-Scholes model. The relevant data used to determine the value of the stock option grants is as follows:

	December 31,		
	2005	2006	2007
Weighted average risk-free interest rate	4.0%	4.8%	4.5%
Expected life in years	7.6	7.0	6.2
Expected volatility	80.0%	75.7%	72.1%
Expected dividends	0.0%	0.0%	0.0%

13. Stock-Based Compensation (Continued)

A summary of stock option activity for the year ended December 31, 2007 is as follows:

	Number of Shares	Weighted average exercise price	Weighted average remaining contractual term (in years)	Aggregate intrinsic value as of December 31, 2007 (in thousands)
Outstanding:				
Balance at December 31, 2006	711,775	$ 0.54		
Granted	1,586,081	$10.40		
Exercised	(13,756)	$ 0.60		
Forfeited	(56,222)	$10.20		
Expired	(33,215)	$10.94		
Balance at December 31, 2007	2,194,663	$ 7.86	9.1	$5,658
Exercisable at December 31, 2007	356,738	$ 3.17	8.2	$2,593
Vested and unvested expected to vest at December 31, 2007	1,932,529	$ 7.86	9.1	$4,986

In March 2007, the Company modified 578,554 unvested stock options granted during the year ended December 31, 2006, which had an exercise price of $0.59 per share, to an exercise price of $1.80 per share with respect to 493,888 stock options granted through October 31, 2006, and to an exercise price of $8.87 per share with respect to 84,666 stock options granted in November and December 2006. This transaction was accounted for as a modification in accordance with SFAS No. 123(R) and did not have a material impact on the Company's financial position, statement of operations or cash flows.

From May 9, 2003 (date of inception) through December 31, 2007, there were 2,410,703 stock options granted, of which 82,269 were exercised, 100,555 were forfeited, and 33,215 had expired through December 31, 2007. The weighted average exercise prices of stock option grants, exercises, forfeitures and expirations from May 9, 2003 (date of inception) through December 31, 2007 was $7.03 per share, $0.48 per share, $5.84 per share and $10.94 per share, respectively.

The aggregate intrinsic value was calculated based on the positive difference between the fair value of the Company's common stock on December 31, 2007 of $10.44 per share and the exercise price of the underlying options.

The weighted-average grant-date fair value of grants of stock options was $0.36 per share, $3.06 per share and $10.57 per share for the years ended December 31, 2005, 2006 and 2007, respectively.

The total intrinsic value of stock options exercised was $0, $285,000 and $83,000 for the years ended December 31, 2005, 2006 and 2007, respectively.

13. Stock-Based Compensation (Continued)

The following table summarizes information about stock options outstanding at December 31, 2007:

Options outstanding			Options exercisable		
Weighted average exercise price	Number of stock options	Weighted average remaining life (years)	Number of stock options	Weighted average exercise price	Weighted average remaining life (years)
$ 0.45	120,319	7.3	73,976	$ 0.45	7.2
$ 1.80	487,434	8.3	213,088	$ 1.80	8.3
$ 7.85	55,555	9.6	—	$ 7.85	—
$ 8.20	55,860	9.6	—	$ 8.20	—
$ 8.56	65,400	9.8	—	$ 8.56	—
$ 8.63	272,276	9.5	2,220	$ 8.63	9.5
$ 8.87	84,663	8.9	23,402	$ 8.87	8.9
$10.75	263,811	9.9	—	$10.75	—
$10.85	55,000	10.0	—	$10.85	—
$11.07	429,460	9.1	44,052	$11.07	9.1
$11.32	27,444	9.8	—	$11.32	—
$11.79	277,441	9.3	—	$11.79	—
$ 7.86	2,194,663	9.1	356,738	$ 3.17	8.2

Restricted stock

During the years ended December 31, 2005, 2006 and 2007, and the period from May 9, 2003 (date of inception) to December 31, 2007, the Company granted 55,555, 394,444, 56,757, and 1,106,755 shares of restricted stock, respectively to certain employees. The vesting of these awards is time-based and the restrictions typically lapse 25% after one year and monthly thereafter for the next 36 months.

During the years ended December 31, 2005, 2006 and 2007, and the period from May 9, 2003 (date of inception) to December 31, 2007, the Company granted 1,666, 1,111, 2,222, and 635,013 shares of restricted stock, respectively to certain nonemployees in exchange for certain consulting services. Vesting on these awards is time-based and the vesting periods range from immediate vesting on grant date to a four-year period. The Company recorded a stock-based compensation charge on these awards following the guidance of EITF No. 96-18, and the accelerated vesting method as described in FIN 28, "Accounting for Stock Appreciation Rights and Other Variable Stock Option or Award Plans—an Interpretation of APB Opinion No. 15 and 25."

13. Stock-Based Compensation (Continued)

For employee and nonemployee restricted stock awards granted before January 1, 2007, the employee or nonemployee paid the Company cash in an amount up to the fair market value of the award. If the employee ceases employment with the Company, or if the nonemployee terminates the service arrangement, the employee or nonemployee is automatically entitled to be refunded the cash paid for any unvested awards. At the time the cash is received, the Company records the cash as subscription payable in the consolidated balance sheet, and the amount is reclassified to additional paid-in capital over the vesting period. At December 31, 2006 and 2007, the Company had $263,000 and $127,000, respectively, recorded as subscription payable, of which $149,000 and $52,000 was recorded to accrued expenses and other current liabilities at December 31, 2006 and 2007, respectively, and $114,000 and $75,000 was recorded to other long-term liabilities at December 31, 2006 and 2007, respectively.

A summary of restricted stock activity during the year ended December 31, 2007 is as follows:

	Number of shares	Weighted average grant date fair value	Weighted average remaining contractual term (in years)	Aggregate intrinsic value as of December 31, 2007 (in thousands)
Balance of outstanding restricted stock at December 31, 2006	547,036	$4.13		
Granted	58,979	$8.03		
Vested	(228,423)	$2.84		
Cancelled	(88,888)	$1.80		
Forfeited	(11,111)	$0.45		
Balance of outstanding restricted stock at December 31, 2007	277,593	$6.56	2.7	$1,078

From May 9, 2003 (date of inception) through December 31, 2007, there were 1,741,768 shares of restricted stock granted, at a weighted average grant date fair value of $1.62, of which 1,364,176 were fully vested at December 31, 2007, with a weighted average grant date fair value of $1.64.

The aggregate intrinsic value was calculated based on the positive difference between the fair value of the Company's common stock on December 31, 2007 of $10.44 per share and the estimated fair value of the Company's common stock at the date of grant.

The total intrinsic value of restricted stock vested was $122,000, $1.4 million and $1.7 million for the years ended December 31, 2005. 2006 and 2007, respectively.

In July 2006, the Company sold 44,444 shares of fully vested common stock to an executive for cash at a price of $0.59 per share. The fair value of the Company's common stock at the time of grant was $5.58 per share, resulting in an intrinsic value of $4.99 per share. During the year ended December 31, 2006, the Company recorded a charge to general and administrative expenses of $221,000 relating to the grant of these shares of common stock.

The Company recorded stock-based compensation expense to the extent that the fair value of the Company's common stock at the date of the grant exceeded the exercise price of the equity awards.

13. Stock-Based Compensation (Continued)

The Company recognized stock-based compensation expense on all employee and nonemployee awards as follows (in thousands):

	Year Ended December 31,			Period from May 9, 2003 (date of inception) through December 31, 2007
	2005	2006	2007	
General and administrative expense	$43	$1,180	$2,372	$3,754
Research and development expense	12	99	1,024	1,137
Total	$55	$1,279	$3,396	$4,891

Total unrecognized stock-based compensation expense for all stock-based awards was approximately $10.0 million at December 31, 2007, of which $3.4 million will be recognized in 2008, $3.0 million in 2009, $2.7 million in 2010 and $907,000 thereafter. This results in these amounts being recognized over a weighted-average period of 1.6 years.

14. Net Loss per Share

Basic net loss per share is computed by dividing net loss by the weighted average number of common shares outstanding for the period. The Company's potential dilutive shares, which include outstanding common stock options, unvested restricted stock, redeemable convertible preferred stock and warrants have not been included in the computation of diluted net loss per share for all periods as the result would be antidilutive. Such potentially dilutive shares are excluded when the effect would be to reduce net loss per share. Because the Company reported a net loss for the years ended December 31, 2005, 2006 and 2007, all potential common shares have been excluded from the computation of the dilutive net loss per share for all periods presented because the effect would have been antidilutive. Such potential common shares consist of the following:

	As of December 31,		
	2005	2006	2007
Stock options	178,167	711,775	2,194,663
Unvested restricted stock	523,929	591,480	322,037
Warrants	—	18,040	—
Redeemable convertible preferred stock	6,262,703	9,707,997	—
	6,964,799	11,029,292	2,516,700

15. Related Party Transactions

In June 2003, the Company entered into two agreements with a founder of the Company: 1) a services agreement providing for the rendering of certain administrative, management and development services and 2) a license agreement allowing for the use of a portion of leased premises. Under these agreements, the Company paid this founder $30,000 during the year ended December 31, 2004. The license agreement was terminated in February 2004.

In September 2003, the Company entered into a consulting arrangement with a board member and scientific founder of the Company. Under this agreement, the Company paid this board member and

15. Related Party Transactions (Continued)

scientific founder $120,000 and $120,000 for the years ended December 31, 2004 and 2005, respectively. At December 31, 2005, this arrangement was discontinued and the board member and scientific founder resigned from the Board of Directors.

In September 2006, the Company loaned $28,000 to an officer, of which $4,000 was outstanding at December 31, 2006 and was recorded as a subscription receivable in the stockholders' equity (deficit) section of the consolidated balance sheet. The $4,000 was repaid to the Company in January 2007.

16. 401(k) Plan

The Company has a 401(k) income deferral plan (the "Plan") for employees. According to the terms of the Plan, the Company may make discretionary matching contributions to the Plan. The Company made no discretionary contributions during the years ended December 31, 2005, 2006 and 2007.

17. Subsequent Events

Resignation of Louise A. Mawhinney as Senior Vice President and Chief Financial Officer

On March 7, 2008, the Company announced the resignation of Louise A. Mawhinney, Senior Vice President and Chief Financial Officer of Helicos, pursuant to a letter agreement (the "Agreement") entered into between the Company and Ms. Mawhinney and effective as of March 3, 2008. Under the Agreement, Ms. Mawhinney will serve in her current position until the earlier of (1) March 19, 2008 and (2) an earlier date agreed upon in writing by Helicos and Ms. Mawhinney (the "Resignation Date").

The Company further announced the appointment of Stephen J. Lombardi as interim principal financial officer of Helicos and the appointment of Kevin G. Lafond as interim principal accounting officer of Helicos effective as of the Resignation Date.

The Company is currently looking for a new Chief Financial Officer.

First Shipment

On March 5, 2008, the Company announced it shipped its first Helicos™ Genetic Analysis System to its initial customer, Expression Analysis of Durham, North Carolina.

18. Unaudited Quarterly Results

The Company's unaudited quarterly results are summarized below (in thousands, except share and per share data):

	Three Months Ended							
	March 31, 2006	June 30, 2006	September 30, 2006	December 31, 2006	March 31, 2007	June 30, 2007	September 30, 2007	December 31, 2007
Grant revenue	$ —	$ —	$ —	$ 159	$ 92	$ 143	$ 230	$ 117
Operating expenses								
Research and development	2,601	2,884	4,182	4,715	5,385	5,298	7,242	6,833
General and administrative	1,034	1,556	1,877	2,450	3,251	3,310	3,615	4,136
Total operating expenses	3,635	4,440	6,059	7,165	8,636	8,608	10,857	10,969
Operating loss	(3,635)	(4,440)	(6,059)	(7,006)	(8,544)	(8,465)	(10,627)	(10,852)
Interest income	130	244	224	168	267	427	736	530
Interest expense	—	(12)	(81)	(113)	(73)	(34)	(73)	(97)
Net loss	(3,505)	(4,208)	(5,916)	(6,951)	(8,350)	(8,072)	(9,964)	(10,419)
Beneficial conversion feature related to Series B redeemable convertible preferred stock	—	—	—	—	(18,140)	—	—	—
Net loss attributable to common stockholders	$ (3,505)	$ (4,208)	$ (5,916)	$ (6,951)	$ (26,490)	$ (8,072)	$ (9,964)	$ (10,419)
Net loss attributable to common stockholders per share—basic and diluted	$ (3.22)	$ (3.53)	$ (4.42)	$ (4.91)	$ (17.90)	$ (0.87)	$ (0.48)	$ (0.50)
Weighted average number of common shares used in computation—basic and diluted	1,087,438	1,193,726	1,337,990	1,414,591	1,480,130	9,294,298	20,573,636	20,639,115

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

None.

ITEM 9A. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our Chief Executive Officer (CEO) and Chief Financial Officer (CFO), has evaluated the effectiveness of the design and operation of our disclosure controls and procedures (as defined in Rule 13a-15(e) under the Securities Exchange Act of 1934, as amended ("the Exchange Act")), as of December 31, 2007. Based on that evaluation, our CEO and CFO have concluded that our disclosure controls and procedures were effective to provide reasonable assurance that information required to be disclosed in our Exchange Act reports is recorded, processed, summarized and reported within the time periods specified by the SEC, and that material information relating to the Company is made known to senior management, including the CEO and CFO, as appropriate to allow timely decisions regarding required disclosure.

While we believe the present design of our disclosure controls and procedures is effective enough to make known to our senior management in a timely fashion all material information concerning our business, we intend to continue to improve the design and effectiveness of our disclosure controls and procedures to the extent necessary in the future to provide our senior management with timely access to such material information, and to correct any deficiencies that we may discover in the future, as appropriate.

Evaluation of Control over Financial Reporting

This annual report does not include a report of management's assessment regarding internal control over financial reporting or an attestation report of the Company's registered public accounting firm due to a transition period established by rules of the Securities and Exchange Commission for newly public companies.

ITEM 9B. OTHER INFORMATION

None.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information required by this item concerning our directors and executive officers is incorporated by reference herein from the information to be contained in our definitive proxy statement (the "2008 Definitive Proxy Statement") for the 2008 annual meeting of stockholders to be filed with the Securities and Exchange Commission within 120 days after the year ended December 31, 2007.

The information required by this item concerning compliance with Section 16(a) of the Exchange Act is incorporated herein by reference from the information contained in our 2008 Definitive Proxy Statement.

Code of Ethics

Certain documents relating to our corporate governance, including our Code of Business Conduct and Ethics, which is applicable to our directors, officers and employees, and the charters of the Audit Committee, Compensation Committee and Nominating and Corporate Governance Committee of our Board of Directors, are available on our website at *http://www.helicosbio.com.* We intend to disclose substantive amendments to or waivers (including implicit waivers) of any provision of the Code of Business Conduct and Ethics that apply to our principal executive officer, principal financial officer, principal accounting officer or controller, or persons performing similar functions, by posting such information on our website available at *http://www.helicosbio.com.*

ITEM 11. EXECUTIVE COMPENSATION

The information required by Item 11 of Form 10-K is incorporated herein by reference from the information contained in our 2008 Definitive Proxy Statement.

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

The information required by Item 12 of Form 10-K is incorporated herein by reference from the information contained in our 2008 Definitive Proxy Statement.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS AND DIRECTOR INDEPENDENCE

The information required by Item 13 of Form 10-K is incorporated herein by reference from the information contained in our 2008 Definitive Proxy Statement.

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

The information required by Item 14 of Form 10-K is incorporated herein by reference from the information contained in our 2008 Definitive Proxy Statement.

PART IV

ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

INDEX TO EXHIBITS

Exhibit Number	Description of Document
3.1**	Form of Third Amended and Restated Certificate of Incorporation of the Registrant (incorporated by reference herein to exhibit 3.1 to the Company's Registration Statement on Form S-1 (File No. 333-140973) which became effective on May 24, 2007)
3.2**	Amended and Restated By-laws of the Registrant (Incorporated by reference herein to exhibit 3.2 to the Company's Registration Statement on Form S-1 (File No. 333-140973) which became effective on May 24, 2007)
3.3**	Form of Fourth Amended and Restated Certificate of Incorporation of the Registrant (Incorporated by reference herein to exhibit 3.3 to the Company's Registration Statement on Form S-1 (File No. 333-140973) which became effective on May 24, 2007)
4.1**	Specimen Stock Certificate (Incorporated by reference herein to exhibit 4.1 to the Company's Registration Statement on Form S-1 (File No. 333-140973) which became effective on May 24, 2007)
10.1**	Warrant by and between the Registrant and General Electric Capital Corporation, dated June 9, 2006 (Incorporated by reference herein to exhibit 10.1 to the Company's Registration Statement on Form S-1 (File No. 333-140973) which became effective on May 24, 2007)
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10.4**	Lease Agreement by and between the Registrant and Lincoln Property Company, dated December 30, 2005 (Incorporated by reference herein to exhibit 10.4 to the Company's Registration Statement on Form S-1 (File No. 333-140973) which became effective on May 24, 2007)
10.5**	Lease Agreement by and between the Registrant and Cummings Properties, LLC, dated February 1, 2006 (Incorporated by reference herein to exhibit 10.5 to the Company's Registration Statement on Form S-1 (File No. 333-140973) which became effective on May 24, 2007)
10.6**	2003 Stock Option and Incentive Plan and forms of agreements thereunder (Incorporated by reference herein to exhibit 10.6 to the Company's Registration Statement on Form S-1 (File No. 333-140973) which became effective on May 24, 2007)
10.7†**	License Agreement between the Registrant and California Institute of Technology, dated November 30, 2003 (Incorporated by reference herein to exhibit 10.7 to the Company's Registration Statement on Form S-1 (File No. 333-140973) which became effective on May 24, 2007)
10.8**	License Agreement between the Registrant, Roche Diagnostics GMBH and Roche Diagnostics Corporation, dated June 7, 2004 (Incorporated by reference herein to exhibit 10.8 to the Company's Registration Statement on Form S-1 (File No. 333-140973) which became effective on May 24, 2007)
10.9†**	License Agreement between the Registrant and Arizona Technology Enterprises, dated March 16, 2005 (Incorporated by reference herein to exhibit 10.9 to the Company's Registration Statement on Form S-1 (File No. 333-140973) which became effective on May 24, 2007)

Exhibit Number	Description of Document
10.10**	Form of Indemnification Agreement (Incorporated by reference herein to exhibit 10.10 to the Company's Registration Statement on Form S-1 (File No. 333-140973) which became effective on May 24, 2007)
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10.14+*	Management Incentive Bonus Plan of the Registrant, as amended on March 13, 2008.
10.15†**	License and Supply Agreement, having an effective date of April 23, 2007 between PerkinElmer LAS, Inc. and the Registrant (Incorporated by reference herein to exhibit 10.15 to the Company's Registration Statement on Form S-1 (File No. 333-140973) which became effective on May 24, 2007)
10.16**	Amendment to the Amended and Restated Investor Rights Agreement dated as of May 7, 2007 (Incorporated by reference herein to exhibit 10.16 to the Company's Registration Statement on Form S-1 (File No. 333-140973) which became effective on May 24, 2007)
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10.18+**	Change in Control Agreement, dated as of May 7, 2007, by and between Stephen J. Lombardi and the Registrant (Incorporated by reference herein to exhibit 10.18 to the Company's Registration Statement on Form S-1 (File No. 333-140973) which became effective on May 24, 2007)
10.19+**	Change in Control Agreement, dated as of May 2, 2007, by and between Louise A. Mawhinney and the Registrant (Incorporated by reference herein to exhibit 10.19 to the Company's Registration Statement on Form S-1 (File No. 333-140973) which became effective on May 24, 2007)
10.20+**	Non-Employee Director Compensation Policy (Incorporated by reference herein to exhibit 10.20 to the Company's Registration Statement on Form S-1 (File No. 333-140973) which became effective on May 24, 2007)
10.21+**	2007 Stock Option and Incentive Plan and forms of agreement thereunder (Incorporated by reference herein to exhibit 10.21 to the Company's Registration Statement on Form S-1 (File No. 333-140973) which became effective on May 24, 2007)
10.22+**	Change in Control Agreement between the Company and J. William Efcavitch, dated August 8, 2007 (Incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K, filed with the Securities and Exchange Commission on August 10, 2007).
10.23†*	Loan and Security Agreement by and between the Registrant and General Electric Capital Corporation, dated December 31, 2007
10.24+**	Letter Agreement, effective March 3, 2008, by and between Louise A. Mawhinney and the Company (Incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K, filed with the Securities and Exchange Commission on March 7, 2008).

Exhibit Number	Description of Document
21.1**	Subsidiary of the Registrant
23.1*	Consent of PricewaterhouseCoopers LLP, an independent registered public accounting firm
31.1*	Certification pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
31.2*	Certification pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
32.1*	Certifications pursuant to 18 U.S.C. Section 1350

* Filed herewith

** Previously filed.

† Confidential treatment has been requested for certain provisions of this Exhibit pursuant to Rule 406 promulgated under the Securities Act.

+ Indicates a management contract or any compensatory plan, contract or arrangement.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

Dated: March 17, 2008

/s/ STANLEY N. LAPIDUS

Stanley N. Lapidus
Chairman and Chief Executive Officer
(Principal Executive Officer)

Dated: March 17, 2008

/s/ LOUISE A. MAWHINNEY

Louise A. Mawhinney
Senior Vice President, Chief Financial Officer and Treasurer
(Principal Financial and Accounting Officer)

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

Signature	Title	Date
/s/ STANLEY N. LAPIDUS Stanley N. Lapidus	Chief Executive Officer and Chairman Board of Directors (Principal Executive Officer)	March 17, 2008
/s/ LOUISE A. MAWHINNEY Louise A. Mawhinney	Senior Vice President and Chief Financial Officer (Principal Financial and Accounting Officer)	March 17, 2008
/s/ NOUBAR B. AFEYAN, PHD Noubar B. Afeyan, PhD	Director	March 17, 2008
/s/ ELISABETH K. ALLISON, PHD Elisabeth K. Allison, PhD	Director	March 17, 2008
/s/ BRIAN G. ATWOOD Brian G. Atwood	Director	March 17, 2008
/s/ PETER BARRETT, PHD Peter Barrett, PhD	Director	March 17, 2008
/s/ CLAIRE M. FRASER-LIGGETT, PHD Claire M. Fraser-Liggett, PhD	Director	March 17, 2008
/s/ ROBERT F. HIGGINS Robert F. Higgins	Director	March 17, 2008
/s/ RONALD A. LOWY Ronald A. Lowy	Director	March 17, 2008
/s/ THEO MELAS-KYRIAZI Theo Melas-Kyriazi	Director	March 17, 2008
/s/ STEVEN ST. PETER, MD Steven St. Peter, MD	Director	March 17, 2008

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21.1	Subsidiary of the Registrant
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31.1*	Certification pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
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\+ Indicates a management contract or any compensatory plan, contract or arrangement.

EXHIBIT 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statement on Form S-8 (No. 333-144094) of Helicos BioSciences Corporation of our report dated March 17, 2008 relating to the financial statements, which appears in this Form 10-K.

/s/ PricewaterhouseCoopers LLP
Boston, Massachusetts
March 17, 2008

EXHIBIT 31.1

CERTIFICATION

I, Stanley Lapidus, certify that:

1. I have reviewed this annual report on Form 10-K of Helicos BioSciences Corporation;

2. Based on my knowledge, this 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 report;

3. Based on my knowledge, the financial statements, and other financial information included in this 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 report;

4. The registrant's other certifying officer(s) 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)) 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 report is being prepared;

   (b) [Paragraph omitted in accordance with SEC transition instructions contained in SEC Release 34-47986];

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

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control 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 control 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 control over financial reporting.

Date: March 17, 2008

/s/ STANLEY N. LAPIDUS

Stanley N. Lapidus
Chief Executive Officer and Chairman Board of Directors (Principal Executive Officer)

EXHIBIT 31.2

CERTIFICATION

I, Louise Mawhinney, certify that:

1. I have reviewed this annual report on Form 10-K of Helicos BioSciences Corporation;
2. Based on my knowledge, this 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 report;
3. Based on my knowledge, the financial statements, and other financial information included in this 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 report;
4. The registrant's other certifying officer(s) 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)) 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 report is being prepared;
   (b) [Paragraph omitted in accordance with SEC transition instructions contained in SEC Release 34-47986];
   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control 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 control 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 control over financial reporting.

Date: March 17, 2008

/s/ LOUISE A. MAWHINNEY

Louise A. Mawhinney
Senior Vice President, Chief Financial Officer and Treasurer (Principal Financial and Accounting Officer)

EXHIBIT 32.1

CERTIFICATION

In connection with the Annual Report on Form 10-K of Helicos BioSciences Corporation (the "Company") for the year ended December 31, 2007 as filed with the Securities and Exchange Commission on the date hereof (the "Report), we Stanley Lapidus, the Principal Executive Officer of the Company and Louise Mawhinney, the Principal Financial and Accounting Officer of the Company, hereby certify, pursuant to 18 U.S.C. 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, to our knowledge that:

(1) the Report fully complies with the requirements of Section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934, as amended, and

(2) the information in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company

Date: March 17, 2008

/s/ STANLEY N. LAPIDUS

Stanley N. Lapidus
Chairman and Chief Executive Officer
(Principal Executive Officer)

Date: March 17, 2008

/s/ LOUISE A. MAWHINNEY

Louise A. Mawhinney
Senior Vice President, Chief Financial Officer and Treasurer (Principal Financial and Accounting Officer)

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

Management

Stanley N. Lapidus
Chairman and Chief Executive Officer

Stephen J. Lombardi
President, Chief Operating Officer and Interim Principal Financial Officer

J. William Efcavitch, PhD
Senior Vice President of Product R&D

Kevin G. Lafond, CPA
Controller, Interim Principal Accounting Officer and Treasurer

Board of Directors

Stanley N. Lapidus
Chairman and Chief Executive Officer

Noubar B. Afeyan, PhD

Elisabeth K. Allison, PhD

Brian G. Atwood

Peter Barrett, PhD

Claire M. Fraser-Liggett, PhD

Robert F. Higgins

Ronald A. Lowy

Theo Melas-Kyriazi

Steven St. Peter, MD

Shareholder Information

Corporate Headquarters:
One Kendall Square, Building 700
Cambridge, MA 02139

Common Stock Listing:
Common stock of Helicos BioSciences Corporation is traded on the NASDAQ Global Market under the symbol "HLCS"

Outside Legal Counsel:
Goodwin Procter LLP
Exchange Place
53 State Street
Boston, MA 02109

Independent Registered Public Accounting Firm [1]:
PricewaterhouseCoopers LLP
125 High Street
Boston, MA 02110

Transfer Agent:
Computershare Shareholder Services
250 Royall Street
Canton, MA 02021

Investor Relations:
Justine Alonzo
617-264-1822
InvestorRelations@helicosbio.com

(1) On November 30, 2006, with the approval of our audit committee, we dismissed BDO Seidman, LLP as our independent registered public accounting firm. During the years ended December 31, 2003, 2004 and 2005, and the subsequent period from January 1, 2006 through November 30, 2006, there were no disagreements with BDO Seidman, LLP on any matter of accounting principles or practices, financial statement disclosure, or auditing scope or procedure, which disagreements, if not resolved to the satisfaction of BDO Seidman, LLP, would have caused it to make reference to the subject matter of the disagreements in its reports on our financial statements for such years. During the period from May 9, 2003 (date of inception) through December 31, 2006, there were no reportable events as defined in Item 304(a)(1)(v) of Regulation S-K.

Certain statements made in this document that are not based on historical information are forward-looking statements which are made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. This document contains express or implied forward-looking statements relating to, among other things, management's forecast of financial performance, expectations regarding the achievement of technical milestones, estimates of expenses and future revenues and profitability, product development and marketing plans, and management's plans, objectives and strategies. These statements are neither promises nor guarantees, but are subject to a variety of risks and uncertainties, many of which are beyond Helicos' control, which could cause actual results to differ materially from those contemplated in these forward-looking statements. In particular, the risks and uncertainties include, among other things, our ability to successfully scale the manufacturing process and commercialize the HeliScope system; our history of operating losses and ability to achieve profitability; our ability to establish manufacturing capabilities; the research and development spending levels of academic, clinical and governmental research institutions and pharmaceutical, biotechnology and agriculture companies who may purchase our HeliScope system; our reliance on third-party suppliers; competition; changing technology and customer requirements; our ability to operate in an emerging market; market acceptance of our technology; the length of our sales and implementation cycles; our dependence on large contracts for the sale and implementation of our HeliScope system; failure of our technology and products; our ability to maintain customer relationships and contracts; ethical, legal and social concerns surrounding the use of genetic information; our ability to retain our personnel and hire additional skilled personnel; our ability to manage our rapid growth; our ability to obtain capital when desired on favorable terms; and the volatility of the market price of our common stock. Existing and prospective investors are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date hereof. Helicos undertakes no obligation to update or revise the information contained in this document, whether as a result of new information, future events or circumstances or otherwise. For additional disclosure regarding these and other risks faced by Helicos, see the disclosure contained in Helicos' public filings with the Securities and Exchange Commission.

Helicos BioSciences Corporation
One Kendall Square, Building 700
Cambridge, MA 02139
www.helicosbio.com
Toll Free: 877-2-HELICOS (877-243-5426)
Local: (617) 264-1800

HELICOS BIOSCIENCES CORPORATION

NOTICE OF ANNUAL MEETING OF STOCKHOLDERS TO BE HELD ON MAY 22, 2008

TO OUR STOCKHOLDERS:

The 2008 annual meeting of stockholders of Helicos BioSciences Corporation will be held on Thursday, May 22, 2008, beginning at 10:00 a.m., local time, at the Goodwin Procter LLP conference center, 53 State Street, Boston, Massachusetts 02109, for the following purposes:

1. To elect two Class I directors to serve until the 2011 Annual Meeting of Stockholders or until their successors are duly elected and qualified;

2. To ratify the appointment of PricewaterhouseCoopers LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2008; and

3. To transact such other business as may properly come before the meeting or any postponement or adjournment.

These items of business are more fully described in the proxy statement accompanying this notice. Our Board of Directors has fixed the close of business on April 18, 2008, as the record date for determination of the stockholders entitled to notice of, and to vote at, the meeting and any postponements or adjournments of the meeting.

All stockholders are cordially invited to attend the meeting in person. However, to assure your representation at the meeting, please mark, sign, date and return the enclosed proxy card as soon as possible in the postage-prepaid envelope enclosed for that purpose. Any stockholder attending the meeting may vote in person even if the stockholder has returned a proxy.

By Order of the Board of Directors,

MARK C. SOLAKIAN
Vice President, General Counsel and Secretary

Cambridge, Massachusetts
May 2, 2008

HELICOS BIOSCIENCES CORPORATION

ONE KENDALL SQUARE, BUILDING 700
CAMBRIDGE, MASSACHUSETTS 02139
(617) 264-1800

PROXY STATEMENT FOR 2008 ANNUAL MEETING OF STOCKHOLDERS

The enclosed proxy is solicited on behalf of the Board of Directors of Helicos BioSciences Corporation for use at our 2008 annual meeting of stockholders, or at any postponement or adjournment of the meeting.

These proxy solicitation materials are first being mailed to stockholders on or about May 2, 2008, together with our Form 10-K for the fiscal year ended December 31, 2007, to all stockholders of record at the close of business on April 18, 2008.

ABOUT THE MEETING

When and where is the meeting being held?

Our annual meeting of stockholders for 2008 is being held on Thursday, May 22, 2008, beginning at 10:00 a.m., local time, at the Goodwin Procter LLP conference center, 53 State Street, Boston, Massachusetts 02109.

What is the purpose of the annual meeting?

At our 2008 annual meeting, stockholders will act on the matters outlined in the notice of annual meeting on the cover page of this proxy statement, namely,

- the election of directors;
- the ratification of the appointment of PricewaterhouseCoopers LLP as our independent registered public accounting firm for the year ending December 31, 2008; and
- any other matters that may properly be presented at the meeting.

Who is entitled to notice of and to vote at the meeting?

You are entitled to receive notice of and to vote at our annual meeting (and any postponements or adjournments of the meeting) if our records indicate that you owned shares of our common stock at the close of business on April 18, 2008, the record date for the meeting. At the close of business on that date 20,935,691 shares of our common stock were outstanding and entitled to vote. You are entitled to one vote for each share held and you may vote on each matter to come before the meeting.

How do I vote?

You can vote in person at the meeting or you can vote by proxy by completing and signing the accompanying proxy card and returning it to us. To assure that your vote is recorded promptly, please vote as soon as possible, even if you plan to attend the meeting in person. If you are a registered stockholder and attend the meeting, you may deliver your completed proxy card in person. If your shares are held in street name and you wish to vote at the meeting, you will need to obtain a proxy from the institution that holds your shares.

Can I change my vote after I return my proxy card?

Yes. Even after you have submitted your proxy card, you may revoke it or change your vote at any time before the proxy is exercised by delivering to our Corporate Secretary either a written notice of revocation or a duly executed proxy card bearing a later date or time, or by attending the meeting and

voting in person. Attendance at the meeting will not by itself revoke a previously granted proxy. If you hold your shares through a bank or brokerage firm you may revoke a previously granted proxy or change previously given voting instructions by contacting the bank or brokerage firm, or by obtaining a legal proxy from the bank or brokerage firm and voting at the meeting.

What constitutes a quorum?

The meeting will be held if a majority of the shares of common stock issued and outstanding on the record date are present at the meeting, either in person or by proxy. This is called a quorum for the transaction of business. At the record date, there were 20,935,691 shares of common stock issued and outstanding. Accordingly, the presence of the holders of common stock representing at least 10,467,846 shares will be required to establish a quorum.

Your shares will be counted for purposes of determining if there is a quorum if you are present in person at the meeting, or have properly submitted a proxy card. Votes "for" and "against," and proxies received but marked as "abstentions" and "broker non-votes" will each be counted as present for purposes of determining the presence of a quorum.

What vote is required to approve each item?

The election of directors requires a plurality of the votes cast "for" the election of directors. "Plurality" means that the two nominees who receive the highest number of votes will be elected as directors. In the election of directors, votes may be cast in favor of or withheld with respect to any or all nominees; votes that are withheld will be excluded entirely from the vote and will have no effect on the outcome of the vote except to the extent that the failure to vote for an individual results in another individual receiving a higher number of shares.

The affirmative vote of the holders of a majority of the shares of common stock present in person or represented by proxy and entitled to vote on the item will be required to ratify the appointment of PricewaterhouseCoopers LLP as our independent registered public accounting firm for the current fiscal year. If any other matter is properly submitted to the stockholders at the annual meeting, its adoption generally will require the affirmative vote of the holders of a majority of the shares of common stock present in person or represented by proxy and entitled to vote on that matter.

In accordance with Delaware law, only votes cast "for" a matter constitute affirmative votes. A properly executed proxy marked "abstain" with respect to any matter will not be voted, although it will be counted for purposes of determining whether there is a quorum. Since abstentions will not be votes cast for the particular matter, they will have the same effect as negative votes or votes against that matter.

If you hold your shares in "street name" through a broker or other nominee, your broker or nominee may not be permitted to exercise voting discretion with respect to some of the matters to be acted upon. Thus, if you do not give your broker or nominee specific instructions with respect to a non-discretionary matter, your shares will not be voted on such matter and will not be counted as shares entitled to vote on such matter. However, shares represented by such "broker non-votes" will be counted in determining whether there is a quorum. As "broker non-votes" are not considered entitled to vote they will have no effect on the outcome other than reducing the number of shares present in person or by proxy and entitled to vote from which a majority is calculated.

What are the Board's recommendations?

Our Board of Directors recommends that you vote:

"FOR" the election of the two Class I directors; and

"FOR" ratification of the appointment of PricewaterhouseCoopers LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2008.

When will the voting results be announced?

The voting results will be announced at the meeting and published in our Quarterly Report on Form 10-Q for the second quarter of fiscal year 2008.

Is Helicos paying the cost of this proxy solicitation?

We will pay the costs of the solicitation. We may request banks and brokers and other custodians, nominees and fiduciaries to solicit their customers who own our shares and will reimburse them for their reasonable out-of-pocket expenses. Our employees, directors, officers and others may solicit proxies on our behalf, personally or by telephone, without additional compensation.

YOUR VOTE IS IMPORTANT. WHETHER OR NOT YOU PLAN TO ATTEND THE MEETING, PLEASE COMPLETE AND PROMPTLY RETURN THE ENCLOSED PROXY CARD IN THE ENVELOPE PROVIDED.

GOVERNANCE OF THE COMPANY

Who are the current members of the Board?

The current members of the Board are set forth in Proposal No. 1 below under the heading "Election of Directors."

Is a majority of the directors independent?

Yes. As required by the listing standards of the National Association of Securities Dealers, or NASD, and our *Corporate Governance Guidelines*, a majority of the Board is "independent" as defined by the listing standards of the NASD. The Board is required to make an affirmative determination at least annually as to the independence of each director. The Board has determined that nine of its members (Noubar B. Afeyan, PhD, Elisabeth K. Allison, PhD, Brian G. Atwood, Peter Barrett, PhD, Claire M. Fraser-Liggett, PhD, Robert F. Higgins, Ronald A. Lowy, Theo Melas-Kyriazi and Steven St. Peter, MD) are independent. As required by NASD listing standards and our *Corporate Governance Guidelines*, the independent directors hold regularly scheduled meetings at which only independent directors are present.

How often did the Board meet in 2007?

The Board held 12 meetings in 2007. Under our *Corporate Governance Guidelines* directors are expected to be active and engaged in discharging their duties and to keep themselves informed about our business and operations. Directors are expected to attend all Board meetings and meetings of each committee on which they serve and to prepare themselves for those meetings. During 2007, each of our directors attended at least 75% of the aggregate number of meetings of the Board and each committee on which he or she served, except as described below. Dr. Claire M. Fraser-Liggett attended fewer than 75% of the Board and Compensation Committee during her membership thereof in 2007.

Does Helicos have a policy with respect to attendance of directors at the annual meeting of stockholders?

Under our *Corporate Governance Guidelines* directors are encouraged to attend our annual meeting of stockholders.

What is the role of the Board's committees?

The Board currently has three standing committees: Audit Committee, Compensation Committee and Nominating and Corporate Governance Committee. Each member of these committees is independent as defined by applicable NASDAQ and SEC rules. Each of the committees has a written charter approved by the Board and available on our website (*www.helicosbio.com*). Under our *Corporate Governance Guidelines*, committee members are appointed by the Board based on the recommendation of the Nominating and Corporate Governance Committee, except that members of the Nominating and Corporate Governance Committee are appointed by the independent members of the Board. The current members of the committees are as follows:

Director	Audit	Compensation	Nominating and Corporate Governance
Noubar B. Afeyan, PhD			✔(Chair)
Elisabeth K. Allison, PhD		✔	
Brian G. Atwood	✔		
Peter Barrett, PhD		✔	
Claire M. Fraser-Liggett, PhD		✔	
Robert F. Higgins		✔(Chair)	✔
Ronald A. Lowy	✔		
Theo Melas-Kyriazi	✔(Chair)		
Steven St. Peter, MD			✔

Audit Committee. Mr. Atwood, Mr. Lowy and Mr. Melas-Kyriazi currently serve on our Audit Committee. Mr. Melas-Kyriazi is the Chairman of our Audit Committee. The Audit Committee's responsibilities include, but are not limited to:

- appointing, approving the compensation of, and assessing the independence of our independent registered public accounting firm;
- pre-approving auditing and permissible non-audit services, and the terms of such services, to be provided by our independent registered public accounting firm;
- reviewing and discussing with management and the independent registered public accounting firm our annual and quarterly financial statements and related disclosures;
- coordinating the oversight and reviewing the adequacy of our internal control over financial reporting;
- establishing policies and procedures for the receipt and retention of accounting related complaints and concerns; and
- preparing the audit committee report required by SEC rules to be included in our annual proxy statement.

Our board of directors has determined that Mr. Melas-Kyriazi qualifies as an "audit committee financial expert" as defined under the Securities Exchange Act of 1934 and the applicable rules of the NASDAQ Global Market. The Board has determined that the composition of our Audit Committee meets the requirements for independence and financial sophistication under the current requirements of the Nasdaq Global Market and SEC rules and regulations. The Audit Committee held eight meetings in 2007. The Audit Committee report is included below.

Compensation Committee. Dr. Allison, Dr. Barrett, Dr. Fraser-Liggett and Mr. Higgins currently serve on our Compensation Committee. Mr. Higgins is the Chairman of our Compensation Committee. The Compensation Committee's responsibilities include, but are not limited to:

- annually reviewing and approving corporate goals and objectives relevant to compensation of our chief executive officer;
- evaluating the performance of our chief executive officer in light of such corporate goals and objectives and reviewing and approving the compensation of our chief executive officer;
- reviewing and approving the compensation of our other executive officers;
- overseeing and administering our compensation, welfare, benefit and pension plans and similar plans; and
- reviewing and making recommendations to the board with respect to director compensation.

The Board has determined that the composition of our Compensation Committee meets the requirements for independence under the current requirements of the NASDAQ Global Market and SEC rules and regulations. The Compensation Committee held ten meetings in 2007. The Compensation Committee report is included below.

Nominating and Corporate Governance Committee. Dr. Afeyan, Mr. Higgins and Dr. St. Peter currently serve on the Nominating and Corporate Governance Committee. Dr. Afeyan is the Chairman of our Nominating and Corporate Governance Committee. The Nominating and Corporate Governance Committee's responsibilities include, but are not limited to:

- developing and recommending to the board criteria for board and committee membership;
- establishing procedures for identifying and evaluating director candidates including nominees recommended by stockholders;
- identifying individuals qualified to become board members;
- recommending to the board the persons to be nominated for election as directors and to each of the board's committees;
- developing and recommending to the board a code of business conduct and ethics and a set of corporate governance guidelines; and
- overseeing the evaluation of the board and management.

The Board has determined that the composition of our Nominating and Corporate Governance Committee meets the requirements for independence under the current requirements of the NASDAQ Global Market. The Nominating and Corporate Governance Committee held four meetings in 2007.

How are nominees for the Board selected?

The Nominating and Corporate Governance Committee makes a periodic assessment of the Board and Board members. In making its assessment and in identifying and evaluating director nominees, the Committee will consider the membership criteria described below, taking into account the enhanced independence, financial literacy and financial expertise standards that may be required under applicable SEC regulations or NASD listing requirements, as well as the current challenges and needs of the Board and Helicos. The Nominating and Corporate Governance Committee uses multiple sources for identifying and evaluating director nominees, including referrals from current directors, recommendations by stockholders and input from third-party executive search firms. Such firms assist the Nominating and Corporate Governance Committee in locating possible nominees who meet criteria specified by the Nominating and Corporate Governance Committee. In evaluating director nominees, the Nominating and Corporate Governance Committee evaluates all candidates under consideration, as it deems appropriate.

The Nominating and Corporate Governance Committee charter requires the Committee to establish criteria for Board and committee membership which are as follows:

- experience at a strategic or policymaking level in a business, government, non-profit or academic organization of high standing;
- high accomplishment in his or her respective field, with superior credentials and recognition;
- well regarded in the community and with a long-term reputation for high ethical and moral standards;
- sufficient time and availability to devote to the affairs of the Company, particularly in light of the number of boards on which the nominee may serve;
- experience in the genomics industry or in the markets in which the Company operates;
- an ability to contribute to achieve a mix of Board members that represents a diversity of background and experience; and
- a demonstrated history of actively contributing at board meetings.

In addition to the qualifications for individual nominees set forth above, the Nominating and Corporate Governance Committee charter requires the Board, when selecting persons for nomination, to endeavor to ensure that:

- a majority of the Board is "independent" in accordance with the standards, if any, promulgated by the SEC, NASDAQ or any exchange upon which securities of the Company are traded, and any governmental or regulatory body exercising authority over the Company;
- each of its Audit, Compensation and Nominating and Corporate Governance Committees is comprised entirely of independent directors; and
- at least one member of the Audit Committee has such experience, education and other qualifications necessary to qualify as an "audit committee financial expert" as defined by the rules of the SEC.

Will the Nominating and Corporate Governance Committee consider director candidates nominated by stockholders?

The Nominating and Corporate Governance Committee has a policy by which it reviews and evaluates the qualifications of director candidates recommended by stockholders in compliance with the following procedures. Stockholders may recommend director nominees for consideration by the Nominating and Corporate Governance Committee by writing to the Corporate Secretary, specifying the nominee's name and qualifications for Board membership and providing confirmation of the nominee's consent to serve as a director. Following verification that the person submitting the recommendation is a stockholder of the Company, all properly submitted recommendations are brought to the attention of the Nominating and Corporate Governance Committee at a regularly scheduled Committee meeting. Stockholders also may nominate directors for election at our annual meeting of stockholders by following the provisions set forth in our bylaws.

If a stockholder properly recommends a director nominee, the Nominating and Corporate Governance Committee will give due consideration to that nominee and will use the same criteria used for evaluating other director nominees, in addition to considering the information relating to the director nominee provided by the stockholder.

How do stockholders communicate with the Board?

Stockholders and other parties interested in communicating directly with the Board of Directors may do so by writing to: Helicos BioSciences Corporation, Attention: Board of Directors, One Kendall Square, Building 700, Cambridge, MA 02139.

Pursuant to a process approved by the Board, the Corporate Secretary reviews all correspondence received by us and addressed to members of the Board and regularly forwards to the Board a summary of such correspondence and copies of all correspondence that, in the opinion of the Corporate Secretary, deal with the functions of the Board or Board committees or otherwise require the Board's attention. Directors may at any time review a log of all correspondence received by us that is addressed to members of the Board and request copies of any such correspondence. Concerns relating to accounting, internal controls or auditing matters are immediately brought to the attention of our internal audit department and handled in accordance with procedures established by the Audit Committee to address such matters.

Does Helicos have a Code of Ethics?

We strive to foster a culture of honesty, integrity and accountability. Our *Code of Business Conduct and Ethics* sets forth our key guiding principles, policies and procedures for employment at Helicos. The Code is applicable to all of our directors, officers and employees, including our Chief Executive Officer, Principal Financial Officer and Principal Accounting Officer. The *Code of Business Conduct and Ethics* is available on our website (*www.helicosbio.com*) in the *Corporate Governance* section under the *Investors* link. Stockholders may also request a copy of the *Code of Business Conduct and Ethics* by sending an email request to *InvestorRelations@helicosbio.com*. Waivers of the Code for executive officers and directors may be granted only by the Board and will promptly be disclosed to our stockholders. Waivers of the Code for other employees may only be granted by our Compliance Officer or the Board. Amendments to the Code must be approved by the Board and will be promptly disclosed to our stockholders.

PROPOSAL NO. 1
ELECTION OF DIRECTORS

Directors and Nominees

Our Board of Directors consists of ten directors and is divided into three classes with members of each class serving for three-year terms. Each of Dr. Allison, Mr. Atwood, Dr. Fraser-Liggett and Dr. St. Peter serve as Class I directors, with a term of office expiring at the 2008 Annual Meeting of Stockholders. The terms of our Class II and Class III directors will expire in 2009 and 2010, respectively. Unless otherwise instructed, the proxy holders will vote the proxies received by them for the two nominees named below, each of whom is currently a director and each of whom has consented to serve if elected. If any nominee is unable or declines to serve as a director at the time of the annual meeting, the proxies will be voted for any nominee designated by the present Board to fill the vacancy. If additional persons are nominated for election as directors, the proxy holders intend to vote all proxies received by them for the nominees listed below.

Dr. Fraser-Liggett and Dr. St. Peter have informed the Board that they do not intend to stand for reelection to our Board. There are no disagreements between either Dr. Fraser-Liggett or Dr. St. Peter and the Company on any matter relating to our operations, policies or practices. Accordingly, upon the recommendation of our Nominating and Corporate Governance Committee, the Board has nominated Dr. Allison and Mr. Atwood for reelection as the Class I directors. Helicos is not presently aware of any nominee who will be unable or will decline to serve as a director. The term of office of each person elected as a director will continue until the 2011 Annual Meeting of Stockholders or until a successor has been elected and qualified.

THE BOARD RECOMMENDS THAT THE STOCKHOLDERS VOTE "FOR" THE ELECTION OF EACH CLASS I DIRECTOR NOMINEE.

The names of the directors and nominees, and certain information about them as of the record date, are set forth below.

Name	Age	Position(s)
Stanley N. Lapidus	59	Chairman, Chief Executive Officer and Class III Director
Noubar B. Afeyan, PhD	45	Lead Independent Director, Class III Director
Elisabeth K. Allison, PhD	62	Class I Director
Brian G. Atwood	55	Class I Director
Peter Barrett, PhD	55	Class II Director
Claire M. Fraser-Liggett, PhD(1)	52	Class I Director
Robert F. Higgins	61	Class II Director
Ronald A. Lowy	52	Class III Director
Theo Melas-Kyriazi	48	Class II Director
Steven St. Peter, MD(2)	41	Class I Director

(1) Dr. Fraser-Liggett has informed the Board that she is not standing for reelection.

(2) Dr. St. Peter has informed the Board that he is not standing for reelection.

Stanley N. Lapidus. Mr. Lapidus, one of our co-founders, has served as the Chairman of our Board of Directors since October 2007 and Chief Executive Officer since May 2003. Mr. Lapidus served as our President from May 2003 until October 2007. Prior to founding Helicos, Mr. Lapidus served as a Venture Partner at Flagship Ventures from March 2002 through September 2003. Mr. Lapidus founded EXACT Sciences Corporation in 1995, where he served as President from 1995 through 2000 and Chairman from 2000 through 2005. Prior to EXACT Sciences, Mr. Lapidus founded Cytyc Corporation, where he served as President from 1987 to 1994. Mr. Lapidus also holds academic appointments in the Pathology Department at Tufts University Medical School and Massachusetts Institute of Technology's Sloan School of Management. He earned a BSEE from Cooper Union. He has served as a trustee of Cooper Union since 2002. Mr. Lapidus is named as an inventor on 30 issued U.S. patents.

Noubar B. Afeyan, PhD. Dr. Afeyan, one of our co-founders, has served as Lead Independent Director of our Board since October 2007. Previously, he served as Chairman of our Board of Directors from 2003 to October 2007. In 1999, Dr. Afeyan founded Flagship Ventures, a venture capital firm, where he serves as Managing Partner and Chief Executive Officer. Dr. Afeyan is also a Senior Lecturer at the Massachusetts Institute of Technology's Sloan School of Management as well as the Biological Engineering Division. Dr. Afeyan served on the Board of Directors of Color Kinetics, a leading LED-lighting company, until its recent acquisition by Philips in August 2007. Dr. Afeyan received a BS in chemical engineering from McGill University and a PhD in biochemical engineering from the Massachusetts Institute of Technology.

Elisabeth K. Allison, PhD. Dr. Allison has served as a member of our Board of Directors since January 2008. Dr. Allison has served as a Principal at ANZI Partners since 1995. She serves as a board member of three mutual funds managed by the Capital Research and Management Company since 1991: the EuroPacific Fund, the New Perspectives Fund and the New World Fund. Previously, Dr. Allison served on the Board of Directors of Color Kinetics, a leading LED lighting company, from 2002 and as Chairperson from January 2007 until its recent acquisition by Philips in August 2007. Prior to her service at ANZI Partners, Dr. Allison was Senior Vice President for Development at the McGraw-Hill Companies. Dr. Allison received an AB from Harvard College and a PhD in Business Economics from the Harvard Business School.

Brian G. Atwood. Mr. Atwood has served as a member of our Board of Directors since 2003. Since 1999, Mr. Atwood has served as a Managing Director of Versant Ventures, a venture capital firm

focusing on healthcare, which he co-founded. Mr. Atwood also serves on the board of directors of Cadence Pharmaceuticals, Inc. and Pharmion Corporation, as well as several private companies. Mr. Atwood holds a BS in biological sciences from the University of California, Irvine, an MS in ecology from the University of California, Davis and an MBA from Harvard University.

Peter Barrett, PhD. Dr. Barrett has served as a member of our Board of Directors since 2003. Dr. Barrett has served as a Partner of Atlas Venture, a venture capital firm, since January 2003. From August 1998 to December 2001, he served as Executive Vice President and Chief Business Officer of Celera Genomics, a biopharmaceutical company, which he co-founded. Dr. Barrett serves on the board of Atlas Venture investments' Alnylam, LAB International and Momenta Pharmaceuticals, as well as several private companies. He is also the President of the Autism Consortium Board of Directors and is Vice Chairman of the Advisory Council of the Barnett Institute of Chemical and Biological Analysis at Northeastern University. Dr. Barrett received his BS in chemistry from Lowell Technological Institute (now known as the University of Massachusetts, Lowell) and his PhD in Analytical Chemistry from Northeastern University. He also completed Harvard Business School's Management Development Program.

Claire M. Fraser-Liggett, PhD. Dr. Fraser has been a member of our Board of Directors since March 2007. Dr. Fraser also founded The Institute for Genomic Research and has served as President and Director since 1998. In addition to her leadership of TIGR, Dr. Fraser also holds professorships in Microbiology and Tropical Medicine as well as in Pharmacology at The George Washington University School of Medicine. Dr. Fraser serves on the board of trustees of Rensselaer Polytechnic Institute and on the board of directors of Becton, Dickinson and Company, a public company which manufactures and sells medical supplies, devices, laboratory instruments, antibodies, reagents and diagnostic products. Dr. Fraser received a BS in biology from Rensselaer Polytechnic Institute and received a PhD in Pharmacology from State University of New York at Buffalo.

Robert F. Higgins. Mr. Higgins has been a member of our Board of Directors since 2003. Mr. Higgins co-founded Highland Capital Partners in 1988 and serves as a General Partner. Currently, he is a member of the Advisory Board of the Department of Health Care Policy at Harvard Medical School and the Advisory Board of the Harvard-MIT Division of Health Sciences & Technology. Also, Mr. Higgins is a faculty member at the Harvard Business School where he teaches courses in entrepreneurial management. He received an AB in history from Harvard College and an MBA from Harvard Business School.

Ronald A. Lowy. Mr. Lowy has been a member of our Board of Directors since October 2007. Mr. Lowy served as president and chief executive officer of Thermo/Fisher Biosciences, a division of Fisher Scientific, from 2004 to 2007. Before joining Fisher Biosciences, Mr. Lowy was president of Global Connectivity Solutions for ADC Telecommunications from April 2004 to October 2004 and as president and chief operating officer at KRONE Group from 2000 to 2004. Prior to KRONE Group, Mr. Lowy was vice president and general manager of the Automotive and Industrial Products Group of GenTek. Mr. Lowy received a BS in mechanical engineering from the University of New Hampshire and an MBA from the University of Wisconsin.

Theo Melas-Kyriazi. Mr. Melas-Kyriazi has been a member of our Board of Directors since March 2007. Mr. Melas-Kyriazi also serves as Chief Financial Officer of Levitronix LLC, a developer of magnetically-levitated bearingless motor technology. From late 2004 to 2006, Mr. Melas-Kyriazi was self-employed, serving as a consultant and director in several public and private companies. From 1999 to 2004 Mr. Melas-Kyriazi served as Chief Financial Officer of Thermo Electron Corporation, a global technology company that manufactures and sells analytical instruments for life science research, manufacturing process control and environmental protection and safety. Mr. Melas-Kyriazi received an AB in economics from Harvard College, and an MBA from the Harvard Business School.

Steven St. Peter, MD. Dr. St. Peter has been a member of our Board of Directors since July 2005. Dr. St. Peter holds the position of General Partner at MPM Capital, which he joined in 2003. Prior to joining MPM Capital, Dr. St. Peter served from 2001 to 2003 as a principal at Apax Partners and from 1999 to 2001 as a senior associate at The Carlyle Group. Dr. St. Peter is board certified in internal medicine and was previously an Assistant Clinical Professor of Medicine at Columbia University. He completed his MD at Washington University and his residency and fellowship at the Hospital of the University of Pennsylvania. Prior to his medical training, he was an investment banker at Merrill Lynch. He also holds an MBA from the Wharton School of the University of Pennsylvania and a BA in chemistry from the University of Kansas. He is a Director of OMRIX Biopharmaceuticals and PharmAthene, Inc.

There are no family relationships among our directors or executive officers.

PROPOSAL NO. 2
RATIFICATION OF APPOINTMENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

The Audit Committee has appointed PricewaterhouseCoopers LLP, independent registered public accounting firm, to audit our consolidated financial statements for the fiscal year ending December 31, 2008. PricewaterhouseCoopers LLP has audited our consolidated financial statements since December 2006. Representatives of PricewaterhouseCoopers LLP are expected to be present at the annual meeting, will have the opportunity to make a statement if they desire to do so, and are expected to be available to respond to appropriate questions. Services provided to us by PricewaterhouseCoopers LLP are described under "*Fees Paid to PricewaterhouseCoopers LLP*" below.

On November 30, 2006, with the approval of our audit committee, we dismissed BDO Seidman, LLP as our independent registered public accounting firm. During the years ended December 31, 2003, 2004 and 2005, and the subsequent period from January 1, 2006 through November 30, 2006, there were no disagreements with BDO Seidman, LLP on any matter of accounting principles or practices, financial statement disclosure, or auditing scope or procedure, which disagreements, if not resolved to the satisfaction of BDO Seidman, LLP, would have caused it to make reference to the subject matter of the disagreements in its reports on our financial statements for such years. During the period from May 9, 2003 (date of inception) through December 31, 2006, there were no reportable events as defined in Item 304(a)(1)(v) of Regulation S-K.

Stockholder ratification of the appointment of PricewaterhouseCoopers LLP as our independent registered public accounting firm is not required by our bylaws or otherwise. The Board, however, is submitting the appointment of PricewaterhouseCoopers LLP to the stockholders for ratification as a matter of good corporate practice. If the stockholders fail to ratify the appointment, the Audit Committee and the Board will reconsider whether or not to retain that firm. Even if the appointment is ratified, the Audit Committee in its discretion may direct the appointment of different independent auditors at any time during the year if it determines that such a change would be in the best interests of Helicos and its stockholders.

THE BOARD UNANIMOUSLY RECOMMENDS A VOTE "FOR" THE RATIFICATION OF THE APPOINTMENT OF PRICEWATERHOUSECOOPERS LLP AS INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM FOR THE FISCAL YEAR ENDING DECEMBER 31, 2008.

Fees Paid to PricewaterhouseCoopers LLP

During fiscal year 2007 and fiscal year 2006, the aggregate fees billed by PricewaterhouseCoopers LLP for professional services were as follows:

	Fiscal Year Ended	
	December 31, 2007	December 31, 2006
Audit Fees(1)	$329,247	$784,200
Audit-Related Fees(2)	—	—
Tax Fees(3)	—	—
All Other Fees(4)	$ 4,200	—

(1) Fees for audit services include fees associated with the audits of our consolidated financial statements. Audit fees also include amounts associated with SEC registration statements and consents.

(2) There were no fees billed by PricewaterhouseCoopers for audit-related services in 2006 or 2007.

(3) There were no fees billed by PricewaterhouseCoopers for tax services in 2006 or 2007.

(4) The amount listed as "All Other Fees" consists of fees for products and services other than those services reported above.

Audit Committee Pre-Approval of Audit and Permissible Non-Audit Services of Independent Registered Public Accounting Firm

As required by the Audit Committee charter, the Audit Committee pre-approves the engagement of PricewaterhouseCoopers LLP for all audit and permissible non-audit services. The Audit Committee annually reviews the audit and permissible non-audit services performed by PricewaterhouseCoopers LLP and reviews and approves the fees charged by PricewaterhouseCoopers LLP. The Audit Committee has considered the role of PricewaterhouseCoopers LLP in providing audit services and other permissible non-audit services to Helicos and has concluded that the provision of such services was compatible with the maintenance of PricewaterhouseCoopers LLP's independence in the conduct of its auditing functions.

REPORT OF THE AUDIT COMMITTEE

The following Report of the Audit Committee does not constitute soliciting material and is not deemed to be filed with the Securities and Exchange Commission, or the SEC, and is not to be incorporated by reference in any filing of the Company under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, whether made before or after the date of this proxy statement and irrespective of any general incorporation language in such filing.

The Audit Committee selects the Company's independent registered public accounting firm to audit financial statements and to perform services related to the audit, reviews the scope and results of the audit with the independent registered public accounting firm, reviews with management and the independent registered public accounting firm the Company's quarterly and annual results, reviews the periodic disclosures related to the Company's financial statements, considers the adequacy of the Company's internal accounting procedures, and oversees internal audit and compliance with the Sarbanes-Oxley Act of 2002.

With respect to the fiscal year ended December 31, 2007, the Audit Committee:

- Reviewed and discussed the audited financial statements with the Company's management;

- Discussed with PricewaterhouseCoopers LLP, the Company's independent registered public accounting firm, the matters required to be discussed by the Statement on Auditing Standards No. 61 (Communications with Audit Committees) and SEC Rule 2-07 of Regulation S-X; and
- Received the written disclosures and the letter from PricewaterhouseCoopers LLP required by Independence Standards Board Standard No. 1, and has discussed with PricewaterhouseCoopers LLP its independence.

Based on these reviews and discussions, our Audit Committee has recommended to our Board of Directors that the audited financial statements be included in our Annual Report on Form 10-K for the fiscal year ended December 31, 2007 for filing with the Securities and Exchange Commission.

Respectfully submitted on April 11, 2008 by the members of the Audit Committee of the Board of Directors:

Theo Melas-Kyriazi, *Chairman*
Brian G. Atwood
Ronald A. Lowy
(As currently constructed)

SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT

The following table sets forth certain information regarding beneficial ownership of the Company's Common Stock as of the Record Date: (i) by each person who is known by the Company to beneficially own more than 5% of the outstanding shares of Common Stock; (ii) by each director or nominee of the Company; (iii) by each of the officers named in the Summary Compensation Table below; and (iv) by all directors and executive officers of the Company as a group. Unless otherwise indicated below, each person listed below maintains a business address in the care of Helicos BioSciences Corporation, One Kendall Square, Building 700, Cambridge, MA 02139 and has sole voting and investment power with respect to all shares of Common Stock owned.

Name of Beneficial Owner	Shares Beneficially Owned(1)	Percentage of Shares Beneficially Owned(2)
Flagship Ventures(3) c/o Flagship Ventures One Memorial Drive, 7th Floor Cambridge, Massachusetts 02142	3,329,019	15.9%
Atlas Venture(4) 890 Winter Street, Suite 320 Waltham, Massachusetts 02451	2,987,766	14.3%
Highland Capital Partners(5) c/o Highland Capital Partners LLC 92 Hayden Avenue Lexington, Massachusetts 02421	2,987,771	14.3%
MPM Capital(6) c/o MPM Capital L.P. The John Hancock Tower 200 Clarendon Street, 54th Floor Boston, Massachusetts 02116	2,987,769	14.3%
Versant Ventures(7) 3000 Sand Hill Road Building #4, Suite 210 Menlo Park, California 94025	2,135,272	10.2%
Millenco LLC(8) c/o Millenium Management LLC 666 Fifth Avenue, 8th Floor New York, New York 10103	1,060,123	5.1%
Stanley N. Lapidus(9)	693,538	3.3%
Stephen J. Lombardi(10)	234,999	1.1%
J. William Efcavitch, PhD(11)	106,479	*
Louise A. Mawhinney(12)	78,407	*
Thomas C. Meyers	77,777	*
Noubar B. Afeyan, PhD(3)	3,329,019	15.9%
Brian G. Atwood(7)	2,135,272	10.2%

Name of Beneficial Owner	Shares Beneficially Owned(1)	Percentage of Shares Beneficially Owned(2)
Peter Barrett, PhD(4)	2,987,766	14.3%
Claire M. Fraser-Liggett, PhD(13)	11,111	*
Robert F. Higgins(5)	2,987,771	14.3%
Steven St. Peter, MD(6)	2,987,769	14.3%
Theo Melas-Kyriazi(14)	11,111	*
Elisabeth K. Allison, PhD	0	*
Ronald A. Lowy	0	*
All executive officers, directors and nominees as a group(15) (13 persons)	15,493,946	72.8%

* Represents less than 1% of the outstanding Common Stock

(1) Beneficial ownership is determined in accordance with the rules of the SEC and includes voting and investment power with respect to shares. Pursuant to the rules of the SEC, the number of shares of Common Stock deemed outstanding includes shares issuable pursuant to options held by the respective person or group that may be exercised within 60 days of the Record Date.

(2) Applicable percentage of ownership as of the Record Date is based upon 20,935,691 shares of Common Stock outstanding as of the Record Date.

(3) With respect to information relating to Flagship Ventures, the Company has relied, in part, on information supplied on a Schedule 13G filed with the SEC on February 15, 2008, by AGTC Advisors Fund L.P. ("AGTC"), Applied Genomic Technology Capital Fund, L.P. ("AGTC Fund" and together with AGTC, the "AGTC Funds"), Flagship Ventures Fund 2004, L.P. ("Flagship"), NewcoGen Élan LLC ("NewcoGen Élan"), NewcoGen Equity Investors LLC ("NewcoGen Equity"), NewcoGen Group, LLC ("NewcoGen Group"), NewcoGen PE LLC ("NewcoGen PE"), NewcoGen Long Reign Holdings LLC ("NewcoGen Long Reign"), and ST NewcoGen LLC ("ST NewcoGen" and together with NewcoGen Élan, NewcoGen Equity, NewcoGen Group, NewcoGen PE and NewcoGen Long Reign, the "NewcoGen Funds"). The AGTC Funds, Flagship and the NewcoGen Funds own in the aggregate 3,329,019 shares of Common Stock. NewcoGen Group Inc. ("NewcoGen Inc.") is the manager of each of the NewcoGen Funds and the general partner of AGTC Partners, L.P., which is the general partner of each of the AGTC Funds. NewcoGen Inc. is a wholly owned subsidiary of Flagship Ventures Management, Inc. ("Flagship Inc."). Flagship Ventures General Partner LLC ("Flagship LLC") is the general partner of Flagship. Noubar B. Afeyan, PhD and Edwin M. Kania are directors of Flagship Inc. and managers of Flagship LLC. As a result, Messrs. Afeyan and Kania may be deemed to have beneficial ownership with respect to all shares held by the NewcoGen Funds, Flagship, and the AGTC Funds.

(4) With respect to information relating to Atlas Venture, the Company has relied, in part, on information supplied on a Schedule 13G filed with the SEC on February 1, 2008, by Atlas Venture Fund V, L.P. ("Atlas V"), Atlas Venture Entrepreneurs' Fund V, L.P. ("AVE V" and together with Atlas V, the "Atlas V Funds"), Atlas Venture Fund VI, L.P. ("Atlas VI"), Atlas Venture Entrepreneurs' Fund VI, L.P. ("AVE VI"), Atlas Venture Fund VI GmbH & Co. KG ("Atlas VI GmbH" and together with Atlas VI and AVE VI, the "Atlas VI Funds"), Atlas Venture Associates V, L.P. ("AVA V LP"), Atlas Venture AssociatesV, Inc. ("AVA V Inc."), Atlas Venture Associates VI, L.P. ("AVA VI LP"), Atlas Venture Associates VI, Inc. ("AVA VI Inc."), Axel

Bichara ("Bichara"), Jean-Francois Formela ("Formela") and Christopher Spray ("Spray" and together with Bichara and Formela, the "Atlas Directors"). The Atlas V Funds, Atlas VI Funds, AVAV LP, AVA V Inc., AVA VI LP, AVA VI Inc., and the Atlas Directors own in the aggregate 2,987,766 shares of Common Stock. AVA V Inc. is the sole general partner of AVA V LP. AVA V LP is the sole general partner of the Atlas V Funds. The Atlas Directors are directors of AVA V Inc. As a result, the Atlas Directors may be deemed to have beneficial ownership with respect to all shares held by AVA V Inc. AVA VI Inc. is the sole general partner of AVA VI LP. AVA VI LP is the sole general partner of Atlas VI and AVE VI and the managing limited partner of Atlas VI GmbH. The Atlas Directors are directors of AVA VI Inc. As a result, the Atlas Directors may be deemed to have beneficial ownership with respect to all shares held by AVA VI Inc. Each of the foregoing disclaims beneficial ownership of these shares except to the extent of their pecuniary interest therein.

(5) With respect to information relating to Highland Capital Partners, the Company has relied, in part, on information supplied on a Schedule 13G filed with the SEC on February 13, 2008, by Highland Capital Partners VI Limited Partnership ("Highland Capital VI"), Highland Capital Partners VI-B Limited Partnership ("Highland Capital VI-B"), Highland Entrepreneurs' Fund VI Limited Partnership ("Highland Entrepreneurs' Fund" and together with Highland Capital VI and Highland Capital VI-B, the "Highland Investing Entities"), HEF VI Limited Partnership ("HEF VI"), Highland Management Partners VI Limited Partnership ("HMP VI"), Highland Management Partners VI, Inc. ("Highland Management"), Robert F. Higgins ("Higgins"), Paul A. Maeder ("Maeder"), Daniel J. Nova ("Nova"), Sean M. Dalton ("Dalton"), Fergal J. Mullen ("Mullen"), and Corey M. Mulloy ("Mulloy" and together with Messrs. Higgins, Maeder, Nova, Dalton, and Mullen, the "Highland Managing Directors"). Highland Management is the general partner of the general partners of the Highland Investing Entities. As a result, Highland Management may be deemed to have beneficial ownership of the shares held by the Highland Investing Entities. HEF VI is the general partner of Highland Entrepreneurs' Fund. HMP VI is the general partner of Highland Capital VI and Highland Capital VI-B. Highland Management is the general partner of both HEF VI and HMP VI. Messrs. Higgins, Maeder and Nova are senior managing directors of Highland Management and limited partners of each of HMP VI and HEF VI. Messrs. Dalton, Mullen and Mulloy are managing directors of Highland Management and limited partners of each of HMP VI and HEF VI. The Managing Directors of Highland Management have shared power over all investment decisions of Highland Management. As a result, the Managing Directors may be deemed to share beneficial ownership of the shares held by Highland Investing Entities by virtue of their status as controlling persons of Highland Management.

(6) With respect to information relating to MPM Capital, the Company has relied, in part, on information supplied on a Schedule 13G filed with the SEC on February 12, 2008, by MPM BioVentures III, L.P. ("MPM BV III"), MPM BioVentures III-QP, L.P. ("MPM BV III-QP"), MPM BioVentures III Parallel Fund, L.P. ("MPM BV III Parallel Fund"), MPM BioVentures III GmbH & Co. Beteiligungs KG ("MPM BV III GmbH" and together with MPM BV III, MPM BV III-QP, MPM BV III Parallel Fund, the "MPM Funds"), MPM Asset Management Investors 2003 BVIII LLC ("MPM AMI"), MPM BioVentures III GP, L.P. ("MPM BV III GP"), MPM BioVentures III LLC ("MPM BV III LLC"), Ansbert Gadicke ("Gadicke"), Luke Evnin ("Evnin"), Nicholas Galakatos ("Galakatos"), Michael Steinmetz ("Steinmetz"), Kurt Wheeler ("Wheeler"), Nicholas Simon III ("Simon") and Dennis Henner ("Henner" and together with Gadicke, Evnin, Galakatos, Steinmetz, Wheeler, Simon, the "MPM Members"). The MPM Members, the MPM Funds, MPM AMI, MPM BV III GP, and MPM BV III LLC own in the aggregate 2,987,769 shares of Common Stock. MPM BV III GP is a direct general partner of the MPM Funds. MPM BV III LLC is an indirect general partner of the MPM Funds. The MPM Members are members of MPM BV III LLC and MPM AMI. As a result,

the MPM Members may be deemed to share beneficial ownership of the shares held by the MPM Funds by virtue of their status as controlling persons of MPM BV III LLC and MPM AMI.

(7) With respect to information relating to Versant Ventures, the Company has relied, in part, on information supplied on a Schedule 13G filed with the SEC on February 13, 2008, by Versant Ventures II, LLC ("VVII-LLC"), Versant Venture Capital II, L.P. ("VVC-II"), Versant Side Fund II, L.P. ("VSF-II"), Versant Affiliates Fund II-A, L.P. ("VAF-IIA" and together with VVII-LLC, VVC-II, VSF-II, the "Versant II Funds"), Brian G. Atwood ("Atwood"), Bradley J. Bolzon ("Bolzon"), Samuel D. Colella ("Colella"), Ross A. Jaffe ("Jaffe"), William J. Link ("Link"), Barbara N. Lubash ("Lubash"), Donald B. Milder ("Milder"), Rebecca B. Robertson ("Robertson"), Camille D. Samuels ("Samuels") and Charles M. Warden ("Warden" and together with Atwood, Bolzon, Colella, Jaffe, Link, Lubash, Milder, Robertson and Samuels, the "Versant Managing Directors"). The Versant II Funds and the Versant Managing Directors own in the aggregate 2,135,272 shares of Common Stock. VVII-LLC is the General Partner of VVC-II, VSF-II and VAF-IIA. The Versant Managing Directors are Managing Directors of VVII-LLC.

(8) With respect to information relating to Millenco LLC, the Company has relied, in part, on information supplied on a Schedule 13D filed with the SEC on March 3, 2008, by Millenco LLC. Millennium Management LLC, a Delaware limited liability company ("Millennium Management"), is the manager of Millenco, and consequently may be deemed to have voting control and investment discretion over securities owned by Millenco. Israel A. Englander ("Mr. Englander") is the managing member of Millennium Management. As a result, Mr. Englander may be deemed to be the beneficial owner of any shares deemed to be beneficially owned by Millennium Management.

(9) Includes 200,000 shares held by certain family members of Stanley N. Lapidus and 199,999 shares issuable to Mr. Lapidus upon exercise of stock options.

(10) Includes 55,555 shares issuable to Stephen J. Lombardi upon exercise of stock options.

(11) Includes 58,334 shares issuable to J. William Efcavitch, PhD upon exercise of stock options.

(12) Includes 10,208 shares issuable to Louise A. Mawhinney upon exercise of stock options.

(13) Includes 11,111 options issuable to Claire M. Fraser-Liggett, PhD upon exercise of stock options.

(14) Includes 11,111 options issuable to Theo Melas-Kyriazi upon exercise of stock options.

(15) Includes an aggregate of 343,517 shares issuable upon exercise of stock options.

SECTION 16(a) BENEFICIAL OWNERSHIP REPORTING COMPLIANCE

Section 16(a) of the Securities Exchange Act of 1934 requires our executive officers and directors and persons who beneficially own more than 10% of our common stock to file with the SEC initial reports of beneficial ownership and reports of changes in beneficial ownership of common stock. Executive officers, directors and 10% stockholders are required by SEC regulations to furnish us with copies of all Section 16(a) forms they file. To the best of our knowledge, during the year ended December 31, 2007, each director, executive officer, and 10% stockholder complied with all Section 16(a) filing requirements, except as described below. Flagship Ventures Fund 2004 L.P., the beneficial owner of greater than 10% of the Company, filed one Form 4 after the applicable due date reporting the grant of an option for 11,111 shares.

Equity Compensation Plan Information

The following table summarizes, as of December 31, 2007, the number of options issued under our stock option plans and the number of options available for future issuance under these plans.

	(a)	(b)	(c)
Plan Category	**Number of securities to be issued upon exercise of outstanding options, warrants and rights**	**Weighted-average exercise price of outstanding options, warrants and rights**	**Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column(a))**
Equity compensation plans approved by security holders(1)	2,212,233	$7.88	684,732
Equity compensation plans not approved by security holders	—	$ —	—
Total	2,212,233	$7.88	684,732

(1) Includes the 2003 Stock Option and Incentive Plan and the 2007 Stock Option and Incentive Plan.

MANAGEMENT

Our executive officers, and their ages and positions are as follows:

Name	Age	Position(s)
Stanley N. Lapidus	59	Chairman and Chief Executive Officer
Stephen J. Lombardi	52	President, Chief Operating Officer and interim Principal Financial Officer
J. William Efcavitch, PhD	55	Senior Vice President of Product Research and Development
Kevin G. Lafond	52	Controller, interim Principal Accounting Officer and Treasurer

Stanley N. Lapidus. *See "Election of Directors"*

Stephen J. Lombardi. Mr. Lombardi has served as our President since October 2007, our Chief Operating Officer since February 2007 and our interim Principal Financial Officer since March 2008. He joined Helicos in June 2006 as Senior Vice President of Sales and Marketing. He has over 29 years of commercial biotechnology experience as a scientist and in business management. Prior to Helicos he spent four years as a Senior Vice President at Affymetrix, Inc., serving as an executive in its Corporate Development, Product R&D and Marketing divisions. From 1986 to 2002, Mr. Lombardi was employed by Applied Biosystems, a division of Applera Corporation, most recently as Senior Vice President of Applications and Products. From 1989 to 1998, Mr. Lombardi led the formation of Applied Biosystems' DNA sequencing and genetic analysis business, resulting in widely-used sequencers, including those which became the standard used for the Human Genome Project. Mr. Lombardi was also involved in forming Celera Genomics within the Applera corporate structure. He earned a BA degree in Biology from Merrimack College.

J. William Efcavitch, PhD. Dr. Efcavitch joined us in October 2004 and serves as our Senior Vice President of Product Research and Development. Previously, he spent 23 years at Applied Biosystems, a division of Applera Corporation, most recently as Director of the Synthesis and Arrays Business Unit which commercialized several products, including an expression array system. At Applied Biosystems, Dr. Efcavitch led the successful development and commercialization of Applied Biosystems' DNA sequencing instruments, reagents, consumables and software products, including the sequencer that became the standard used for the Human Genome Project. Dr. Efcavitch is a co-author of twelve research publications and is named as an inventor on fifteen patents. He earned his PhD in Biochemistry from Ohio University.

Kevin G. Lafond. Mr. Lafond has served as our controller since February 2007 and interim Principal Accounting Officer and Treasurer since March 2008. Prior to joining Helicos, Mr. Lafond served as the corporate controller at Pegasystems Inc., a computer software manufacturer, from September 2005 until February 2007, and the controller at Patni Computer Systems, Inc., a software development company, from April 2001 until September 2005. He earned a BS from Plymouth State College, MS degrees in taxation and accountancy from Bentley College and has been a Certified Public Accountant since 1983.

COMPENSATION DISCUSSION AND ANALYSIS

We believe that the compensation of our executive officers should focus executive behavior on the achievement of near-term corporate targets as well as long-term business objectives and strategies. It is the responsibility of the Compensation Committee of our Board of Directors to administer our compensation practices to ensure that they are competitive and include incentives which are designed to appropriately drive corporate performance. Overall, we intend to create an executive compensation

program that is set at levels competitive with comparable public life sciences companies and, in particular, companies in the genetic analysis market segment. Our Compensation Committee reviews and approves all of our compensation policies, including executive officer salaries, bonuses and equity incentive compensation and reports such actions to the full Board.

Objectives of our executive compensation programs

Our compensation programs for our named executive officers are designed to achieve the following objectives:

- attract and retain talented and experienced executives in the highly competitive and dynamic life sciences industry;
- motivate and reward executives whose knowledge, skills and performance are critical to our success;
- align the interests of our executives and stockholders by motivating executives to increase stockholder value and rewarding executives when stockholder value increases;
- ensure fairness among the executive management team by recognizing the contributions each executive makes to our success, while maintaining internal salary equity; and
- motivate our executives to manage our business to meet our short- and long-term objectives, and reward them for meeting these objectives.

We use a mix of short-term compensation (base salaries and cash incentive bonuses) and long-term compensation (equity incentive compensation) to provide a total compensation structure that is designed to achieve these objectives. The Compensation Committee determines the appropriate mix of compensation structures for each of our executive officers by analyzing each of the primary elements of our compensation programs, discussed below, to ensure that our executive officers' total compensation is in the 50th percentile of compensation paid to executive officers with similar positions in public life sciences companies. In this regard, we have reviewed data from the annual Radford Biotechnology Survey as reference points for comparable companies together with data from companies in the genetic analysis market segment, including Cepheid, Commonwealth Biotechnologies, Inc., Luminex Corporation, Nanogen, Inc., Nanosphere, Inc., NimbleGen Systems Inc., Pressure BioSciences, Inc., Sangamo BioSciences, Inc., Sequenom, Inc. and Vermillion, Inc. In November 2007, the Compensation Committee agreed to engage Dolmat-Connell & Partners, a compensation consulting firm, to review and refine our list of peer group companies and complete a review of executive compensation. The Compensation Committee may rely on Dolmat-Connell & Partners from time to time for advisory services regarding executive and director compensation and related matters. The Compensation Committee uses its judgment and experience and the recommendations of the Chief Executive Officer (except for his own compensation) to determine the appropriate mix of compensation for each individual.

Our executive compensation programs

Our executive compensation primarily consists of base salary, periodic cash incentive bonuses and equity awards and broad-based benefits programs. We believe it is important that the interests of our executives are aligned with those of our stockholders; therefore, equity incentive compensation constitutes a significant portion of our total executive compensation.

Within the context of the overall objectives of our compensation programs, we determined the specific amounts of compensation to be paid to each of our executives in 2007 based on a number of factors, including:

- our understanding of the amount of compensation generally paid by similarly situated companies to their executives with similar roles and responsibilities;
- the roles and responsibilities of our executives;
- the individual experience and skills of, and expected contributions from, our executives;
- the amounts of compensation being paid to our other executives; and
- our executives' historical compensation at our company.

We discuss each of the primary elements of our executive compensation in detail below. While we have identified particular compensation objectives that each element of executive compensation serves, our compensation programs are designed to complement each other and collectively serve all of our executive compensation objectives described above. Accordingly, whether or not specifically mentioned below, we believe that, as a part of our overall executive compensation, each element to a greater or lesser extent serves each of our objectives.

There are no material differences to how our compensation policies are applied to individual named executive officers. Market compensation levels for executive officers, however, differ based on the roles and responsibilities of the individual officer. As a result, the compensation paid to our named executive officers will vary among individuals.

Annual cash compensation

Base salary

We intend to pay base salaries that are competitive with similar positions at our peer group companies. Base salary is generally targeted at the 50th percentile for each position. Our executives' base salaries reflect the initial base salaries that we negotiated with each of them at the time of his or her initial employment or promotion and our subsequent adjustments to these amounts to reflect market increases, the growth and stage of development of our company, any changes in our executives' roles and responsibilities and other factors. The Compensation Committee performs formal evaluations of each executive officer's performance on an annual basis and makes adjustments to the executives' base salaries to reflect individual roles and performance. The base salaries of all executive officers are reviewed annually together with the Chief Executive Officer, except in the case of his own base salary.

We may also increase the base salary of an executive officer at other times if a change in the scope of the officer's responsibilities justifies such consideration or in order to maintain salary equity among executive officers. We believe that a competitive base salary is a necessary element of any compensation program designed to attract and retain talented and experienced executives. We also believe that attractive base salaries can motivate and reward executives for their overall performance.

In February 2007, the base salary of Mr. Lapidus increased from $318,000 to $350,000; the base salary of Dr. Efcavitch, our Senior Vice President of Product Research and Development, increased from $262,500 to $275,625; and the base salary of Ms. Mawhinney, who served as our Senior Vice President and Chief Financial Officer until March 2008, increased from $250,000 to $253,125. This reflects an increase of 10% to the base salary of Mr. Lapidus, a 5% increase to the base salary of Dr. Efcavitch and a pro-rated 5% increase to Ms. Mawhinney's base salary based upon her term of service to the Company in 2006.

In February 2007, Mr. Lombardi, who then served as the Company's Senior Vice President of Sales and Marketing, was promoted to the position of Executive Vice President and Chief Operating

Officer, and his base salary increased from $300,000 to $325,000. Mr. Lombardi subsequently became our President and Chief Operating Officer in October 2007. In connection with Mr. Lombardi's promotion, Mr. Lapidus remained our Chief Executive Officer and also became the Chairman of the Board of Directors. There was no change to either Mr. Lombardi's or Mr. Lapidus' salary at that time. In June 2007, as recognition for her performance in connection with our initial public offering, Ms. Mawhinney's salary increased from $253,125 to $278,125.

In February 2008, in connection with its annual review of our executive officers' individual performance, the Compensation Committee increased the salary of each of our executive officers, except for Ms. Mawhinney, by 5%. As a result, Mr. Lapidus' salary increased from $350,000 to $367,500; Mr. Lombardi's salary increased from $325,000 to $341,250; and Dr. Efcavitch's salary increased from $275,625 to $289,406. In determining the appropriate increase in salary, which is consistent with past years' increases, the Compensation Committee relied on the factors described above, including a review of the compensation paid by peer group companies to their executives, the results of the review performed by Dolmat-Connell and maintaining internal salary equity.

Cash incentive bonuses

In prior years, our Compensation Committee has, on occasion, granted discretionary cash bonuses to our executive officers. Prior to 2007, we did not have a management incentive bonus plan in place. However, consistent with our emphasis on pay for performance incentive compensation programs, in February 2007 we adopted a management incentive bonus plan, the Bonus Plan, to ensure that some portion of overall cash compensation is contingent upon the successful achievement of our corporate objectives. The primary objectives of the Bonus Plan are to provide an incentive for superior work, to motivate our executives toward even higher achievement and business results, to tie our executives' goals and interests to ours and our stockholders' and to enable us to attract and retain highly qualified individuals. In 2007, executive officers were eligible to earn cash bonuses, targeted at 30% of such executive officers' base salaries, based on our attainment of company-wide goals and the individual performance of the executives with corporate performance comprising two-thirds of the total bonus opportunity. The individual performance component for the Chief Executive Officer and President is determined by the Compensation Committee with consideration of matters such as strategic planning, growing the Company, leadership and continuing to focus on the long-term interests of our stockholders. For the other named executive officers, individual performance is determined by the Compensation Committee with consideration of matters such as leadership, strategic planning and other position-specific goals.

Our corporate performance goals for 2007 related to shipments and annual cash flow targets for 2007. Each of these two corporate performance goals were weighted equally for purposes of determining the corporate portion of the total bonus opportunity. If we achieved the minimum corporate performance goals of shipping one HeliScope System and having an annual cash burn of between $44 million and $48 million, then the executive would have been eligible to receive between 40% and 107% of his or her target bonus, depending upon whether the individual performance were measured as needing improvement, meeting expectations, exceeding expectations or outstanding. The executive would have been eligible to receive between 60% and 200% of the corporate portion of the target bonus opportunity if we had shipped one or more HeliScope Systems and had an annual cash burn within one of the following ranges between $44 million and $48 million; between $40 million and $43.9 million; or less than $40 million. Regardless of the actual award determined by the Bonus Plan parameters, our Compensation Committee has the authority to modify any award. Although we shipped our first HeliScope System in the first quarter of 2008 and had a cash burn of less than $40 million in 2007, we did not ship any HeliScope Systems in 2007 and, therefore, we did not sufficiently meet our corporate performance goals. As a result, we did not pay bonuses for 2007 to any of the named executive officers.

The terms of the Bonus Plan, including the target bonus levels and relationship of payouts to achievement of the performance goals, were established by our Compensation Committee and discussed with our Board. Annually, our Compensation Committee reviews the Bonus Plan (including the performance goals) to ensure that it is designed in a manner that continues to motivate employees to achieve our performance goals. In connection with its annual review of the Bonus Plan, the Compensation Committee made adjustments to the applicable metrics and weighting of corporate and individual performance goals for fiscal year 2008. In 2008, executive officers will be eligible to earn cash bonuses, targeted at 30% of such executive officers' base salaries, based on our attainment of company-wide goals and, except for Mr. Lapidus and Mr. Lombardi, the individual performance of the executives with corporate performance comprising 70% of the total bonus opportunity. For Mr. Lapidus and Mr. Lombardi, the bonus opportunity is based 100% on our attainment of company-wide goals. Our corporate performance goals for Mr. Lapidus and Mr. Lombardi during 2008 relate to product shipments and backlog, the audit of our internal controls over financial reporting, expenses and certain financial measures. For our other executive officers, the corporate performance goals for 2008 relate to product shipments and backlog, the audit of our internal controls over financial reporting and expenses. Each of the applicable corporate performance goals will be weighted equally for purposes of determining the corporate portion of the total bonus opportunity.

The Compensation Committee may also, in its discretion, award bonuses to executives based upon such other terms and conditions as the Compensation Committee may determine.

Equity incentive compensation

We grant equity incentive awards in the form of stock options and restricted stock awards to align the interests of our executives with our stockholders by providing our executives with strong incentives to increase stockholder value. These awards represent a significant portion of total executive compensation. Our decisions regarding the amount and type of equity incentive compensation and relative weighting of these awards among total executive compensation have been based on our understanding of market practices of similarly situated companies and our negotiations with our executives in connection with their initial employment or promotion by our company.

Prior to February 2007, we typically made grants of equity incentive awards to our executive officers on a periodic, but not necessarily annual, basis. In February 2007, we adopted an equity grant policy that formalizes how we grant equity awards by setting a regular schedule for grants, outlining grant approval requirements and specifying how awards are priced. Under this policy, grants, including those to our named executive officers, may be made quarterly, annually or in connection with a promotion. All such grants are subject to approval by the Compensation Committee at regularly scheduled committee meetings throughout the year. The date of grant and the fair market value of the award are based upon the date of the committee meeting.

In 2007, we considered a number of factors in determining the amount of equity incentive awards, if any, to grant to our executives, including:

- the number of shares subject to, and exercise price of, outstanding options, both vested and unvested, held by our executives;
- the vesting schedule of the unvested stock options held by our executives; and
- the amount and percentage of our total equity on a diluted basis held by our executives.

Stock option awards

Stock option awards provide our executive officers with the right to purchase shares of our common stock at a fixed exercise price typically for a period of up to ten years, subject to continued employment with our company. Stock options are earned on the basis of continued service to us and

generally vest over four years, beginning with 25% vesting one year after the date of grant, then pro-rata vesting monthly thereafter. Stock option awards are made pursuant to our 2007 Stock Option and Incentive Plan, or 2007 Plan. The exercise price of each stock option granted under our 2007 Plan is based on the fair market value of our common stock on the grant date.

We have granted stock options as incentive stock options under Section 422 of the Internal Revenue Code of 1986, as amended, subject to the volume limitations contained in the Internal Revenue Code, as well as non-qualified stock options. Generally, for stock options that do not qualify as incentive stock options, we are entitled to a tax deduction in the year in which the stock options are exercised equal to the spread between the exercise price and the fair market value of the stock for which the stock option was exercised. The holders of the non-qualified stock options are generally taxed on this same amount in the year of exercise. For stock options that qualify as incentive stock options, we do not receive a tax deduction, and the holder of the stock option may receive more favorable tax treatment than he or she would for a non-qualified stock option. Historically, we have primarily granted incentive stock options to provide these potential tax benefits to our executives and because of the limited expected benefits to our company of the potential tax deductions as a result of our historical net losses.

Restricted stock purchase awards

Prior to our initial public offering, restricted stock grants were made as restricted stock purchase awards which provided our executive officers with the ability to purchase shares of our common stock at a fixed purchase price at the time of grant pursuant to a restricted stock purchase agreement. Restricted stock purchase awards were primarily granted to executive officers and director-level employees at the commencement of their employment with us. Similar to stock options, shares of restricted stock purchase awards generally vest over four years, beginning with 25% vesting one year after the date of grant and pro-rata vesting monthly thereafter. Pursuant to the restricted stock purchase agreement, unvested shares are subject to mandatory repurchase by us in the case of termination of an executive officer's employment. Restricted stock purchase awards were made pursuant to our 2003 Plan, under which equity awards will no longer be granted.

Restricted stock awards

Following our initial public offering, restricted stock awards are made pursuant to a restricted stock award agreement and do not require purchase by the grantee. Shares of restricted stock generally vest over four years, beginning with 25% vesting one year after the date of grant and pro-rata vesting each fiscal quarter thereafter. Pursuant to the restricted stock award agreement, unvested shares are forfeited in the case of termination of an executive officer's employment. Restricted stock awards are made pursuant to our 2007 Plan.

2007 equity incentive compensation

During 2007, the Company granted Mr. Lombardi incentive stock options for the purchase of an aggregate of 416,666 shares in connection with his promotion to Executive Vice President and Chief Operating Officer in February 2007 and to President and Chief Operating Officer, in October 2007. We granted Mr. Lombardi 12,778 shares of restricted stock in July 2007 in connection with grants made to certain of our employees following our initial public offering. In June 2007, we granted Ms. Mawhinney an incentive stock option for the purchase of 35,000 shares as recognition for her performance in connection with our initial public offering.

Other compensation

All of our executive officers are eligible for benefits offered to employees generally, including parking or commuting passes, life, health, disability and dental insurance and our 401(k) plan. In addition, our Chief Executive Officer and our Senior Vice President of Product Research and Development each receive a housing allowance. Our Senior Vice President of Product Research and Development also receives an allowance for commuting expenses, including a tax gross-up for such amount paid to him. These were the only perquisites provided by the Company in 2007 to our executive officers. Consistent with our compensation philosophy, we intend to continue to maintain our current benefits and perquisites for our executive officers. The Compensation Committee in its discretion may revise, amend or add to the officer's executive benefits and perquisites if it deems it advisable. We do not believe it is necessary for the attraction or retention of management talent to provide the officers with a substantial amount of compensation in the form of perquisites.

Compensation Committee Report

The Compensation Committee has reviewed and discussed the Compensation Discussion and Analysis report beginning on page 18 of this Proxy Statement with management. Based on that review and discussion, the Compensation Committee recommended to the Board of Directors that the Compensation Discussion and Analysis be included in this Proxy Statement.

The foregoing report has been furnished by the members of the Compensation Committee:

Robert F. Higgins, *Chairman*
Elisabeth K. Allison, PhD
Peter Barrett, PhD
Claire M. Fraser-Liggett, PhD
(As currently constructed)

Compensation Committee Interlocks and Insider Participation

The current members to the Compensation Committee are Mr. Higgins, Dr. Allison, Dr. Barrett and Dr. Fraser-Liggett. We are not aware of any Compensation Committee interlocks or relationships involving our executive officers or members of our Board requiring disclosure in this item.

EXECUTIVE COMPENSATION

Summary Compensation

The following table sets forth certain information with respect to compensation for the year ended December 31, 2007 earned by or paid to our Chief Executive Officer, Chief Financial Officer and our three other most highly compensated executive officers, which are referred to as the named executive officers.

SUMMARY COMPENSATION TABLE

Name and principal position	Year	Salary	Bonus	Stock awards(1)	Option awards(1)	All other compensation(2)	Total
Stanley N. Lapidus	2007	$347,626	—	—	$138,953	$ 36,000(3)	$522,579
Chairman and Chief Executive Officer	2006	$318,000	—	$221,272	$115,794	$ 36,000(4)	$691,066
Stephen J. Lombardi(5)	2007	$322,420	—	$240,169	$369,711	—	$932,300
President and Chief Operating Officer	2006	$167,115(6)	—	$133,846	—	$314,313(7)	$615,274
J. William Efcavitch	2007	$275,625	—	—	$ 25,751	$175,824(8)	$477,200
Senior Vice President of Product Research and Development	2006	$262,500	—	—	$ 22,856	$ 84,149(9)	$369,505
Thomas C. Meyers(10)	2007	$ 95,305	—	$ 64,000	$124,370	$ 72,534(11)	$356,209
Former Vice President and Chief Intellectual Property Counsel	2006	$237,038	—	$ 5,625	—	—	$242,663
Louise A. Mawhinney	2007	$267,548	—	$237,484	$ 29,877	$ 11,388(13)	$546,297
Former Senior Vice President and Chief Financial Officer	2006	$ 67,308(12)	—	$ 59,371	$ 31,719	$142,356(14)	$300,754

(1) Based on the dollar amount recognized for financial statement reporting purposes with respect to the year ended December 31, 2007 in accordance with FAS 123(R), excluding the impact of forfeitures, and assuming that we used the modified prospective transition method for reporting awards granted prior to 2006. The assumptions we used for calculating the grant date fair values are set forth in Footnote 12 to our financial statements included in our Registration Statement on Form S-1 (333-140973), for 2006, and in Footnote 13 to the Consolidated Financial Statements presented in our 2007 Form 10-K, for 2007.

(2) Excludes medical, disability and certain other benefits received by the named executive officers that are available generally to all of our employees and certain perquisites and other personal benefits received by the named executive officers which do not exceed $10,000 in the aggregate.

(3) Represents a housing allowance in the amount of $36,000 paid to Mr. Lapidus.

(4) Includes a housing allowance in the amount of $36,000 paid to Mr. Lapidus.

(5) Mr. Lombardi was promoted to Executive Vice President and Chief Operating Officer in February 2007 and to President and Chief Operating Officer in October 2007.

(6) Mr. Lombardi joined our company in June 2006 and his annual base salary was $300,000.

(7) Includes relocation expenses of $171,359 paid to Mr. Lombardi and income taxes of $142,954 paid on Mr. Lombardi's behalf.

(8) Includes a housing allowance in the amount of $36,000 and commuting expenses of $44,340 (includes a tax gross-up of $10,627) paid to Dr. Efcavitch. Also, includes compensation from stock option pricing amendments during the first quarter of 2007 in the amount of $95,484, including the tax gross up.

(9) Includes a housing allowance in the amount of $36,000 and commuting expenses of $48,149 (includes a tax gross-up of $18,142) paid to Dr. Efcavitch.

(10) In 2007, following our appointment of a Chief Operating Officer, Mr. Meyers began reporting to our Chief Operating Officer and was no longer considered an executive officer pursuant to Rule 405 of the Securities Act of 1933, as amended. Mr. Meyers resigned from his position with the Company in May 2007.

(11) Includes a severance payment in the amount of $61,270 and payment in the amount of $11,264 for accrued vacation time as of his resignation.

(12) Ms. Mawhinney joined our company in September 2006 and her annual base salary was $250,000.

(13) Represents compensation from stock option pricing amendments during the first quarter of 2007, including the tax gross up.

(14) Represents income taxes of $142,356 paid on Ms. Mawhinney's behalf.

Grants of plan-based awards

The following table sets forth certain information with respect to grants of plan-based awards for the year ended December 31, 2007 to the named executive officers.

2007 GRANTS OF PLAN-BASED AWARDS(1)

Name	Grant Date	All Other Stock Awards: Number of Shares of Stock or Units (#)	All Other Option Awards: Number of Securities Underlying Options (#)	Exercise or Base Price of Option Awards ($/Sh)	Grant Date Fair Value of Stock and Option Award ($)(2)
Stephen J. Lombardi	02/22/2007	—	166,666(3)	$11.07	$1,510,695
	07/27/2007	12,778(4)	—	—	$ 100,307
	11/20/2007	—	250,000(5)	$10.75	$1,673,919
Thomas C. Meyers	01/30/2007	—	40,822(6)	$11.07	$ 351,162
Louise A. Mawhinney	06/07/2007	—	35,000(7)	$ 8.63	$ 211,307

(1) We did not make any payments pursuant to our Bonus Plan, which would be required to be disclosed in this table. Additionally, no grants of plan-based awards were made to Mr. Lapidus or Dr. Efcavitch during the year ended December 31, 2007.

(2) The amounts included in this column represent the full grant date fair value of the awards computed in accordance with SFAS No. 123R. Information related to the financial reporting of stock options and restricted stock are presented in Footnote 13 to the Consolidated Financial Statements presented in our 2007 Form 10-K.

(3) Such award was granted under the 2003 Plan and vests 25% on the first anniversary of the grant date and the remainder vest monthly at the rate of 2.083333% per month.

(4) Such award was granted under the 2007 Plan and vests 25% on the first anniversary of the grant date and the remainder vests 6.25% on the first day of each fiscal quarter.

(5) Such award was granted under the 2007 Plan and vests 25% on the first anniversary of the grant date and the remainder vest monthly at the rate of 2.083333% per month.

(6) Such award was granted under the 2003 Plan and vested 25% on the first anniversary of the vesting start date of March 1, 2006 and the remainder vested monthly at the rate of 2.083333% per month. Upon Mr. Meyers' resignation, an additional 2,552 shares vested and the award was cancelled.

(7) Such award was granted under the 2007 Plan and would have vested 25% on the first anniversary of the grant date and the remainder would have vested monthly at the rate of 2.083333% per month. In connection with Ms. Mawhinney's resignation, 10,208 shares vested and the award was cancelled. However, Ms. Mawhinney may exercise the option with respect to the vested shares until June 19, 2008.

Discussion of summary compensation and grants of plan-based awards tables

Our executive compensation policies and practices, pursuant to which the compensation set forth in the Summary Compensation Table and the 2007 Grants of Plan Based Awards Table was paid or awarded, are described above under "Compensation Discussion and Analysis." A summary of certain material terms of our compensation plans and arrangements is set forth below.

2007 Stock Option and Incentive Plan

The 2007 Plan was adopted by our Board of Directors in April 2007 and approved by our stockholders in May 2007. The 2007 Plan permits us to make grants of incentive stock options, non-qualified stock options, stock appreciation rights, deferred stock awards, restricted stock awards, unrestricted stock awards and dividend equivalent rights. We reserved 1,440,266 shares of our common stock for the issuance of awards under the 2007 Plan. The 2007 Plan provides that the number of shares reserved and available for issuance under the plan will be automatically increased each January 1, beginning in 2008, by 4.5% of the outstanding number of shares of common stock on the immediately preceding December 31 or such lower number of shares of common stock as determined by the Board of Directors. In February 2008, pursuant to this provision, the number of shares of our common stock reserved for the issuance of awards under the 2007 Plan was increased by 944,263, or 4.5% of the outstanding number of shares of common stock outstanding as of December 31, 2007. This number is subject to adjustment in the event of a stock split, stock dividend or other change in our capitalization. Generally, shares that are forfeited or canceled from awards under the 2007 Plan also will be available for future awards. In addition, available shares under our 2003 Stock Option and Incentive Plan, including as a result of the forfeiture, expiration, cancellation, termination or net issuances of awards, are automatically made available for issuance under the 2007 Plan.

The 2007 Plan may be administered by either a committee of at least two non-employee directors or by our full Board of Directors, in either case acting as the administrator. The administrator has full power and authority to select the participants to whom awards will be granted, to make any combination of awards to participants, to accelerate the exercisability or vesting of any award and to determine the specific terms and conditions of each award, subject to the provisions of the 2007 Plan.

All full-time and part-time officers, employees, non-employee directors and other key persons (including consultants and prospective employees) are eligible to participate in the 2007 Plan, subject to the discretion of the administrator. There are certain limits on the number of awards that may be granted under the 2007 Plan. For example, no more than 1,444,444 shares of common stock may be granted in the form of stock options or stock appreciation rights to any one individual during any one-calendar-year period.

The exercise price of stock options awarded under the 2007 Plan may not be less than the fair market value of our common stock on the date of the option grant and the term of each option may not exceed ten years from the date of grant. The administrator will determine at what time or times each option may be exercised and, subject to the provisions of the 2007 Plan, the period of time, if any, after retirement, death, disability or other termination of employment during which options may be exercised.

To qualify as incentive options, stock options must meet additional federal tax requirements, including a $100,000 limit on the value of shares subject to incentive options which first become exercisable in any one calendar year, and a shorter term and higher minimum exercise price in the case of certain large stockholders.

- Stock appreciation rights may be granted under our 2007 Plan. Stock appreciation rights allow the recipient to receive the appreciation in the fair market value of our common stock between the exercise date and the date of grant. The administrator determines the terms of stock

appreciation rights, including when such rights become exercisable and whether to pay the increased appreciation in cash or with shares of our common stock, or a combination thereof.

- Restricted stock may be granted under our 2007 Plan. Restricted stock awards are shares of our common stock that vest in accordance with terms and conditions established by the administrator. The administrator will determine the number of shares of restricted stock granted to any employee. The administrator may impose whatever conditions to vesting it determines to be appropriate. For example, the administrator may set restrictions based on the achievement of specific performance goals. Shares of restricted stock that do not vest are subject to our right of repurchase or forfeiture.
- Dividend equivalent rights may be granted under our 2007 Plan. Dividend equivalent rights are awards entitling the grantee to current or deferred payments equal to dividends on a specified number of shares of stock. Dividend equivalent rights may be settled in cash or shares and are subject to other conditions as the administrator shall determine.
- Cash-based awards may be granted under our 2007 Plan. Each cash-based award shall specify a cash-denominated payment amount, formula or payment ranges as determined by the administrator. Payment, if any, with respect to a cash-based award may be made in cash or in shares of stock, as the administrator determines.

Unless the administrator provides otherwise, our 2007 Plan does not allow for the transfer of awards and only the recipient of an award may exercise an award during his or her lifetime.

In the event of a merger, sale or dissolution, or a similar "sale event" in which all awards are not assumed or substituted by the successor entity, all stock options may be terminated upon the effective time of such sale event following an exercise period, in which case all such stock options shall first become fully exercisable.

No awards may be granted under the 2007 Plan after May 6, 2017. In addition, our Board of Directors may amend or discontinue the 2007 Plan at any time and the administrator may amend or cancel any outstanding award for the purpose of satisfying changes in law or for any other lawful purpose. No such amendment may adversely affect the rights under any outstanding award without the holder's consent. Other than in the event of a necessary adjustment in connection with a change in the Company's stock or a merger or similar transaction, the administrator may not "reprice" or otherwise reduce the exercise price of outstanding stock options or stock appreciation rights. Further, amendments to the 2007 Plan will be subject to approval by our stockholders if the amendment (i) increases the number of shares available for issuance under the 2007 Plan, (ii) expands the types of awards available under, the eligibility to participate in, or the duration of, the plan, (iii) materially changes the method of determining fair market value for purposes of the 2007 Plan, (iv) is required by the NASDAQ Global Market rules, or (v) is required by the Internal Revenue Code of 1986, as amended, or the Code, to ensure that incentive options are tax-qualified.

Stock option agreements. All stock option awards that are granted to the named executive officers pursuant to the 2007 Plan are covered by a Stock Option Agreement. Generally, under the Stock Option Agreements, 25% of the shares vest on the first anniversary of the grant date and the remaining shares vest monthly over the following three years. Our Board of Directors may accelerate the vesting schedule in its discretion.

Restricted stock award agreements. All restricted stock awards that are granted to the named executive officers pursuant to the 2007 Plan are covered by a Restricted Stock Award Agreement. Generally, under the Restricted Stock Award Agreements, 25% of the shares vest on the first anniversary of the grant date and the remaining shares vest in equal installments on the first day of each fiscal quarter over the following three years. Our Board of Directors may accelerate the vesting schedule in its discretion. The Restricted Stock Award Agreements provide that the named executive officer may not sell, transfer, pledge or otherwise encumber or dispose of any unvested shares. Upon the termination of employment, including upon death, disability, retirement or discharge or resignation for any reason, whether voluntary or involuntary or upon a sale event, any unvested shares of restricted stock are deemed to have been reacquired by the Corporation.

2003 Stock Option and Incentive Plan

Until April 2007 certain option and restricted stock purchase awards were made pursuant to our 2003 Plan. The 2003 Plan was adopted by our Board of Directors and approved by our stockholders in November 2003. Upon the adoption of our 2007 Plan, in April 2007, our Board of Directors determined not to grant any further awards under our 2003 Plan.

Our 2003 Plan is administered by either our Board of Directors or the Compensation Committee. The administrator of the 2003 Plan has full power and authority to grant and amend awards and to adopt, amend and repeal rules relating to the 2003 Plan.

Upon a sale event in which all awards are not assumed or substituted by the successor entity, all stock options may be terminated upon the effective time of such sale event following an exercise period, in which case all such stock options shall first become fully exercisable. Restricted stock shall be treated as provided in the relevant award agreement. Under the 2003 Plan, a sale event is defined as the consummation of (i) a sale of all or substantially all of the assets, (ii) a sale of the Company by merger in which the shareholders of the Company do not own a majority of the outstanding voting power of the successor entity or (iii) any other acquisition of the business of the Company, as determined by the Board of Directors.

Stock option agreements. All stock option awards that are granted to the named executive officers are covered by a Stock Option Agreement. Generally, under the Stock Option Agreements, 25% of the shares vest on the first anniversary of the grant date and the remaining shares vest monthly over the following three years. Our Board of Directors may accelerate the vesting schedule in its discretion.

Restricted stock purchase agreements. The restricted stock purchase agreements provide that the named executive officer may not sell or transfer any unvested shares without first offering the shares to us. This does not apply to transfers to family members, to a trust or similar estate planning entity for the benefit of a family member or pursuant to a court order. Transferees must agree to be bound by the terms of the restricted stock agreement. Upon the termination of employment, including upon death, disability, retirement or discharge or resignation for any reason, whether voluntary or involuntary or upon a sale event, we have the obligation to repurchase all of the unvested shares held by the employee or any permitted transferee as of such date. We refer to this as the repurchase right. The per share purchase price of the unvested shares shall be the per share amount the employee paid for such shares.

The following table sets forth certain information with respect to outstanding equity awards at December 31, 2007 with respect to the named executive officers.

OUTSTANDING EQUITY AWARDS AT FISCAL YEAR-END 2007(1)

	Option awards				Stock awards	
Name	Number of securities underlying unexercised options exercisable	Number of securities underlying unexercised options unexercisable	Option exercise price	Option expiration date	Number of shares or units of stock that have not vested	Market value of shares or units of stock that have not vested(2)
Stanley N. Lapidus	155,555	200,000(3)	$0.585(4)	03/28/2016	—	—
Stephen J. Lombardi	—	166,666(3)	$11.07	02/22/2017	—	—
	—	250,000(5)	$10.75	11/20/2017	—	—
	—	—	—	—	104,166(3)	$1,087,493
	—	—	—	—	12,778(6)	$ 133,402
J. William Efcavitch	22,225	18,518(3)	$ 0.45	11/03/2014	—	—
	19,444	25,000(3)	$0.585(4)	03/28/2016	—	—
Louise A. Mawhinney	—	35,000(7)	$ 8.63	06/07/2017	—	—
	—	—	—	—	91,666(8)	$ 956,993

(1) Mr. Meyers, our former Vice President and Chief Intellectual Property Counsel, is not included in this table as he resigned from his position with the Company in May 2007 and therefore did not have any outstanding equity awards at the Company's fiscal year-end 2007.

(2) Based upon the fair market value of $10.44 of our common stock on December 31, 2007, the last trading day of the fiscal year.

(3) These shares vest monthly at the rate of 2.083333% per month.

(4) All stock options granted in 2006 were originally granted with an exercise price of $0.585 per share. However, it was subsequently determined by our Board of Directors that the fair market value for tax purposes under Internal Revenue Code Sections 409A and 83 on the dates of grant was $1.80 per share. As a result, the unvested options were re-priced upwards to $1.80 in the first quarter of 2007.

(5) 62,500 of these shares will become exercisable on November 20, 2008 and the remainder vest monthly at the rate of 2.083333% per month.

(6) 3,194 of these shares will become exercisable on July 27, 2008 and the remainder on the first day of each fiscal quarter at the rate of 6.25% per quarter.

(7) 10,208 of these shares became exercisable on March 19, 2008, in connection with Ms. Mawhinney's resignation and the option terminated with respect to the remainder of the shares.

(8) 13,888 of these shares vested on March 19, 2008, in connection with Ms. Mawhinney's resignation.

OPTION EXERCISES AND STOCK VESTED DURING FISCAL YEAR 2007(1)

Name	Option awards		Stock awards	
	Number of shares acquired on exercise	Value realized on exercise	Number of shares acquired on vesting	Value realized on vesting(2)
Stanley N. Lapidus	—	—	33,333	$292,975
Stephen J. Lombardi	—	—	62,500	$534,824
Thomas C. Meyers	—	—	14,815	$126,665
Louise A. Mawhinney	4,311	$36,277(3)	41,667	$351,430

(1) Dr. Efcavitch did not have any stock awards which vested in 2007, nor did he exercise any option awards.

(2) The value realized has been calculated by multiplying the number of shares vested by the fair market value, less the applicable per share purchase price. For shares vesting prior to our initial public offering, the value realized upon vesting has been calculated by multiplying the number of shares vested by $9.00, the initial public offering price of our stock, less the applicable per share purchase price.

(3) Our common stock was not publicly traded at the time of exercise. The value realized has been calculated by multiplying the number of shares acquired on exercise by $9.00, the initial public offering price of our stock, less the per share purchase price of $0.585.

Potential payments upon termination or change in control

Change of Control Agreements

We have entered into change in control agreements with each of Stanley N. Lapidus, Stephen J. Lombardi and J. William Efcavitch. Under these change in control agreements, we will have an obligation to make payments to each executive upon a termination event following a change in control. A termination event under the agreements includes, among other things, termination of the executive's employment by the Company without cause or a termination by the executive as a result of a reduction in his annual compensation or benefits, a significant diminution of his or her responsibilities or, for Mr. Lapidus and Mr. Lombardi, a more than 50 mile relocation of his primary business location. In the case of Dr. Efcavitch, a termination event includes relocation of his primary business location more than 50 miles from each of his residences in Cambridge, Massachusetts and San Carlos, California.

Under his change in control agreement, if a termination event occurs within 12 months following a change in control, we would have an obligation to pay Mr. Lapidus an amount equal to the sum of (i) one and one-half times his annual base salary in effect immediately prior to the termination event, or prior to the change in control if higher, and (ii) the average annual bonus paid to Mr. Lapidus over the two fiscal years (or such shorter period to reflect actual length of service) immediately prior to the change in control. The change in control agreements with each of Mr. Lombardi and Dr. Efcavitch provide for a payment equal to (i) three-fourths of his annual base salary in effect immediately prior to the termination event, or prior to the change in control if higher, and (ii) the average annual bonus paid to him or her over the two fiscal years (or such shorter period to reflect actual length of service) immediately prior to the change in control. Under his change in control agreement, Mr. Lapidus would continue to participate in our group health and dental programs for 18 months following a termination event within 12 months of a change of control, and Mr. Lombardi and Dr. Efcavitch would continue to participate in such group health and dental programs for nine months in such circumstance under their respective change of control agreements. The change of control agreements also provide for full acceleration of any outstanding stock options or stock-based awards upon a termination event within

12 months of a change in control. All payments under the change in control agreement are subject to reduction as may be necessary to avoid certain tax consequences.

The following table outlines the post-employment payments that would be made, assuming termination following a change in control on December 31, 2007 (assuming the change in control agreements were effective at that time):

Payments and Benefits	Termination without cause or for good reason following change in control(1)(2)
Stanley N. Lapidus	
Severance	$ 525,000
Accelerated vesting of stock options	$1,728,000
Accelerated vesting of restricted stock awards	—
Health benefits	$ 18,994
Stephen J. Lombardi	
Severance	$ 243,750
Accelerated vesting of stock options	—
Accelerated vesting of restricted stock awards	$1,159,958
Health benefits	$ 13,725
J. William Efcavitch	
Severance	$ 206,719
Accelerated vesting of stock options	$ 400,995
Accelerated vesting of restricted stock awards	—
Health benefits	$ 13,725

(1) If the post-employment payments described in this table would result in taxes payable by the executive officer under Section 4999 of the Internal Revenue Code of 1986, as amended, then such payment will be automatically reduced in order to avoid incurring such tax liability, unless the reduced post-employment payment would be less than the post-employment payment net of the payable taxes, in which case the executive officer is entitled to receive the full amount under the agreement.

(2) The amounts reported for accelerated vesting of stock options and restricted stock awards has been calculated by multiplying the number of unvested shares by $10.44, the fair market value of our common stock on December 31, 2007, the last trading day of the fiscal year, less the applicable per share exercise or purchase prices.

Post-Termination Payments

In connection with her resignation as Senior Vice President and Chief Financial Officer, we entered into a letter agreement with Ms. Mawhinney, effective as of March 3, 2008, the Mawhinney Agreement. Under the Mawhinney Agreement, Ms. Mawhinney served as Senior Vice President and Chief Financial Officer until March 19, 2008, the Resignation Date. Under the terms of the Mawhinney Agreement, we will continue to pay Ms. Mawhinney her regular base salary from the Resignation Date through and including August 1, 2008, or an aggregate of approximately $103,762, less any tax-related deductions or withholding. Ms. Mawhinney also will be reimbursed for COBRA payments through August 1, 2008. Pursuant to the Mawhinney Agreement, Ms. Mawhinney has agreed to provide transitional assistance to the Company through July 31, 2008.

In addition, the Mawhinney Agreement provided that Ms. Mawhinney's outstanding stock options and restricted stock accelerated such that the portion that would have been vested through August 1, 2008 was vested on the Resignation Date. Ms. Mawhinney has 90 days from the Resignation Date to exercise all vested stock options. The Mawhinney Agreement further provides that Helicos waives its right to receive repayment from Ms. Mawhinney for the one-time cash payment previously made by Helicos to Ms. Mawhinney, in the amount of $142,356, which amount represented a tax gross-up payment in connection with equity awards that were granted below fair market value (as described in the Company's Registration Statement on Form S-1, filed with the Securities and Exchange Commission on May 24, 2007).

In May 2007, we entered into a letter agreement with Mr. Meyers, the Meyers Agreement, in connection with his resignation as Vice President and Chief Intellectual Property Counsel. Under the terms of the Meyers Agreement, we paid Mr. Meyers a lump sum equal to three months of his then current base salary, or $61,270, less any tax-related deductions or withholding. In addition, the Meyers Agreement provided that Mr. Meyers' outstanding stock options and restricted stock accelerated such that the portion that would have been vested through August 18, 2007 was vested on May 18, 2007.

Director compensation

We do not pay any compensation for serving on our Board of Directors to our employee directors, including Stanley N. Lapidus, Chairman and Chief Executive Officer, and prior to 2007 we have not paid any compensation for serving on our Board of Directors to our non-employee directors. We reimburse all non-employee directors for their reasonable out-of-pocket expenses incurred in attending meetings of our Board of Directors or any committees thereof.

In February 2007, the Board of Directors adopted our Non-Employee Director Compensation Policy, the 2007 Policy. The 2007 Policy was designed to ensure that the compensation aligns the directors' interests with the long-term interests of the stockholders, that the structure of the compensation is simple, transparent and easy for stockholders to understand and that our directors are fairly compensated. Employee directors would not have received additional compensation for their services as directors.

Under the 2007 Policy, upon initial election or appointment to the Board of Directors, new non-employee directors received a non-qualified stock option to purchase 11,111 shares of common stock at an exercise price equal to the fair market value on the date of grant that vests one year from the date of grant. Directors who were on the Board when the 2007 Policy was adopted received such grant in July 2007. Under the 2007 Policy, each year of a non-employee director's tenure, the director would have received a non-qualified stock option to purchase 5,555 shares of common stock at an exercise price equal to the fair market value on the date of the grant that vests one year from the date of grant.

In addition, each non-employee director was paid an annual retainer of $20,000 ($40,000 for any non-employee chairman or lead independent director as appropriate) for their services. For each Board of Directors meeting that a non-employee director attended in person in excess of six meetings in a single calendar year, such non-employee director would have been paid $1,500. Committee members receive additional annual retainers in accordance with the following:

Committee	Non-employee chairman	Non-employee director
Audit Committee	$10,000	$5,000
Compensation Committee	$ 6,500	$3,000
Nominating and Corporate Governance Committee	$ 6,500	$3,000

For each committee meeting a non-employee director attends in person, such non-employee director would have received $1,000 unless such committee meeting is held on the same day as a meeting of the full Board of Directors, in which case the non-employee directors were not entitled to additional compensation.

These additional payments for service on a committee are due to the workload and broad-based responsibilities of the committees.

Director Summary Compensation Table

The table below summarizes the compensation paid to non-employee Directors for the fiscal year ended December 31, 2007. Directors who are employees receive no additional compensation for Board service.

DIRECTOR COMPENSATION(1)(2)

Name	Fees Earned or Paid in Cash ($)(3)	Option Awards ($)(4)	Total ($)
Noubar B. Afeyan, PhD	$50,000	$24,044	$74,044
Brian G. Atwood	$27,500	$24,044	$51,544
Peter Barrett, PhD	$26,500	$24,044	$50,544
Claire M. Fraser-Liggett, PhD(5)	$17,250	$68,500	$85,750
Robert F. Higgins	$35,000	$24,044	$59,044
Ronald A. Lowy(6)	$ 6,250	$ 8,334	$14,584
Theo Melas-Kyriazi(5)	$23,500	$68,500	$92,000
Steven St. Peter, MD	$32,500	$24,044	$56,544

(1) Mr. Lapidus, our Chairman and Chief Executive Officer, is not included in this table as he was an employee of the Company during 2007 and received no compensation for his services as a director. The compensation received by Mr. Lapidus as an employee of the Company is shown in the Summary Compensation Table. Dr. Allison, one of our directors, did not join the Board of Directors until January 2008 and, therefore, did not receive any compensation in 2007.

(2) We do not maintain any non-equity incentive plans, pension plans, or non-qualified deferred compensation plans in which the directors participate. No directors received any other compensation other than what is listed above.

(3) Total reflects fees and retainers earned.

(4) Amount listed reflects the dollar amount recognized for financial statement reporting purposes in 2007 in accordance with SFAS No. 123R on stock option awards and thus includes amounts from awards granted in and prior to 2007. Information related to the financial reporting of stock options are presented in Footnote 13 to the Consolidated Financial Statements presented in our 2007 Form 10-K.

(5) Dr. Fraser-Liggett and Mr. Melas-Kyriazi joined the Board of Directors in March 2007 and their annual retainers have been prorated accordingly.

(6) Mr. Lowy joined the Board of Directors in November 2007 and his annual retainer has been prorated accordingly.

2008 Director Compensation

Effective January 1, 2008, the Company adopted a revised Non-Employee Director Compensation Policy, the 2008 Policy. The revised policy reflects changes to set the retainer to more adequately compensate for director responsibilities, provide per meeting compensation for meetings outside the original schedule and differentiate compensation for in-person versus telephonic attendance. In determining the adequate compensation, the Board of Directors looked at 30 companies in the biotechnology and pharmaceutical industry with market capitalization of $150 - 400 million. The cash compensation payable to our directors is targeted to be in the 50th percentile of the cash compensation paid by these companies. The 2008 Policy, like the 2007 Policy, is designed to ensure that the compensation aligns the directors' interests with the long-term interests of the stockholders, that the structure of the compensation is simple, transparent and easy for stockholders to understand and that our directors are fairly compensated. Employee directors will not receive additional compensation for their services as directors.

The equity portion of our director compensation remains unchanged. Under the 2008 Policy, upon initial election or appointment to the Board of Directors, new non-employee directors receive a non-qualified stock option to purchase 11,111 shares of common stock at an exercise price equal to the fair market value on the date of grant that vests one year from the date of grant. Each year of a non-employee director's tenure, the director will receive a non-qualified stock option to purchase 5,555 shares of common stock at an exercise price equal to the fair market value on the date of the grant that vests one year from the date of grant.

Under the 2008 Policy, each non-employee director is paid an annual retainer of $25,000 ($40,000 for any non-employee Chairman or, as appropriate, the Lead Independent Director) for their services. For each Board of Directors meeting that a non-employee director attends in person in excess of six meetings in a single calendar year, such non-employee director shall be paid $1,500, if attended in person, and $750, if attended via telephone.

Committee members receive additional annual retainers in accordance with the following:

Committee	Non-employee chairman	Non-employee director
Audit Committee	$15,000	$10,000
Compensation Committee	$10,000	$ 7,500
Nominating and Corporate Governance Committee	$ 7,500	$ 5,000

For each committee meeting a non-employee director attends in excess of nine meetings, for members of the Audit Committee, twelve meetings, for members of the Compensation Committee, or six meetings, for members of the Nominating and Corporate Governance Committee, such non-employee director will receive $1,000, if attended in person, and $500, if attended via telephone. These additional payments for service on a committee are due to the workload and broad-based responsibilities of the committees.

CERTAIN TRANSACTIONS

In accordance with NASD listing standards, the Board conducts an appropriate review of all related party transactions required to be disclosed in this proxy statement for potential conflicts of interest situations on an ongoing basis and, all such transactions are approved by the Audit Committee.

Director Indemnification Agreements

We have entered into indemnification agreements with each of our directors. These agreements require us to indemnify our directors to the fullest extent permitted by Delaware law.

OTHER MATTERS

We know of no other matters to be submitted at the meeting. If any other matters properly come before the meeting, it is the intention of the persons named in the enclosed proxy to vote the shares they represent as the Board may recommend.

It is important that your shares be represented at the meeting, regardless of the number of shares which you hold. Please complete, date, execute and return, at your earliest convenience, the accompanying proxy card in the envelope which has been enclosed.

DEADLINE FOR RECEIPT OF STOCKHOLDER PROPOSALS

Proposals of stockholders which are intended to be included in our proxy statement for our 2009 annual meeting must be received by us no later than December 29, 2008 in order that they may be included in the proxy statement and form of proxy relating to that meeting.

Stockholders intending to present a proposal at the 2009 annual meeting, but not to include the proposal in our proxy statement, must comply with the requirements set forth in our bylaws. The bylaws require, among other things, that a stockholder must submit a written notice of intent to present such a proposal to the Secretary at the our principal executive offices not later than the close of business on the ninetieth day nor earlier than the close of business on the one hundred twentieth day prior to the first anniversary of the preceding year's annual meeting. Therefore, we must receive notice of such proposal for the 2009 annual meeting between January 22, 2009 and February 21, 2009. If the notice is received after February 21, 2009, it will be considered untimely and we will not be required to present it at the 2009 annual meeting.

END