RXi Pharmaceuticals

Next Generation in RNAi

2007 Annual Report

Management

Tod Woolf, Ph.D., President and CEO
Founder & CEO of Sequitur, an RNAi company acquired by Invitrogen
Co-invented and commercialized Stealth™ RNAi
Co-invented two of RPI's (Sirna-Merck) main RNA technologies

Stephen J. DiPalma, Chief Financial Officer
Founded and served as President and CEO of Catalyst Oncology
Former CFO at Milkhaus Laboratory, Phytera and Athena Diagnostics
Successfully turned around Aquila Biopharmaceuticals

Pamela Pavco, Ph.D., VP of Pharmaceutical Development
Brought Sirna's lead RNAi candidate to Phase I in under 12 months
Three additional RNA drug candidates through IND at Sirna (RPI)
Managed Sirna's Allergan and Huntington Disease collaborations

Dmitry Samarsky, Ph.D., VP of Technology Development
Organizer and speaker for dozens of RNAi conferences
Agreements with over a dozen pharma and biotech companies
Director of Technology Development at RNAi tech leader Dharmacon

Scientific Advisors

Craig Mello, Ph.D., Founder, SAB Chairman
2006 Nobel Prize in Medicine for RNAi
Co-discovered RNAi and invented RNAi therapeutics
Howard Hughes Medical Institute Investigator at UMMS

Greg Hannon, Ph.D., Founder
HHMI Investigator at Cold Spring Harbor Laboratory
Discovered mechanism of RNAi in human cells
Developed the widely used shRNA

Tariq Rana, Ph.D., Founder
Professor and Founder, Program in Chemical Biology, UMMS
Discovered key parameters to stabilize RNAi
Developed RXi's Nanotransporter Technology

Michael Czech, Ph.D., Founder
Professor and Chair, Program in Molecular Medicine, UMMS
American Diabetes Association's Eli Lilly Award for Diabetes
Banting Award for scientific achievement

Nassim Usman, Ph.D.
Held positions of CSO and COO at Sirna
Negotiated Lilly, Allergan and GSK alliances
130 patents and patent applications: Main RNAi synthesis chemistry

Robert H. Brown, Jr., M.D., Ph.D.
Professor of Neurology at Harvard Medical School
Director, Day Neuromuscular Lab at MGH
Identified SOD1's roles in familial ALS

Nicholas Dean, Ph.D.
VP positions in oncology and pharmacology at Isis
Over 100 patents and publications in RNA therapeutics
Managed $100M budget for Isis - Eli Lilly collaboration

Corporate Overview

RXi Pharmaceuticals is a leader in next generation RNA targeting, including its proprietary rxRNA™ discovery platform, for the treatment of human diseases. RXi is engaged in the discovery, development and commercialization of proprietary therapeutics.

RXi Pharmaceuticals believes it is well-positioned to compete successfully in the RNAi therapeutics market with its strong technology platform, broad and early intellectual property position, a management team that is experienced in commercializing products, and accomplished scientific advisors, including Dr. Craig Mello, recipient of the 2006 Nobel Prize for his co-discovery of RNAi.

RXi's Therapeutic Platform

RXi Pharmaceuticals' rxRNA™ compounds are distinct from the siRNA compounds used by many other companies developing RNAi therapeutics and are believed by the company, based on its internal research, to be up to 100 times more active than conventional siRNA (depending on the target site), nuclease resistant and readily manufactured.

Delivery

RXi's founding scientists recognized very early that the key to therapeutic success with RNAi lies in delivering intact RNAi compounds to the target tissue and the interior of the target cells. RXi founding scientist Dr. Tariq Rana has developed novel and proprietary nanotransporters which have been shown to deliver RNAi to target tissues in animal models. Unlike other therapeutic delivery technologies, nanotransporters are of a defined size and are readily formulated.

QUICK FACTS

Ticker:
Nasdaq: RXII

Founded by:
Craig Mello, Ph.D.
discoverer of RNAi
2006 Nobel Laureate
and other leaders
in the field

Initial Trading:
March 2008

Headquarters:
Worcester, MA

Investor Contact:
RXi Pharmaceuticals
60 Prescott Street
Worcester, MA 01605

www.rxipharma.com
ir@rxipharma.com
508-929-3615

Letter to Our Stockholders

In late 2006, while the four scientific founders and I were formulating the plans for a Next Generation RNAi company, we received the exciting news from Stockholm: Craig Mello, one of our founders and Chair of our Scientific Advisory Board, had been awarded the Nobel Prize for his co-discovery of RNAi. In just ten years since this seminal discovery, RNAi has captured the imagination and attention of both the scientific community and the pharmaceutical industry because RNAi has the potential to silence numerous disease-causing genes, offering the possibility to treat diseases that may not be able to be addressed by traditional pharmaceuticals.

Craig Mello and I first met at Harvard twenty years ago. Since then, we have been working on discovering the mechanisms and developing therapeutics based on RNA inhibition both in academia and in industry. Together in 2007, we signed on leading academic and industrial experts in the field to form the foundation for RXi Pharmaceuticals. In turn, we were able to attract an experienced and accomplished management team, including Pamela Pavco, Ph.D., VP of Pharmaceutical Development, Dmitry Samarsky, Ph.D., VP of Technology Development and Steve DiPalma, CFO. Their impressive biographies can be found in our proxy statement.

An RNAi compound can be custom-designed to block the production of disease-causing proteins in cells. RNAi therapeutics have the potential ability to target virtually any gene and accelerate the drug development process. Whereas traditional drug discovery is a long process that is expensive, time consuming and, most critically, prone to failure, RNAi is a potentially rapid, systematic way of finding compounds that can target genes involved in diseases. This year, RXi established a system whereby, often in a matter of weeks, we can identify an RNAi compound that inhibits the disease-causing RNA.

We are currently building a broad portfolio of potential product candidates that have been selected with a rigorous focus on large markets with unmet medical needs. Specifically, we are generating multiple opportunities in neurodegenerative disease, metabolic disease and inflammation for internal development and/or partnering, each of which is a multibillion dollar disease area.

Craig Mello, myself and other scientists currently at RXi have been working for more than ten years to develop technologies that may enable RNAi therapeutics, and RXi's core technology represents a decade of innovation from our internal and external scientific teams of true leaders in the RNAi field. We have leveraged a number of technologies that we have licensed from companies and institutions in the field in 2007 with advances made at RXi to create a new form of an RNAi compound that we call rxRNA™, which has potential applications across multiple therapeutic areas and offers a number of significant advantages to other RNAi therapeutics. rxRNA compounds are highly potent, which we believe will allow them to work at very low doses, enhancing efficacy, reducing costs and minimizing any potential side effects. rxRNA compounds are also more stable in serum than classic siRNA, so they should degrade less in the body before they reach the desired organ, and we believe that rxRNA compounds are also relatively easy to manufacture. We believe that the use of rxRNA compounds gives RXi a strong competitive advantage in the field of RNA therapeutics.

RXi's founding scientists recognized very early that the key to therapeutic success with RNAi lies in delivering intact RNAi compounds to the target tissue and the interior of the target cells. RXi uses a combination of delivery methods including nanotransporters, a novel and proprietary chemical that is mixed with RNAi compounds to form minute particles. We believe that these readily formulated particles will transport RNAi compounds to target tissues/organs, including the liver. Delivery to the liver is critical for many diseases, including diabetes, obesity and other metabolic disorders, and the nanotransporters can be used at extremely low doses (1 mg/kg) in these cases.

Looking Forward to 2008 and Beyond

In 2007 RXi Pharmaceuticals built a robust RNAi technology platform that we are now applying to our target disease areas in 2008. As the company grows we will continue to improve and expand our technology to remain in the forefront of this fast developing field.

ADVANTAGES OF RNAi THERAPEUTICS

- Rapid development of lead compounds
- Highly selective for the target gene
- Highly potent
- Natural mechanism of action

In March of 2008 RXi Pharmaceuticals began trading on the Nasdaq Capital Market (RXII) as one of the few public companies exclusively pursuing RNAi therapeutics.

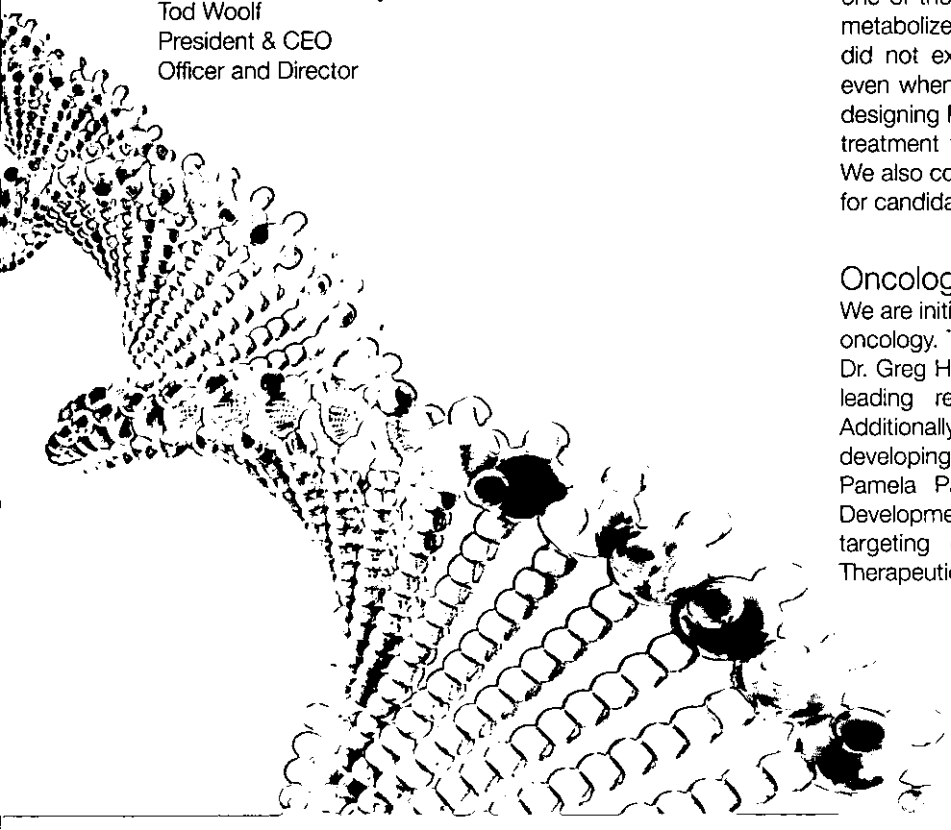
We believe that 2008 will be a promising year for RNAi companies and that we are well positioned to share in that success, with a diversified pipeline, expected collaborations with industry leaders, and our ability to generate new product candidates from our proprietary platform for clinical development, either on our own or for establishing strategic collaborations with industry partners.

This has been an extraordinary year and I would like to thank our management team, Scientific Advisory Board, Board of Directors and employees for all their effort. We would also like to thank you, our shareholders, for your support and commitment. We are looking forward to building value for our shareholders by creating and developing highly differentiated products that have the potential to offer new therapeutic options for patients suffering from neurodegenerative disease, oncology, type 2 diabetes, and obesity.

Sincerely,

Tod Woolf

Tod Woolf
President & CEO
Officer and Director



Therapeutic Areas

Neurology

Initially, we are pursuing research in ALS (amyotrophic lateral sclerosis, commonly known as Lou Gehrig's Disease). Some forms of ALS are caused by defects in a gene called SOD1. Early preclinical studies conducted by RXi advisors, Dr. Tariq Rana and Dr. Zuoshang Xu at UMMS showed promising results in animals using an RNAi compound to selectively inhibit the SOD1 gene. We are refining and extending this work and, if successful, will move into formal preclinical development. We also intend to leverage our experience related to the delivery of RNAi therapeutics in the central nervous system to explore development of RNAi-based treatments for neurodegenerative diseases other than ALS, including Alzheimer's Disease.

Metabolic Disease

One of our scientific co-founders and scientific advisory board members, Dr. Michael Czech, is a leading metabolic disease researcher. We have in-licensed intellectual property developed by Dr. Czech on genes that appear to be important regulators of metabolism. Studies conducted in Dr. Czech's laboratory at UMMS and by others at Imperial College of London have demonstrated that inactivation of one of these genes, called RIP140, can cause fat cells to metabolize rather than store fat. Mice in these studies that did not express RIP140 remained lean and non-diabetic even when maintained on a high fat diet. We are currently designing RNAi compounds targeting RIP140 as a potential treatment for obesity and obesity-related type 2 diabetes. We also continue to evaluate genes in Dr. Czech's database for candidate targets.

Oncology

We are initiating a program to develop RNAi drugs for use in oncology. This strategy is led by key RXi scientific advisors, Dr. Greg Hannon and Dr. Nicholas Dean, both of whom are leading researchers in targeting oncogene pathways. Additionally, our management team has expertise in developing programs targeting genes involved in cancer. Dr. Pamela Pavco, our Vice President for Pharmaceutical Development, previously managed the pre-clinical programs targeting genes involved with cancer while at Sirna Therapeutics, Inc. (recently acquired by Merck & Co.).

THERAPEUTIC AREAS

Neurology	ALS, Alzheimer's Disease	SOD1	Drs. Rana, Brown
Metabolic Disease	Obesity, Type 2 Diabetes	RIP140	Dr Czech
Oncology	Cancer	oncogene	Drs. Hannon, Dean, Pavco

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 No. 333-147009

RXi PHARMACEUTICALS CORPORATION

(Exact name of registrant as specified in its charter)

Delaware	**20-8099512**
(State or other jurisdiction of incorporation or organization)	*(I.R.S. Employer Identification Number)*
60 Prescott Street Worcester, Massachusetts	**01605**
(Address of principal executive offices)	*(Zip Code)*

Registrant's telephone number, including area code:
(508) 767-3861

SECURITIES REGISTERED PURSUANT TO SECTION 12(b) OF THE ACT:

Title of Each Class	Name of Exchange on Which Registered
Common Stock, $0.0001 Par Value Per Share	**NASDAQ Capital 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 a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act. (Check one):

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

There was no public trading market for the registrant's common stock as of June 30, 2007.

There were 12,684,432 shares of the registrant's common stock outstanding as of March 6, 2008.

DOCUMENTS INCORPORATED BY REFERENCE:

None

RXi PHARMACEUTICALS CORPORATION

FORM 10-K — FISCAL YEAR ENDED DECEMBER 31, 2007

Table of Contents

PART I

FORWARD-LOOKING STATEMENTS

This annual report on Form 10-K contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995 that involve risks and uncertainties, as well as assumptions that, if they never materialize or prove incorrect, could cause the results of RXi Pharmaceuticals Corporation to differ materially from those expressed or implied by such forward-looking statements. All statements other than statements of historical fact are statements that could be deemed forward-looking statements, including any projections of financing needs, revenue, expenses, earnings or losses from operations, or other financial items; any statements of the plans, strategies and objectives of management for future operations; any statements concerning product research, development and commercialization plans and timelines; any statements regarding safety and efficacy of product candidates, any statements of expectation or belief; and any statements of assumptions underlying any of the foregoing. In addition, forward looking statements may contain the words "believe," "anticipate," "expect," "estimate," "intend," "plan," "project," "will be," "will continue," "will result," "seek," "could," "may," "might," or any variations of such words or other words with similar meanings.

The risks, uncertainties and assumptions referred to above include risks that are described in "Risk Factors" and elsewhere in this annual report and that are otherwise described from time to time in our Securities and Exchange Commission reports filed after this report.

The forward-looking statements included in this annual report represent our estimates as of the date of this annual report. We specifically disclaim any obligation to update these forward-looking statements in the future. These forward-looking statements should not be relied upon as representing our estimates or views as of any date subsequent to the date of this annual report.

ITEM 1. *BUSINESS*

Overview

We were incorporated as Argonaut Pharmaceuticals, Inc. in Delaware on April 3, 2006, changed our name to RXi Pharmaceuticals Corporation on November 28, 2006, and began operations as a majority-owned subsidiary of CytRx Corporation ("CytRx") in January 2007. We are a discovery-stage biopharmaceutical company pursuing the development and potential commercialization of proprietary therapeutics based on RNA interference (RNAi) for the treatment of human diseases. We believe RNAi-based therapeutics have the potential to effectively treat a broad array of diseases by interfering with (sometimes referred to as silencing) the expression of targeted disease-associated genes. Our initial focus is on the treatment of neurological diseases, metabolic diseases and oncology.

RXi was founded by CytRx and four prominent researchers in the field of RNAi, including Dr. Craig Mello, recipient of the 2006 Nobel Prize for Medicine for his co-discovery of RNAi, and Blais University Chair of Molecular Medicine at the University of Massachusetts Medical School ("UMMS"). On March 11, 2008, CytRx distributed approximately 36% of our common stock to its shareholders of record on March 6, 2008 (the "Distribution"), and awarded approximately 27,700 shares of our common stock to certain of its directors, officers and other employees (the "Award"). As a result of and immediately following the Distribution, CytRx owned approximately 49% of our common stock.

RNAi is a naturally occurring mechanism for the regulation of gene expression that has the potential to be harnessed to selectively inhibit the activity of any human gene. As evidenced by Kim and Rossi's review published in March 2007 in *Nature Reviews Genetics*, it is believed that this inhibition may potentially treat human diseases by "turning off" genes that lead to disease. While no therapeutic RNAi products have been approved to date, there has been significant growth in the field of RNAi development and potential therapeutic applications. This growth is driven by the potential ability to use RNAi to rapidly develop lead compounds that specifically and selectively inhibit a target gene. By utilizing our expertise in RNAi and the RNAi technology

platform we have licensed from prominent researchers, we intend to identify lead compounds and advance towards pre-clinical and clinical development programs in the following therapeutic areas:

- *Neurology.* Initially, we are pursuing research in ALS (amyotrophic lateral sclerosis, commonly known as Lou Gehrig's Disease). Some forms of ALS are caused by defects in a gene called SOD1. Early preclinical studies conducted by our advisors, Dr. Tariq Rana and Dr. Zuoshang Xu at UMMS, showed promising results in animals using an RNAi compound to selectively inhibit the SOD1 gene. We are refining and extending this work and, if successful, will move into formal preclinical development. We also intend to leverage our experience related to the delivery of RNAi therapeutics in the central nervous system to explore development of RNAi-based treatments for neurodegenerative diseases other than ALS, including Alzheimer's Disease.

- *Metabolic disease.* One of our co-founders and scientific advisors, Dr. Michael Czech, is a prominent metabolic disease researcher. We have in-licensed intellectual property developed by Dr. Czech on genes that appear to be important regulators of metabolism. Studies conducted in Dr. Czech's laboratory at UMMS and by others at Imperial College of London have demonstrated that inactivation of one of these genes, called RIP140, can cause fat cells to metabolize rather than store fat. Mice in these studies that did not express RIP140 remained lean and non-diabetic even when maintained on a high-fat diet. We are currently designing RNAi compounds targeting RIP140 as a potential treatment for obesity and obesity-related type 2 diabetes. We also continue to evaluate genes in Dr. Czech's database for candidate targets.

- *Oncology.* We are initiating a program to develop RNAi drugs for use in oncology. This strategy is led by key RXi scientific advisors, Dr. Gregory Hannon and Dr. Nicholas Dean, both of whom are prominent researchers in targeting oncogene pathways. Additionally, our management team has expertise in developing programs targeting genes involved in cancer. Dr. Pamela Pavco, our Vice President for Pharmaceutical Development, previously managed the pre-clinical programs targeting genes involved with cancer while at Sirna Therapeutics, Inc. (acquired by Merck & Co. in 2006).

- *Additional indications.* There are many well-studied genes associated with numerous diseases that have been identified but have been difficult to target with normal medicinal chemistry. We believe RNAi technology may play an important role in targeting these genes and potentially treating these diseases. With the pioneering work being done in developing the RXi technology platform, we believe that we will discover many more drug candidates than can be advanced into clinical trials by our company alone. For research on target genes in our portfolio that are not funded internally, we will seek to identify and work with partners in the discovery and development process to build our development pipeline.

We believe that we possess a strong intellectual property portfolio. We have secured exclusive and nonexclusive licenses from academic institutions under certain issued and pending patents and patent applications covering RNAi technologies in the following three categories: (i) therapeutic targets, (ii) chemistry and configurations of RNAi and (iii) delivery of RNAi within the body.

We have an accomplished Scientific Advisory Board ("SAB"), which includes Craig C. Mello, Ph.D., Tariq Rana, Ph.D., Gregory Hannon, Ph.D., Michael Czech, Ph.D., Nicholas Dean, Ph.D., and Nassim Usman, Ph.D. (collectively, "SAB Members"). Our SAB Members are not employees and have other professional commitments to which they must devote substantial time. Each has agreed, however, to commit between 100 to 140 hours per year to their RXi service. These relationships with our SAB Members are governed by SAB advisory board agreements, each of which is terminable at any time by either party. Upon termination, the SAB Member would have no further obligation or duty to perform any advisory services to us or to remain as advisor in any capacity.

Introduction to the Field of RNAi Therapeutics

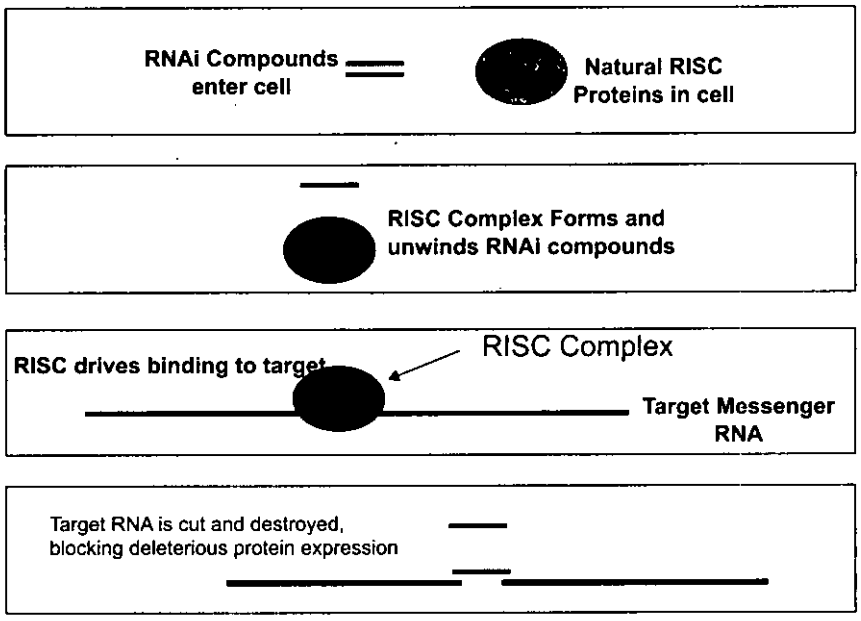
RNAi is a naturally-occurring phenomenon where short double-stranded RNA molecules interfere with the expression of targeted genes. RNAi technology takes advantage of this phenomenon and potentially allows us to effectively interfere with particular genes within living cells by designing RNA-derived molecules

targeting those genes. RNAi is regarded as a significant advancement, as evidenced by the journal *Science*'s selection of RNAi as the "Breakthrough of the Year" in 2002, and by the awarding of the 2006 Nobel Prize in Medicine to the codiscoverers of RNAi, including Dr. Craig Mello, an RXi founder and SAB Chairman. RNAi offers a novel approach to the drug development process because, as described below under "The RNAi Mechanism", RNAi compounds can potentially be designed to target any one of the thousands of human genes. In contrast, an article published in the December 2005 edition of *Drug Discovery Today* by Andreas P. Russ and Stefan Lampel has demonstrated that only a subset of the proteins encoded in the genome are able to be targeted efficiently by traditional medicinal chemistry or antibody-based approaches. The specificity of RNAi is achieved by an intrinsic well-understood biological mechanism based on designing the sequence of an RNAi compound to match the sequence of the targeted gene. The specificity of RNAi may be sufficient to permit therapeutic targeting of only a single gene and, importantly, may even selectively destroy expression from a single abnormal copy of a gene while preserving expression from a normal copy ("allele-specific" targeting). This is critical in diseases such as cancer and neurodegenerative disorders that are often caused by abnormal copies of genes.

The RNAi Mechanism

The human genetic code (human genome) is made of a double-strand of DNA (the double helix) that acts as an instruction manual for the production of the roughly 50,000 human proteins. Proteins are the molecular parts that allow cells and organisms to live and function. With rare exceptions, each cell in the human body has the entire complement of genes. However, only a subset of these genes directs the production of proteins in any particular cell type. For example, a muscle cell produces muscle-specific protein, whereas a skin cell does not. In order for a gene to guide the production of a protein, it must first be copied into a single-stranded chemical messenger (messenger RNA) and then translated into protein. RNA interference (RNAi) is a naturally occurring process by which a particular messenger RNA can be destroyed before it is translated into protein. The process of RNAi can be artificially induced by introducing a double-stranded fragment of RNA corresponding to a particular messenger RNA into a cell. A complex set of proteins within the cell called RISC (RNA-Induced Silencing Complex) recognizes this double-stranded RNA fragment and splits the double-strands apart. One of the strands of RNA then binds to its corresponding cellular messenger RNA and destroys this targeted RNA. Thus, RNAi provides a method to potentially block the creation of the proteins that cause disease, as depicted in the following figure.

Figure 1 — Mechanism of RNA interference within a cell



C Mello & A Fire, Nature (1998) and Hannon (2002)

Since gene expression controls most cellular processes, the ability to inhibit gene expression provides a potentially powerful tool to treat human diseases. Furthermore, since the human genome has already been decoded, and based on numerous gene-silencing reports, we believe that RNAi compounds can readily be designed to interfere with the expression of any specific gene.

A 2007 independently researched report published by Business Insights Ltd. indicates that the potential market for RNAi therapeutics is substantial. We believe that the RNAi platform may create therapeutics with significant potential advantages, which we have identified in the scientific literature as well as through our own research, over traditional drug development methods, including:

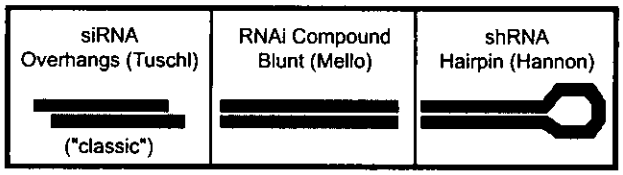
- high specificity for targeted genes;
- high potency (low doses);
- potential interference with the expression of any gene; and
- accelerated development of lead compounds.

RXi's RNAi Therapeutic Platform

RNAi Compound Design

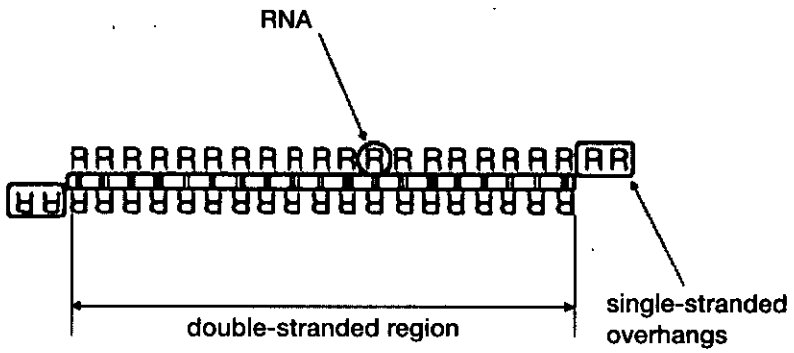
RNAi compounds are made from a strand or strands of RNA that are manufactured by a nucleic acid synthesizer. The synthesizer is programmed to assemble a strand of RNA of a particular sequence using the four kinds of nucleotide units (Adenine ("A"), Uracil ("U"), Cytidine ("C") and Guanosine ("G")) that match a small segment of the targeted gene. The hallmark of an RNAi compound is that it has a double stranded region. The compounds can be of various lengths of nucleotide units (nt). As seen in Figure 2 below, the two strands can have overhangs (as shown on the far left), or they can have blunt ends (as shown in the middle and right). A single strand can form an RNAi compound by forming a structure shown on the right referred to as a hairpin (as shown on the right).

Figure 2 — Types of RNAi Compounds



The length and shape can affect the activity and hence the potency of the RNAi in cells. The form of RNAi that was the first to be pursued for development as a human therapeutic was a short double-stranded RNA that included at least one overhanging single-stranded region, known as small interfering RNA, or siRNA which we also refer to as classic siRNA and can be seen in figure 2 above.

Figure 3 — First generation of RNAi pursued for human therapeutics: classic siRNA



In the case of classic siRNA, double-stranded RNA with single-stranded overhangs is used. The two strands comprising the RNA have bases that are complementary to each other in order to create double-stranded regions; that is, an "A" on one strand is paired with a "U" on the other, and a "C" on one strand is paired with a "G" on the other, creating double-stranded regions. The pairing holds the two strands together creating double-stranded RNA. The overhangs that are at the ends of the double-stranded RNA do not have a matching partner and thus these single-stranded bases in the overhang area are exposed to nucleases in the environment which can degrade the molecule. The classic siRNA therapeutics are about 19 to 23 base pairs long.

We believe, based on our own research, that classic siRNAs have limitations and drawbacks that may limit the usefulness of those agents as human therapeutics, and that we may be able to utilize the technologies we have licensed to optimize RNAi for use as a human therapeutic agent, such as to improve potency or efficacy, or to reduce manufacturing steps and costs. For example, the RNA can be chemically modified in a manner that reduces its sensitivity to nucleases, which are enzymes that attack and degrade RNA. Likewise, it is our expectation that removing the single-stranded overhang regions will be a way of reducing the rate of spurious degradation of the RNAi, as single-stranded RNA is more susceptible to degradation than double-stranded RNA. The length range of 19 to 23 nucleotides can also be varied to yield more potent RNAi compounds. Introducing "mismatches" in the double-stranded region, that is, discrete internal portions of the duplex region that do not form good base pairs between the two strands, also may be a useful way of improving the potency of the resulting RNA. In certain instances, we have the option of using hairpin structures, or a single-strand of nucleic acid which folds back on itself to form a double-stranded region, as the RNAi construct. These hairpin constructs may have improved efficacy as inhibitory agents, and we hope to demonstrate these may also improve the manufacturing process by requiring that only a single strand of RNA be produced, rather than two separate strands as is the case with classic siRNA.

We prefer to use RNAi of the form without the overhangs as originally described by Dr. Craig Mello in the seminal patent application on RNAi. The RNAi compounds we prefer can also optionally be of the hairpin shape. These RNAi compounds are distinct from the siRNA compounds used by many other companies developing RNAi therapeutics, and we call this class of compounds rxRNA™. Our internal research has demonstrated rxRNA to be a promising alternative to classic siRNA used by other companies developing RNAi therapeutics, and which we believe, based on our internal research, is:

- up to 100x more active than conventional siRNA (depending on the target site),
- nuclease resistant,
- readily manufactured, and
- potentially more specific for the target gene.

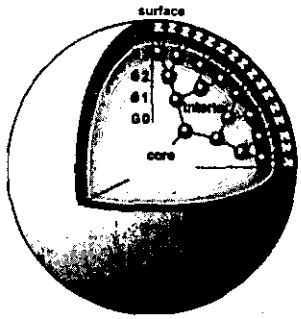
Depending on which delivery method is selected, stabilizing RNAi compounds by chemical modification may be critical for RNAi activity in animal models and in humans. The stabilization may be necessary to protect the RNAi compounds from being degraded by enzymes that exist in bodily fluids. Many of our employees and SAB Members are accomplished in the field of chemically modified RNAi design; for example, Dr. Woolf, our President and CEO, was a co-inventor of Stealth™ RNAi brand of chemically modified RNAi and Drs. Rana and Dean have conducted published research involving the design elements of RNAi. We will employ their collective expertise to design chemically modified RNAi compounds. We have in-licensed technology on chemically stabilized RNAi compounds that will also form the basis of our chemical modification strategy.

Delivery

Our founding scientists recognized very early that the key to therapeutic success with RNAi lies in delivering intact RNAi compounds to the target tissue and the interior of the target cells. We plan to work with chemically synthesized RNAi compounds that are optimized for stability and efficacy. We intend to rely on a combination of delivery at the site of action and formulation with delivery agents to achieve optimal delivery to specific target tissues.

One of our founding scientists, Dr. Tariq Rana, has developed novel and proprietary nanotransporters that have been shown to deliver RNAi compounds to target tissues in animal models. A nanotransporter is a chemical that is mixed with an RNAi compound to form minute particles which transport RNAi compounds to tissues. We have an exclusive therapeutic license to Dr. Rana's technology, which have been used to deliver RNAi compounds to the mouse liver and obtain exceptionally low dose (1 mg/kg) gene specific inhibition. Delivery to the liver is critical for many diabetes, obesity and other metabolic targets. In addition, Dr. Rana's nanotransporters are of a defined size and are readily formulated.

Figure 4 — Schematic Diagram of a Nanotransporter



The nanotransporter is a chemical that is mixed with RNAi compound to form minute particles which transport RNAi to tissues. The nanotransporter has a core to which layers (shown as G1, G2, and G3 in the figure above) are added by chemical synthesis. The final layer has positive charges (shown as Zs in the figure above) which attract and bind to negatively charged RNAi compounds. Based on Dr. Rana's research described above, which was included in an *ACS Chemical Biology Journal* article in 2007, we believe that nanotransporter delivery has the following potential advantages, which we intend to utilize in the development of our products:

- inhibition of liver target with 1 mg RNAi compound per kg of body weight;
- no immune stimulation detected;
- defined particle size; and
- readily formulated.

Strategy

We intend to use our intellectual property and expertise in RNAi to develop and potentially commercialize RNAi compounds. The key elements of our business strategy are as follows:

- We intend to finance the initial development of a limited number of RNAi drug candidates with our own capital resources and any financial resources that we may obtain from capital markets and partners. Our key therapeutic areas of interest are neurology, metabolic disease and oncology. We intend to develop drugs in these areas internally to establish significant value, at which point we may seek to partner them.
- We are seeking partnerships with large pharmaceutical and biotechnology companies to leverage our intellectual property and expand our development pipeline. Such partnerships may include traditionally structured drug development and commercialization licenses, discovery and development collaborations, research and technology collaborations, and intellectual property licenses.
- We intend to maintain and continue to develop and enhance our RNAi technology platform by expanding our intellectual property position in RNAi compound chemistry, delivery and target sequences. To date, we have in-licensed RNAi technologies from various institutions and companies, including UMMS, Imperial College of London, Cold Spring Harbor Laboratories and TriLink Biotechnologies. We intend to

continue to enhance our technology platform through in-licensing in combination with internal and collaborative research and development programs.

- We intend to develop future RNAi technology improvements and believe we are well positioned to do so. Our management and advisors have developed much of the core technology in the field of oligonucleotide therapeutics, and more specifically RNAi. For example, our Scientific Advisory Board member, Dr. Nassim Usman, developed the standard synthesis chemistry used to manufacture RNAi compounds throughout the world while a fellow at MIT. Our CEO, Dr. Tod Woolf, co-developed Stealth™ RNAi, which is one of the most commonly employed second generation RNAi chemistries, and our Vice President of Pharmaceutical Development, Dr. Pamela Pavco, developed the first modified RNAi tested in humans while she was at Sirna Therapeutics. Our advisors and scientists routinely meet to discuss novel approaches and improvements in our RNAi technology platforms to enhance our intellectual property portfolio.
- We may also seek to collaborate with government and charitable institutions through grants and funded research for our development programs.

Intellectual Property and Proprietary Rights

We have secured exclusive and non-exclusive rights to develop RNAi therapeutics by licensing key RNAi technologies and patent rights. Three categories of intellectual property rights important for successfully developing RNAi technology have been in-licensed. These rights are in the following areas:

- therapeutic targets,
- chemistry and configurations of RNAi compounds, and
- delivery technology for RNAi.

Intellectual Property Rights to Key Therapeutic Targets

We have entered into the licenses described below to obtain rights to therapeutic targets against which we may seek to develop therapeutics.

Genetic Diseases

We have exclusive and co-exclusive licenses from UMMS to technology and pending patent applications covering the design, synthesis and delivery of chemically modified RNAi and *in vivo* methods using RNAi to treat allele-specific genetic diseases such as ALS.

Metabolic Control

We also have exclusive rights to technology, patents and pending patent applications covering RNAi that targets RIP140, a co-repressor of many nuclear receptors and a key factor involved in sugar uptake and oxidative metabolism, and consequently, diabetes and obesity. We are an exclusive licensee of UMMS's technology establishing the key role of RIP140 in diabetes and insulin action. In addition, we have exclusive rights to technology, patents and pending patent applications covering the use of the endoplasmic reticulum stress response pathway in adipose cells to enhance whole body insulin sensitivity. We also have an exclusive license from the Imperial College in London, England for technology, patents and pending patent applications directed to controlling oxidative metabolism and burning of fat in adipose tissues.

Infectious Diseases

We believe that another promising area of RNAi-based therapeutics is infectious diseases, especially viral diseases. We have exclusive rights from UMMS to technology, patents and pending patent applications covering treatment of cytomegalovirus related disorders using RNAi.

Intellectual Property Rights to Chemistry and Configurations of Therapeutically Useful RNAi

We have a non-exclusive license to the Mello and Fire foundational RNAi patent and associated applications covering the use of double stranded RNA to induce gene silencing which describes RNAi products, compositions and therapeutic RNAi methods. In addition, we have secured exclusive and co-exclusive rights to technologies, patents and pending patent applications directed to producing and delivering *in vivo* stable and potent RNAi therapeutics. These rights include:

- Dr. Rana's inventions which provide fundamental rules for designing chemically modified RNAi sequences suitable for *in vivo* gene silencing, to which we have co-exclusive licenses in the therapeutic areas of type 2 diabetes, obesity, and ALS by targeting mutant SOD1, and CMV retinitis;
- Dr. Tuschl's invention regarding RNAi therapeutics using double-stranded RNAs in the areas of type 2 diabetes, obesity, and ALS by targeting mutant SOD1, and CMV retinitis;
- Drs. Mello and Zamore's invention regarding *in vivo* production of siRNA; and
- methods of triggering RNAi *in vivo*, based on particular RNA structural characteristics.

Intellectual Property Rights to Delivery of RNAi Compounds to Cells

We have exclusive and non-exclusive licenses to technologies for the efficient delivery of RNAi therapeutics to cells in cell culture and/or in the intact organism. These technologies include:

- methods and compositions, including use of nanotransporters, for RNAi compound delivery which enable therapeutic gene silencing in cells and animals which is licensed for all therapeutic areas and is one optional technology available to us to enhance the delivery of RNAi to tissues when using systemic (injected) RNAi; and
- inhibition of gene expression in fat cells using RNAi.

Summary of Patent Rights

The following table sets forth and summarizes the various patents that we have licensed from the various sources described above:

Subject Field	Inventor(s)	Priority Date	License*	Status
Drug discovery for diabetes and obesity	Michael P. Czech Silvia Corvera	09/27/1993	Exclusive license for products in the field of drug discovery in type 2 diabetes and/or obesity.	US Pat. 5,989,893 Pending elsewhere
RNAi in general	Craig C. Mello Andrew Fire Stephen Kostas Mary Montgomery Lisa Timmons SiQun Zu Hiroaki Tabara Samuel E. Driver	12/23/1997	Non-exclusive license to fundamental RNAi from Carnegie Institute of Washington.	US Pat. 6,506,559 Pending elsewhere
Drug discovery using genomic databases for diabetes and obesity	Michael P. Czech Andrew D. Cherniack Adilson L. Guilherme	10/20/2000	Exclusive license for products in the field of drug discovery in type 2 diabetes and/or obesity.	Pending
dsRNA in general	Thomas Tuschl, Philip A. Sharp Phillip D. Zamore David P. Bartel	12/01/2000	Non-exclusive license for RNAi use to inhibit (1) HCMV immediate early gene in retinitis (2) mutant SOD1 gene in ALS, and (3) gene targets in type II diabetes & obesity from UMMS, a co-owner of the patent.	Pending
Engineered precursor to siRNA for in vivo production of siRNA	Phillip D. Zamore Gyorgy Hutvagner Juanita McLachlan Craig C. Mello Alla Grishok	07/12/2001	Exclusive license for RNAi use to inhibit (1) HCMV immediate early gene in retinitis (2) mutant SOD1 gene in ALS, and (3) gene targets in type II diabetes & obesity.	Pending
In vivo gene silencing by chemically modified and stable siRNA	Tariq M. Rana Ya-Lin Chiu	09/25/2002	Exclusive worldwide license to the treatment of CMV, ALS, diabetes & obesity for therapeutics, prophylactics or diagnostics.	Pending
Allele specific inhibition by siRNA, especially SOD inhibition for the treatment of ALS	Zuoshang Xu Phillip D. Zamore	11/04/2002	Exclusive license on inhibition of SOD1 expression for the treatment of ALS including therapeutics, prophylactics and diagnostics.	Pending
Delivery of siRNA using peptide conjugate	Tariq M. Rana	11/26/2002	Exclusive license for therapeutic, prophylactic or diagnostic healthcare applications in humans, including for ALS, diabetes and obesity.	Pending
Allele specific inhibition by chemically modified siRNA	Tariq M. Rana	11/26/2002	Exclusive license for therapeutic, prophylactic or diagnostic healthcare applications in humans including for ALS, diabetes and obesity.	Pending
Delivery of siRNA into adipocytes for treatment of diabetes and obesity;	Michael P. Czech Qiong L. Zhou Zhen Y. Jiang	12/11/2002	Exclusive license for products in the field of drug discovery in type 2 diabetes and/or obesity.	Pending
Screening for modulators of fat storage	Malcolm Parker Roger White Goran Leonardsson	02/03/2003	Exclusive license for screening methods for identifying compounds that are useful as modulators of fat storage from Imperial College, UK.	Pending
Inhibition of CMV using siRNA	Timothy F. Kowalik	02/05/2003	Exclusive license to develop RNAi therapeutics for cytomegalovirus related diseases (HCMV- immediate early gene). (Note that original license only for CMV retinitis; amended 01/04 to include all CMV)	Pending

Subject Field	Inventor(s)	Priority Date	License*	Status
Modulation of insulin sensitivity through stress proteins	Silvia Corvera	06/19/2003	Exclusive license for products in the field of drug discovery in type 2 diabetes and/or obesity.	Pending
Chemically modified siRNA and their uses	Tariq M. Rana Ya-Lin Chiu	08/05/2003	Co-Exclusive license for therapeutic, prophylactic or diagnostic healthcare applications of RNAi for inhibition of human CMV immediate early gene expression, mutant SOD1 (ALS treatment), genes implicated in diabetes and obesity.	Pending
Increase of insulin stimulated glucose regulation by a small molecule inhibitor of RIP140	Michael P. Czech Aimee Powelka Adilson L. Guilherme Andrew D. Cherniack	03/05/2004	Exclusive license for drug discovery in type 2 diabetes and/or obesity with therapeutic, prophylactic, or diagnostic applications and products for treatment, prevention or diagnosis of type 2 diabetes and/or obesity.	Pending
Efficient delivery of siRNA into cells and animals	Tariq M. Rana	08/11/2005	Nonexclusive license for therapeutic, prophylactic or diagnostic healthcare applications in humans including for ALS, diabetes and obesity.	Pending
Delivery of chemically modified siRNA using nanotransporters	Tariq M. Rana (Zuoshang Xu)	01/26/2006	Exclusive license for therapeutic, prophylactic or diagnostic healthcare applications in humans including for ALS, diabetes and obesity.	Pending
Delivery of chemically modified siRNA	Tariq M. Rana	01/26/2006	Exclusive license for therapeutic, prophylactic or diagnostic healthcare applications in humans including for ALS, diabetes and obesity.	Pending
Gene silencing of cholesterol biosynthesis and other metabolic genes by chemically modified siRNA	Tariq M. Rana	01/26/2006	Exclusive license for therapeutic, prophylactic or diagnostic healthcare applications in humans including for ALS, diabetes and obesity.	Pending
Microwave assisted nucleic acid delivery system	Tariq M. Rana	Not yet filed	Nonexclusive license for therapeutic, prophylactic or diagnostic healthcare applications in humans including for ALS, diabetes and obesity.	Invention disclosure
Methods and compositions for RNA interference in suspended cells or in whole body	Scott Hammond Gregory Hannon David Beach Amy Caudy Emily Bernstein	03/16/2001	Non-exclusive license from Cold Spring Harbor Laboratory for use of short hairpin RNA for drug discovery and development.	Pending

* Unless otherwise noted, the licenses are from UMMS.

License Agreements

University of Massachusetts Medical School and Imperial College London

In connection with the Contribution Agreement dated January 8, 2007, CytRx assigned to us their rights under four exclusive license agreements, one co-exclusive license agreement and one non-exclusive license agreement with UMMS, entered into between CytRx and UMMS and one patent license agreement entered into between CytRx, Imperial College Innovations Limited and Imperial College of Science and Technology, which cover potential therapeutic applications for proprietary RNAi technology in the treatment of specified diseases. Additionally, CytRx assigned to us their rights under a Collaboration and Invention Disclosure Agreement entered into between CytRx and UMMS.

As consideration for the licenses and collaboration and invention disclosure agreement assigned to us by CytRx, we agreed to assume and be responsible for all of the liabilities and obligations to the extent that such liabilities and obligations relate to the assigned licenses and agreement, including all of CytRx's payment, performance and other obligations under these assigned licenses.

In connection with the licenses entered into with UMMS that were assigned to us by CytRx, we have assumed the obligation to pay to UMMS annual license maintenance fees and certain additional amounts upon the attainment of certain specified product development milestones. These licenses will expire upon the expiration of all patents licensed under the licenses or ten years after the effective date of such license if no patents have been issued within that ten year period and are terminable by either party upon an uncured breach by the other party. We are generally required to indemnify UMMS for losses incurred by UMMS based on the exercise of the licensed patents by us.

In connection with the license entered into with Imperial College Innovations Limited and Imperial College of Science and Technology, we have assumed the obligation to make defined milestone and royalty payments based on sales of products developed using this technology. This license will expire upon the expiration of all patents licensed under the license, is terminable by us upon three months written notice and terminable by either party upon an uncured breach by the other party.

On January 10, 2007, we entered into three exclusive licenses and one non-exclusive license with UMMS pursuant to which UMMS granted to us rights under certain UMMS patent applications to make, use and sell products related to applications of RNAi technologies in particular fields (see above, "— Summary of Patent Rights").

Under these licenses, UMMS granted to us exclusive, worldwide licenses, with the right to sub-license, to three different patent families and a non-exclusive, worldwide license to a fourth patent family. As consideration for these licenses, we paid UMMS an up-front fee, reimbursed UMMS for previously incurred patent expenses and agreed to undertake to raise working capital by a specified date, agreed to expend a specified amount on the development of royalty-bearing products, and to meet a defined timeline relating to the clinical development of royalty-bearing products. Our obligation to raise working capital was satisfied when CytRx invested $17.0 million in us (before a $2.0 million reimbursement for expenses by us to CytRx) on April 30, 2007. Upon the completion of the $17.0 million financing from CytRx, we became obligated to pay UMMS additional licenses fees in an aggregate amount of $175,000, issued to UMMS approximately 308,075 shares of our common stock valued at $5.00 per share, for a total value of $1,540,375 and thereafter to pay UMMS annual maintenance fees, commencing on January 1, 2008, and certain additional amounts upon the attainment of certain specified product development milestones, as discussed above in "Management's Discussion and Analysis of Financial Condition and Results of Operation." We also will be required to pay to UMMS a percentage of income received from any sublicensees under these licenses and to pay expenses incurred by UMMS in prosecuting and maintaining the licensed patents.

These licenses will expire upon the expiration of all patents licensed under the licenses, are terminable by either party upon an uncured breach by the other party, and may be terminated by us for any reason following a specified notice period. We are generally required to indemnify UMMS for losses incurred by UMMS based on the exercise of the licensed patents by us.

Additionally, in connection with all of our licenses with UMMS, including those assigned to us by CytRx as well as those entered into directly between us and UMMS, we are obligated to pay specified royalties on net sales of products covered by the licensed patents, subject to minimum annual royalties, as discussed above in "Management's Discussion and Analysis of Financial Condition and Results of Operation." On January 10, 2007, we also entered into an invention disclosure agreement with UMMS pursuant to which UMMS is obligated, for a period of three years from the effective date of the invention disclosure agreement, to disclose to us any unrestricted inventions conceived or reduced to practice by UMMS related to therapeutic applications of RNAi technologies. Under the invention disclosure agreement, UMMS grants to us an option to negotiate the terms of a license to inventions disclosed by UMMS pursuant to the invention disclosure agreement. If we exercise the option and are unable to reach agreement on the terms of any such license, we may elect to have an arbitrator determine the terms of such a license.

The invention disclosure agreement became effective on April 30, 2007, upon completion of the $17.0 million investment by CytRx. The invention disclosure agreement is terminable by either party upon an uncured breach by the other party and by us at any time for any reason. As consideration for the rights granted to us under the invention disclosure agreement, upon completion of the $17.0 million investment by CytRx, we issued to UMMS a total of 154,037 shares of our common stock at $5 per share for a total value of $770,185 and are obligated to pay UMMS specified fees on the effective date of the invention disclosure agreement and on each of the first and second anniversaries of the effective date of that agreement. We also will be obligated to pay UMMS a fee each time we exercise our right to negotiate a license under the invention disclosure agreement.

Cold Spring Harbor Laboratory

On March 15, 2007, we entered into a license agreement with Cold Spring Harbor Laboratory, or CSHL pursuant to which CSHL granted to us a non-exclusive, worldwide, royalty-bearing license under its commercial rights in the certain RNAi related patent applications and tangible biological materials that are necessary under the patent rights to develop, make and sell products that are covered by the license and to develop and perform services using at least one process covered by the patent rights (i) in relating to the use of short hairpin RNA (shRNA) for drug discovery or the development of therapeutic drugs and drug targets or use in a drug screening program and (ii) in the use of short hairpin RNA, by us and for our scientific research and development. Additionally, CSHL granted to us a non-exclusive, worldwide, royalty bearing license in certain know-how, technical information, research and development, information, test results and data which are owned or controlled by CSHL relating to both RNAi therapeutics and research.

CSHL has also agreed to grant a non-exclusive license in the research field, under substantially similar terms as are in the above mentioned license agreement to up to three companies that qualify as bona fide collaborators with us, except that each such additional licensee shall pay CSHL an additional license fee and an annual license maintenance fee. Furthermore, CSHL has agreed to grant a non-exclusive license in the therapeutic field under substantially similar terms as are in the CSHL license agreement to up to three companies that qualify as co-marketers, except that each such co-marketer licensee shall also pay to CSHL an additional license fee and an annual license maintenance fee.

We are generally required to indemnify and defend CSHL for and against losses incurred by CSHL based on the exercise of the licenses by us. The license agreement with CSHL remains in effect until the expiration of all issued patents within the patent rights covered by the agreement or for a period of 10 years if no patents have been issued during the term. We can terminate the agreement at any time within a specified notice period, but the obligation to pay the milestones and royalties survives.

Within 18 months after the effective date of the license agreement with CSHL, we were obligated to successfully undertake a public or private offering to raise or commit at least $10.0 million. This obligation was satisfied by the investment by CytRx of $17.0 million on April 30, 2007.

Further, we are required to maintain insurance of not less than $1.0 million for injuries to any one person arising out of a single occurrence and $5.0 million for injuries to all persons arising out of a single occurrence. As of the date of the first sale of a product developed by us in connection with the license agreement with CSHL, we are required to obtain product liability insurance.

Other License Agreements

Consistent with our overall business strategy, we have enhanced our RNAi technology platform by entering into additional licenses for various aspects of RNAi technology, including:

- In January 2007, CytRx assigned to us a non-exclusive license to the Mello and Fire foundational RNAi patent owned by UMMS and the Carnegie Institution of Washington, which claims various aspects of RNAi or genetic inhibition by double stranded RNA.
- In August 2007, we entered into a license agreement with TriLink Biotechnologies, Inc. for three RNAi chemistry technologies for all therapeutic RNAi applications, for which we paid an up-front fee and

agreed to pay yearly maintenance fees, as well as future clinical milestone payments and royalty payments based on sales of therapeutic products developed from the licensed technologies.

- In October 2007, we entered into a license agreement with Dharmacon, Inc. (now part of Thermo Fisher Scientific Inc.), pursuant to which we obtained an exclusive license to certain RNAi sequences to a number of target genes for the development of our rxRNA compounds. Further, we have obtained the right to license additional RNAi sequences, under the same terms, disclosed by Thermo Fisher Scientific Inc. in its pending patent applications against target genes and have received an option for exclusivity for other siRNA configurations. As consideration for this license, we paid an up-front fee of $150,000 and agreed to pay future clinical milestone payments and royalty payments based on sales of siRNA compositions developed in connection with the licensed technology.

In November 2007, we entered into a license agreement with Invitrogen IP Holdings, Inc. pursuant to which we were granted rights under four patents relating to RNA target sequences, RNA chemical modifications, RNA configurations and/or RNA delivery to cells. As consideration for this license, we paid an up-front fee of $250,000 and agreed to pay yearly maintenance fees of the same amount beginning in 2008. Further, we are obligated to pay a fee for each additional gene target added to the license as well as a fee on the first and second anniversaries of the date we were granted consent to add the gene target to the list of those covered by the license. We have also been granted, for each gene target, an option to secure pre-clinical rights and/or the clinical rights, for which we would be required to pay additional fees. Further, we are required to make future clinical milestone payments and royalty payments based on sales of therapeutic products developed from the licensed technologies.

Research and Development

Research and development expense consists primarily of costs related to (i) the UMMS license agreements, (ii) the collaboration and invention disclosure agreements pursuant to which UMMS agreed to disclose certain inventions to us and to provide us with the right to negotiate exclusive licenses for those disclosed technologies, (iii) the sponsored research agreements with both UMMS and Massachusetts General Hospital and (iv) the compensation for our scientific advisory board ("SAB"). Total research and development expenses were approximately $6,747,000, $1,772,000 and $2,080,000 for the fiscal years ended December 31, 2007, 2006 and 2005, respectively.

Competition

We face significant competition in our research and development of RNAi-related pharmaceuticals. Competitors include large and small pharmaceutical, chemical and biotechnology companies, as well as universities, government agencies, and other private and public research organizations that are focusing their efforts in the RNAi field or are developing pharmaceuticals for similar diseases as we are targeting through our research and development efforts. Though at an early stage of development, the RNAi field is already intensely competitive and the competition is expected to increase. Development work on RNAi is still at an early stage, and we are aware of a limited number of clinical trials using RNAi; specifically trials for age-related macular degeneration by Opko Health, Inc., Sirna Therapeutics (acquired by Merck & Co.), Allergan Inc. and Quark Biotech Inc., for respiratory syncytial virus by Alnylam Pharmaceuticals, for diabetic macular edema by Opko Health, Inc, and for Pachyonychia congenita by TransDerm, Inc. Companies that are focusing their commercial efforts in the RNAi field include: Alnylam Pharmaceuticals, Nastech Pharmaceutical Company Inc., Cequent Pharmaceuticals Inc., Dicerna Pharmaceuticals, Inc., Nucleonics, Inc., Tacere Therapeutics Inc., Benitec Ltd., Opko Corp., Silence Therapeutics plc (formerly SR Pharma plc), Quark Pharmaceuticals, Inc., Rosetta Genomics Ltd., Calando Pharmaceuticals, Inc., and Isis Pharmaceuticals, Inc., as well as a number of the multinational pharmaceutical companies. A number of the multinational pharmaceutical companies also either have gene silencing product development programs or are collaborating with smaller biopharmaceutical companies. This competition will manifest itself not only in our potential product markets but also, and importantly at this stage in development of RNAi technology, in recruiting and retaining key scientific and management personnel, in securing strategic alliances, and in obtaining rights to key intellectual property.

Our RNAi-focused competitors, as well as companies in other fields, may be targeting the same diseases we are targeting. Competitive products for some of the disease indications that we have targeted are currently being marketed by other parties. Additional competitive products are under development and there may also be products under development that we are not aware of or products that may be developed in the future. With respect to ALS, Rilutek, which was developed by Aventis Pharma AG, is the only drug of which we are currently aware that has been approved by the Food and Drug Administration ("FDA"). Other companies are working to develop pharmaceuticals to treat ALS, including CytRx, Isis Pharmaceuticals, Inc., Aeolus Pharmaceuticals, Ono Pharmaceuticals, Trophos SA, Faust Pharmaceuticals SA and Oxford BioMedica plc. Also, since ALS belongs to a family of similar diseases called neurodegenerative disease, which includes Alzheimer's, Parkinson's and Huntington's diseases, a new treatment for one ailment potentially could be useful for treating others. There are many companies that are producing and developing drugs used to treat neurodegenerative diseases other than ALS, including Amgen, Inc., Cephalon, Inc., Ceregene, Inc., Elan Pharmaceuticals, plc, Forest Laboratories, Inc., H. Lundbeck A/S, Phytopharm plc, and Schwarz Pharma AG.

In addition, a number of products are currently being marketed by a variety of the multinational or other pharmaceutical companies for treating type 2 diabetes, including among others, the diabetes drug Avandia by GlaxoSmithKline PLC, Actos by Eli Lilly & Co., Glucophage and Junavia by Bristol-Myers Squibb Co., Symlin and Byetta by Amylin Pharmaceuticals, Inc. and Starlix by Novartis. For obesity, the drugs Acomplia by Sanofi-Aventis SA, Xenical by F. Hoffman-La Roche Ltd. and Meridia by Abbott Laboratories are presently on the market. Many major pharmaceuticals companies are also seeking to develop new therapies for these disease indications.

Competitors both in and outside of the RNAi field have financial resources, research and development staffs, and facilities that are, in most cases, substantially greater than ours or our strategic partners or licensees and are engaged in the research and development of pharmaceutical products that could compete with our potential products. To the extent that we seek to acquire, existing or potential new products, through license or otherwise, we will be competing with numerous other companies that may have a competitive advantage in identifying and evaluating these drug acquisition opportunities. Any products that we acquire will compete with products marketed by companies that, in many cases, will have substantially greater marketing resources than we have. The industry is characterized by rapid technological advances and competitors may develop products more rapidly and such products may be more effective than those currently under development or that may be developed in the future by our strategic partners or licensees.

Government Regulation

The United States and other developed countries extensively regulate the pre-clinical and clinical testing, manufacturing, labeling, storage, record-keeping, advertising, promotion, export, marketing and distribution of drugs and biologic products. The United States Food and Drug Administration ("FDA") regulates pharmaceutical and biologic products under the Federal Food, Drug, and Cosmetic Act, the Public Health Service Act and other federal statutes and regulations.

To obtain approval of our future product candidates from the FDA, we must, among other requirements, submit data supporting safety and efficacy for the intended indication as well as detailed information on the manufacture and composition of the product candidate. In most cases, this will require extensive laboratory tests and pre-clinical and clinical trials. The collection of these data, as well as the preparation of applications for review by the FDA involve significant time and expense. The FDA also may require post-marketing testing to monitor the safety and efficacy of approved products or place conditions on any approvals that could restrict the therapeutic claims and commercial applications of these products. Regulatory authorities may withdraw product approvals if we fail to comply with regulatory standards or if we encounter problems at any time following initial marketing of our products.

The first stage of the FDA approval process for a new biologic or drug involves completion of pre-clinical studies and the submission of the results of these studies to the FDA. This data, together with proposed clinical protocols, manufacturing information, analytical data and other information submitted to the FDA, in an investigational new drug application, or IND, must become effective before human clinical trials may

commence. Pre-clinical studies generally involve FDA regulated laboratory evaluation of product characteristics and animal studies to assess the efficacy and safety of the product candidate.

After the IND becomes effective, a company may commence human clinical trials. These are typically conducted in three sequential phases, but the phases may overlap. Phase I trials consist of testing the product candidate in a small number of patients or healthy volunteers, primarily for safety at one or more doses. Phase II trials, in addition to safety, evaluate the efficacy of the product candidate in a patient population somewhat larger than Phase I trials. Phase III trials typically involve additional testing for safety and clinical efficacy in an expanded population at multiple test sites. A company must submit to the FDA a clinical protocol, accompanied by the approval of the Institutional Review Boards at the institutions participating in the trials, prior to commencement of each clinical trial.

To obtain FDA marketing authorization, a company must submit to the FDA the results of the pre-clinical and clinical testing, together with, among other things, detailed information on the manufacture and composition of the product candidate, in the form of a new drug application, or NDA, or, in the case of a biologic, a biologics license application, or BLA.

The amount of time taken by the FDA for approval of an NDA or BLA will depend upon a number of factors, including whether the product candidate has received priority review, the quality of the submission and studies presented, the potential contribution that the compound will make in improving the treatment of the disease in question, and the workload at the FDA.

The FDA may, in some cases, confer upon an investigational product the status of a fast track product. A fast track product is defined as a new drug or biologic intended for the treatment of a serious or life threatening condition that demonstrates the potential to address unmet medical needs for this condition. The FDA can base approval of an NDA or BLA for a fast track product on an effect on a surrogate endpoint, or on another endpoint that is reasonably likely to predict clinical benefit. If a preliminary review of clinical data suggests that a fast track product may be effective, the FDA may initiate review of entire sections of a marketing application for a fast track product before the sponsor completes the application.

We anticipate that our products will be manufactured by our strategic partners, licensees or other third parties. Before approving an NDA or BLA, the FDA will inspect the facilities at which the product is manufactured and will not approve the product unless the manufacturing facilities are in compliance with the FDA's current good manufacturing practice ("cGMP"), which are regulations that govern the manufacture, holding and distribution of a product. Manufacturers of biologics also must comply with the FDA's general biological product standards. Our manufacturers also will be subject to regulation under the Occupational Safety and Health Act, the Environmental Protection Act, the Nuclear Energy and Radiation Control Act, the Toxic Substance Control Act and the Resource Conservation and Recovery Act. Following approval, the FDA periodically inspects drug and biologic manufacturing facilities to ensure continued compliance with the good manufacturing practices regulations. Our manufacturers will have to continue to comply with those requirements. Failure to comply with these requirements subjects the manufacturer to possible legal or regulatory action, such as suspension of manufacturing or recall or seizure of product. Adverse patient experiences with the product must be reported to the FDA and could result in the imposition of marketing restrictions through labeling changes or market removal. Product approvals may be withdrawn if compliance with regulatory requirements is not maintained or if problems concerning safety or efficacy of the product occur following approval.

The labeling, advertising, promotion, marketing and distribution of a drug or biologic product also must be in compliance with FDA and Federal Trade Commission requirements which include, among others, standards and regulations for off-label promotion, industry sponsored scientific and educational activities, promotional activities involving the internet, and direct-to-consumer advertising. We also will be subject to a variety of federal, state and local regulations relating to the use, handling, storage and disposal of hazardous materials, including chemicals and radioactive and biological materials. In addition, we will be subject to various laws and regulations governing laboratory practices and the experimental use of animals. In each of these areas, as above, the FDA has broad regulatory and enforcement powers, including the ability to levy

fines and civil penalties, suspend or delay issuance of product approvals, seize or recall products, and deny or withdraw approvals.

We will also be subject to a variety of regulations governing clinical trials and sales of our products outside the United States. Whether or not FDA approval has been obtained, approval of a product candidate by the comparable regulatory authorities of foreign countries and regions must be obtained prior to the commencement of marketing the product in those countries. The approval process varies from one regulatory authority to another and the time may be longer or shorter than that required for FDA approval. In the European Union, Canada and Australia, regulatory requirements and approval processes are similar, in principle, to those in the United States.

Environmental Compliance

Our research and development activities involve the controlled use of potentially harmful biological materials as well as hazardous materials, chemicals and various radioactive compounds. We are subject to federal, state and local laws and regulations governing the use, storage, handling and disposal of these materials and specific waste products. We are also subject to numerous environmental, health and workplace safety laws and regulations, including those governing laboratory procedures, exposure to blood-borne pathogens and the handling of biohazardous materials. The cost of compliance with these laws and regulations could be significant and may adversely affect capital expenditures to the extent we are required to procure expensive capital equipment to meet regulatory requirements

Human Resources

As of March 31, 2008, we had 17 full-time employees, 9 of whom are engaged in research and development and 8 of whom are engaged in management, administration and finance. None of our employees are represented by a labor union or covered by a collective bargaining agreement, nor have we experienced any work stoppages.

Insurance

The Company currently purchases insurance policies for property and liability risks arising out of current operations.

ITEM 1A. *RISK FACTORS*

In addition to the other information in this annual report on Form 10-K and all of our other SEC reports, you should consider the following factors in evaluating us, our business and the strategic direction we may head in the future.

Risks Relating to RXi's Business and Industry

The approach we are taking to discover and develop novel therapeutics using RNAi is unproven and may never lead to marketable products.

The scientific discoveries that form the basis for our efforts to discover and develop new drugs are relatively new. The RNAi technologies that we have licensed and that we intend to develop have not yet been clinically tested by us, nor are we aware of any clinical trials for efficacy having been completed by third parties involving similar technologies. To date, neither we nor any other company has received regulatory approval to market therapeutics utilizing RNAi. The scientific evidence to support the feasibility of developing drugs based on these discoveries is both preliminary and limited. Successful development of RNAi-based products by us will require solving a number of issues, including providing suitable methods of stabilizing the RNAi material and delivering it into target cells in the human body. We may spend large amounts of money trying to solve these issues and never succeed in doing so. In addition, any compounds that we develop may not demonstrate in patients the chemical and pharmacological properties ascribed to them in laboratory studies, and they may interact with human biological systems in unforeseen, ineffective or even harmful ways.

Further, our exclusive focus on RNAi technology for developing products as opposed to multiple, more proven technologies for drug development, increases the risk associated with our business. If we are not successful in developing a product candidate using RNAi technology, we may not be able to identify and successfully implement an alternative product development strategy.

We will be subject to competition and may not be able to compete successfully.

A number of medical institutions and pharmaceutical companies are seeking to develop therapeutic products based on RNA interference technologies. Companies working in this area include Alnylam Pharmaceuticals, Nastech Pharmaceutical Company Inc., Cequent Pharmaceuticals Inc., Nucleonics, Inc., Tacere Therapeutics Inc., Benitec Ltd., Opko Corp., Silence Therapeutics plc (formerly SR Pharma plc), Quark Pharmaceuticals, Inc., Rosetta Genomics Ltd., Calando Pharmaceuticals, Inc., and Isis Pharmaceuticals, Inc, as well as a number of the multinational pharmaceutical companies. In addition, a number of companies are developing therapeutics for the same diseases we are targeting using technologies other than RNA interference, and we are aware of some usage of an existing drug in a manner not described in its approved label for the potential treatment of ALS. Most of these competitors have substantially greater research and development capabilities and financial, scientific, technical, manufacturing, marketing, distribution, and other resources than us, and we may not be able to successfully compete with them. In addition, even if we are successful in developing our product candidates, in order to compete successfully we may need to be first to market or to demonstrate that our RNAi based products are superior to therapies based on different technologies. If we are not first to market or are unable to demonstrate such superiority, any products for which we are able to obtain approval may not be successful. For example, Isis Pharmaceuticals, Inc. has begun pre-clinical toxicology studies for an antisense-based therapeutic product candidate, for which the FDA has granted orphan drug status, that targets the same gene for ALS that we intend to target. If Isis is able to successfully bring this treatment to market before we are able to complete the development of an RNAi therapeutic in this area, even if our development efforts are successful, we may not receive any market advantages that we would have benefited from if ours were the first such therapeutic product available on the market.

We may not be able to maintain the third party relationships that are necessary to develop or potentially commercialize some or all of our product candidates.

We expect to depend on collaborators, partners, licensees, clinical research organizations and other third parties to support our discovery efforts, to formulate product candidates, and to conduct clinical trials for some or all of our product candidates. We cannot guarantee that we will be able to successfully negotiate agreements for or maintain relationships with collaborators, partners, licensees, clinical investigators and other third parties on favorable terms, if at all. If we are unable to obtain or maintain these agreements, we may not be able to clinically develop, formulate, obtain regulatory approvals for or commercialize our product candidates. Under certain license agreements that we have already entered into, we have minimum dollar amounts per calendar year that we are obligated to spend on the development of the technology we have licensed from our contract partners. If we fail to meet this requirement under any of our licenses, we may be in breach of our obligations under such agreement which may result in the loss of the technology licensed. We cannot necessarily control the amount or timing of resources that our contract partners will devote to our research and development programs, product candidates or potential product candidates, and we cannot guarantee that these parties will fulfill their obligations to us under these arrangements in a timely fashion.

We will rely upon third parties for the manufacture of our clinical product candidates.

We do not have the facilities or expertise to manufacture supplies of any of our potential product candidates. Accordingly, we will be dependent upon contract manufacturers for these supplies. We have no manufacturing supply arrangements for any of our product candidates, and there can be no assurance that we will be able to secure needed supply arrangements on attractive terms, or at all. Our failure to secure these arrangements as needed could have a materially adverse effect on our ability to complete the development of our product candidates or, if we obtain regulatory approval for our product candidates, to commercialize them.

We will seek to engage a specialty organic chemistry synthesis company, which we have not yet selected, to manufacture nanotransporters for which we have an exclusive license from UMMS for delivery of our product candidates, once they are determined. The synthesis methods for nanotransporters are described in the patent applications which we have licensed from UMMS. It is anticipated that refinement and scale-up in the synthesis methods will be performed under contract with this manufacturer. However, as the nanotransporters are unique chemicals, the costs of synthesis are not currently known and there is potential for technical challenges with respect to scale-up.

Our current plans call for the manufacture of our RNAi compounds by contract manufacturers offering research grade, Good Laboratory Practices toxicology studies and Good Manufacturing Practices grade RNAi for clinical use. The chemistry, manufacturing and controls for RNAi active pharmaceutical ingredient will be addressed by our clinical development team in close collaboration with a contract manufacturer with extensive experience in RNA drug synthesis. RNA is a complex molecule requiring many synthesis steps, which may lead to challenges with purification and scale-up. These challenges could result in increased costs and delays in manufacturing. Additionally, although we are not currently aware of any such litigation or threatened litigation or challenge, if we have litigation or threatened litigation for or challenge to the composition of our products candidates in the future, manufacturers may refuse to manufacture such compounds.

Any drug candidates we develop may fail in development or be delayed or may not be commercially viable.

All of our products in development must be approved by the FDA or similar foreign governmental agencies before they can be marketed. The process for obtaining FDA approval is both time-consuming and costly, with no certainty of a successful outcome. This process typically includes the conduct of extensive preclinical and clinical testing, which may take longer or cost more than we anticipate, and may prove unsuccessful due to numerous factors. Product candidates that may appear to be promising at early stages of development may not successfully reach the market for a number of reasons. The results of pre-clinical and initial clinical testing of these products may not necessarily indicate the results that will be obtained from later or more extensive testing. Companies in the pharmaceutical and biotechnology industries have suffered significant setbacks in advanced clinical trials, even after obtaining promising results in earlier trials.

We, the FDA or other applicable regulatory authorities, or an institutional review board ("IRB"), an independent committee under the oversight of the U.S. Department of Health and Human Services ("HHS"), which has been formally registered with HHS and functions to approve, monitor and review biomedical and behavioral research involving humans, may suspend clinical trials of a drug candidate at any time for various reasons, including if we or they believe the subjects or patients participating in such trials are being exposed to unacceptable health risks. Among other reasons, adverse side effects of a drug candidate on subjects or patients in a clinical trial could result in the FDA or other regulatory authorities suspending or terminating the trial and refusing to approve a particular drug candidate for any or all indications of use.

Clinical trials of a new drug candidate require the enrollment of a sufficient number of patients, including patients who are suffering from the disease the drug candidate is intended to treat and who meet other eligibility criteria. Rates of patient enrollment are affected by many factors, and delays in patient enrollment can result in increased costs and longer development times.

Clinical trials also require the review and oversight of IRBs, which approve and continually review clinical investigations and protect the rights and welfare of human subjects. An inability or delay in obtaining IRB approval could prevent or delay the initiation and completion of clinical trials and the FDA may decide not to consider any data or information derived from a clinical investigation not subject to initial and continuing IRB review and approval.

Numerous factors could affect the timing, cost or outcome of our drug development efforts, including the following:

- delays in filing initial drug applications,
- difficulty in securing centers to conduct trials,

- conditions imposed on us by the FDA or comparable foreign authorities regarding the scope or design of our clinical trials,
- problems in engaging IRBs to oversee trials or problems in obtaining or maintaining IRB approval of studies,
- difficulty in enrolling patients in conformity with required protocols or projected timelines,
- unexpected adverse reactions by patients in trials,
- difficulty in obtaining clinical supplies of the product,
- negative or inconclusive results from our clinical trials or the clinical trials of others for drug candidates similar to our own or inability to generate statistically significant data confirming the efficacy of the product being tested,
- changes in the FDA's requirements for our testing during the course of that testing,
- modification of the drug during testing,
- reallocation of our limited financial and other resources to other clinical programs, and
- adverse results obtained by other companies developing RNAi drugs.

The substances we are intending to develop may represent a new class of drug, and the FDA has not yet established any definitive policies, practices or guidelines in relation to these drugs. While we expect any product candidates that we develop will be regulated as a new drug under the Federal Food, Drug, and Cosmetic Act, the FDA could decide to regulate them or other products we may develop as biologics under the Public Health Service Act. The lack of policies, practices or guidelines may hinder or slow review by the FDA of any regulatory filings that we may submit. Moreover, the FDA may respond to these submissions by defining requirements that we may not have anticipated.

It is possible that none of the product candidates that we develop will obtain the appropriate regulatory approvals necessary for us to begin selling them or that any regulatory approval to market a product may be subject to limitations on the indicated uses for which we may market the product. The time required to obtain FDA and other approvals is unpredictable but often can take years following the commencement of clinical trials, depending upon the complexity of the drug candidate. Any analysis we perform of data from clinical activities is subject to confirmation and interpretation by regulatory authorities, which could delay, limit or prevent regulatory approval. Any delay or failure in obtaining required approvals could have a material adverse effect on our ability to generate revenue from the particular drug candidate.

We are also subject to numerous foreign regulatory requirements governing the conduct of clinical trials, manufacturing and marketing authorization, pricing and third-party reimbursement. The foreign regulatory approval process includes all of the risks associated with FDA approval described above as well as risks attributable to the satisfaction of local regulations in foreign jurisdictions. Approval by the FDA does not assure approval by regulatory authorities outside of the United States.

The FDA approval process may be delayed for any drugs we develop that require the use of specialized drug delivery devices or vehicles.

Some drug candidates that we develop may need to be administered using specialized vehicles that deliver RNAi therapeutics directly to diseased parts of the body. For example, we anticipate using an implantable pump to deliver drug candidates to the nervous system. While we expect to rely on drug delivery vehicles that have been approved by the FDA or other regulatory agencies to deliver our drug candidates, we may need to modify the design or labeling of these delivery vehicles for some products we may develop. In such an event, the FDA may regulate the product as a combination product of a drug and a device or require additional approvals or clearances for the modified delivery. Additionally, it has been observed in at least one previous clinical trial, conducted by another company, that delivery vehicles similar to the delivery vehicle in-licensed from UMMS may cause toxicity, which could delay or prevent approval of this delivery vehicle.

Further, to the extent the specialized delivery vehicle is owned by another company, we would need that company's cooperation to implement the necessary changes to the vehicle, or its labeling, and to obtain any additional approvals or clearances. Any delays in finding suitable drug delivery vehicles to administer RNAi therapeutics directly to diseased parts of the body could negatively affect our ability to successfully develop our RNAi therapeutics.

If we are not successful in developing pre-clinical product candidates, we will not be able to commence clinical trials in humans or obtain approval for our product candidates.

We are in the new drug discovery phase and we have not yet identified any lead compounds for therapeutic development in our initial areas of focus. RNA interference is a relatively new scientific field, and the technologies are still in the early stage of development. We have no compounds in pre-clinical toxicology studies, and we may not be able to advance any product candidate through the pre-clinical stage into clinical trials. Additionally, our development efforts may never result in the identification of a pre-clinical candidate which we are able to successfully develop into a drug. Even if we are able to designate a lead candidate, we may not be able to identify data that would support entering such a candidate into clinical trials. Furthermore, even if we successfully enter into clinical studies, the results from pre-clinical testing of a drug candidate may not predict the results that will be obtained on human clinical trials.

If our pre-clinical testing does not produce successful results or our clinical trials do not demonstrate safety and efficacy in humans, we will not be able to commercialize our drug candidates.

Before obtaining regulatory approval for the sale of our drug candidates, we must conduct, at our own expense, extensive pre-clinical tests and clinical trials to demonstrate the safety and efficacy in humans of our drug candidates. However, we are required to do extensive testing in animal models with our product candidates before we can be approved by the FDA to initiate clinical trials in humans. Furthermore, we cannot be sure that our product candidates will be safely tolerated by humans or be efficacious. Pre-clinical and clinical testing is expensive, difficult to design and implement, can take many years to complete and is uncertain as to outcome. Success in pre-clinical testing and early clinical trials does not ensure that later clinical trials will be successful, and interim results of a clinical trial do not necessarily predict final results.

A failure of one or more of our pre-clinical studies or clinical trials can occur at any stage of testing. We may experience numerous unforeseen events during, or as a result of, the pre-clinical testing and the clinical trial process that could delay or prevent our ability to receive regulatory approval or potentially commercialize our drug candidates, including:

- regulators or IRBs may not authorize us to commence a clinical trial or conduct a clinical trial at a prospective trial site,
- our pre-clinical tests or clinical trials may produce negative or inconclusive results, and we may decide, or regulator may require us, to conduct additional pre-clinical testing or clinical trials, or we may abandon projects that we previously expected to be promising,
- enrollment in our clinical trials may be slower than we anticipate or participants may drop out of our clinical trials at a higher rate than we anticipate, resulting in significant delays,
- our third party contractors may fail to comply with regulatory requirements or meet their contractual obligations to us in a timely manner,
- our drug candidates may have very different chemical and pharmacological properties in humans than in laboratory testing and it may interact with human biological systems in unforeseen, ineffective or harmful ways.
- we might have to suspend or terminate our clinical trials if the participants are being exposed to unacceptable health risks,
- IRBs or regulators, including the FDA, may require that we hold, suspend or terminate clinical research for various reasons, including noncompliance with regulatory requirements,

- the cost of our clinical trials may be greater than we anticipate,
- the supply or quality of our drug candidates or other necessary materials necessary to conduct our clinical trials may be insufficient or inadequate, and
- effects of our drug candidates may not be the desired effects or may include undesirable side effects or the drug candidates may have other unexpected characteristics.

Even if we obtain regulatory approvals, our marketed drugs will be subject to ongoing regulatory review. If we fail to comply with continuing U.S. and foreign regulations, we could lose our approvals to market drugs and our business would be materially adversely affected.

Following any initial regulatory approval of any drugs we may develop, we will also be subject to continuing regulatory review, including the review of adverse drug experiences and clinical results that are reported after our drug products are made available to patients. This would include results from any post marketing tests or vigilance required as a condition of approval. The manufacturer and manufacturing facilities we use to make any of our drug candidates will also be subject to periodic review and inspection by the FDA. The discovery of any new or previously unknown problems with the product, manufacturer or facility may result in restrictions on the drug or manufacturer or facility, including withdrawal of the drug from the market. Our product promotion and advertising also will be subject to regulatory requirements and continuing regulatory review. If we fail to comply with applicable continuing regulatory requirements, we may be subject to fines, suspension or withdrawal of regulatory approval, product recalls and seizures, operating restrictions and other adverse consequences.

Even if we receive regulatory approval to market our product candidates, our product candidates may not be accepted commercially, which may prevent us from becoming profitable.

The product candidates that we are developing are based on new technologies and therapeutic approaches. RNAi products are expected to be substantially more expensive to manufacture than traditional small molecule drugs, which may make them more costly than competing small molecule drugs. Additionally, RNAi products are likely to require injection or implantation, and do not readily cross the so-called blood brain barrier, which will make them less convenient to administer than drugs administered orally. Key participants in the pharmaceutical marketplace, such as physicians, medical professionals working in large reference laboratories, public health laboratories and hospitals, third-party payors and consumers, may not accept products intended to improve therapeutic results based on RNAi technology. As a result, it may be more difficult for us to convince the medical community and third-party payors to accept and use our product, or to provide favorable reimbursement. And if medical professionals working with large reference laboratories, public health laboratories and hospitals choose not to adopt and use our RNAi technology, our products may not achieve broader market acceptance.

Other factors that we believe will materially affect market acceptance of our product candidates include:

- the timing of our receipt of any marketing approvals, the terms of any approvals and the countries in which approvals are obtained,
- the safety, efficacy and ease of administration of our product candidates,
- the advantages of our product candidates over those of our competitors,
- the willingness of patients to accept relatively new therapies,
- the success of our physician education programs,
- the availability of government and third-party payor reimbursement,
- the pricing of our products, particularly as compared to alternative treatments, and
- the availability of effective alternative treatments and the relative risks and/or benefits of the treatments.

We may be unable to protect our intellectual property rights licensed from UMMS or others, our intellectual property rights may be inadequate to prevent third parties from using our technologies or developing competing products, and we may need to license additional intellectual property from others.

We have a non-exclusive license to the Mello and Fire foundational RNAi patent owned by UMMS and the Carnegie Institution of Washington, which claims various aspects of RNAi or genetic inhibition by double stranded RNA. This license continues to be available to third parties, and as such it does not provide us with the ability to exclude others from its use or protect us from competition. Therapeutic applications of gene silencing technology and other technologies that we license from UMMS are also claimed in a number of UMMS pending patent applications, but there can be no assurance that these applications will result in any issued patents or that those patents would withstand possible legal challenges or protect RXi's technologies from competition. United States Patent and Trademark Office and patent granting authorities in other countries have upheld stringent standards for the RNAi patents that have been prosecuted so far. Consequently, pending patents that we have licensed may continue to experience long and difficult prosecution challenges and may ultimately issue with much narrower claims than those in the pending applications. We are aware of a number of issued patents covering various particular forms and compositions of RNAi-mediating molecules and therapeutic methods that we do not currently expect to use. Third parties may, however, hold or seek to obtain additional patents that could make it more difficult or impossible for us to develop products based on the gene silencing technology that we have licensed.

In addition, others may challenge the patent owned by UMMS and the Carnegie Institution of Washington or other patents that we currently license or may license in the future and, as a result, these patents could be narrowed, invalidated or rendered unenforceable, which would negatively affect our ability to exclude others from use of RNAi technologies described in these patents. There can be no assurance that these patent or other pending applications or issued patents we licensed in will withstand possible legal challenges. Moreover, the laws of some foreign countries may not protect our proprietary rights to the same extent as do the laws of the United States. Any patents issued to us or our licensors may not provide us with any competitive advantages, and there can be no assurance that the patents of others will not have an adverse effect on our ability to do business or to continue to use our technologies freely. Our efforts to enforce and maintain our intellectual property rights may not be successful and may result in substantial costs and diversion of management time. Even if our rights are valid, enforceable and broad in scope, competitors may develop products based on technology that is not covered by our licenses.

We have entered into an invention disclosure agreement with UMMS under which UMMS has agreed to disclose to us certain inventions it makes and to give us the exclusive right to negotiate licenses to the disclosed technologies. There can be no assurance, however, that any such inventions will arise, that we will be able to negotiate licenses to any inventions on satisfactory terms, or at all, or that any negotiated licenses will prove commercially successful.

We may need to license additional intellectual property rights from third parties in order to be able to complete the development or enhance the efficacy of our product candidates or avoid possible infringement of the rights of others. Additionally, many of our UMMS licenses are limited to ALS, obesity, diabetes and cancer, and in order to pursue other diseases against proprietary gene targets, we may need licenses from UMMS or other third parties that may be unavailable. Accordingly, there is no assurance that we will be able to acquire any additional intellectual property rights on satisfactory terms, or at all.

In addition to our licenses, we also rely on copyright and trademark protection, trade secrets, know-how, continuing technological innovation and licensing opportunities. In an effort to maintain the confidentiality and ownership of our trade secrets and proprietary information, we require our employees, consultants, advisors and others to whom we disclose confidential information to execute confidentiality and proprietary information agreements. However, it is possible that these agreements may be breached, invalidated or rendered unenforceable, and if so, there may not be an adequate corrective remedy available. Furthermore, like many companies in our industry, we may from time to time hire scientific personnel formerly employed by other companies involved in one or more areas similar to the activities we conduct. In some situations, our confidentiality and proprietary information agreements may conflict with, or be subject to, the rights of third parties with whom

our employees, consultants or advisors have prior employment or consulting relationships. Although we require our employees and consultants to maintain the confidentiality of all confidential information of previous employers, we or these individuals may be subject to allegations of trade secret misappropriation or other similar claims as a result of their prior affiliations. Finally, others may independently develop substantially equivalent proprietary information and techniques, or otherwise gain access to our trade secrets. Our failure to protect our proprietary information and techniques may inhibit or limit our ability to exclude certain competitors from the market and execute our business strategies.

Other companies or organizations may assert patent rights that prevent us from developing our products.

RNA interference is a relatively new scientific field that has generated many different patent applications from organizations and individuals seeking to obtain important patents in the field. These applications claim many different methods, compositions and processes relating to the discovery, development and commercialization of RNAi therapeutics. Because the field is so new, very few of these patent applications have been fully processed by government patent offices around the world, and there is a great deal of uncertainty about which patents will issue, when, to whom, and with what claims. While we are not aware of any litigation, threatened litigation or challenge to our intellectual property rights, it is likely that there will be significant litigation and other proceedings, such as interference and opposition proceedings in various patent offices, relating to patent rights in the RNAi field. Others may attempt to invalidate our intellectual property rights or those of our licensors. Even if our rights, or those of our licensors, are not directly challenged, disputes among third parties could lead to the weakening or invalidation of our intellectual property rights. Any attempt by third parties to circumvent or invalidate our intellectual property rights could be costly to defend, require significant time and attention of our management and have a material adverse effect on our business.

We are dependent on technologies we license, and if we lose the right to license such technologies or we fail to license new technologies in the future, our ability to develop new products would be harmed.

We currently are dependent on licenses from third parties for our key technologies, including licenses from UMMS and from Cold Spring Harbor Laboratory, relating to fundamental RNAi technologies. Our current licenses impose, and any future licenses we enter are likely to impose, various development, funding, royalty, diligence, sublicensing, insurance and other obligations on us. If our license with respect to any of these technologies is terminated for any reason, the development of the products contemplated by the licenses would be delayed, or suspended altogether, while we seek to license similar technology or develop new non-infringing technology. The costs of obtaining new licenses are high, and many patents in the RNAi field have already been exclusively licensed to third parties, including our competitors. If any of our existing licenses is terminated, the development of the products contemplated by the licenses could be delayed or terminated and we may not be able to negotiate additional licenses on acceptable terms, if at all, which would have a material adverse effect on our business.

We are subject to potential liabilities from clinical testing and future product liability claims.

If any of our future products are alleged to be defective, they may expose us to claims for personal injury by patients in clinical trials of our products or by patients using our commercially marketed products. Even if the marketing of one or more of our products is approved by the FDA, users may claim that such products caused unintended adverse effects. We will seek to obtain clinical trial insurance for clinical trials that we conduct, as well as liability insurance for any products that we market. There can be no assurance that we will be able to obtain insurance in the amounts we seek, or at all. We anticipate that licensees who develop our products will carry liability insurance covering the clinical testing and marketing of those products. There is no assurance, however, that any insurance maintained by us or our licensees will prove adequate in the event of a claim against us. Even if claims asserted against us are unsuccessful, they may divert management's attention from our operations and we may have to incur substantial costs to defend such claims.

Any drugs we develop may become subject to unfavorable pricing regulations, third-party reimbursement practices or healthcare reform initiatives, which could have a material adverse effect on our business.

We intend to sell our products primarily to hospitals which receive reimbursement for the health care services they provide to their patients from third-party payors, such as Medicare, Medicaid and other domestic and international government programs, private insurance plans and managed care programs. Most third-party payors may deny reimbursement if they determine that a medical product was not used in accordance with cost-effective treatment methods, as determined by the third-party payor, or was used for an unapproved indication. Third-party payors also may refuse to reimburse for experimental procedures and devices. Furthermore, because our programs are in the early stages of development, we are unable at this time to determine their cost-effectiveness and the level or method of reimbursement. Increasingly, the third-party payors who reimburse patients are requiring that drug companies provide them with predetermined discounts from list prices, and are challenging the prices charged for medical products. If the price we are able to charge for any products we develop is inadequate in light of our development and other costs, our profitability could be adversely effected.

We currently expect that any drugs we develop may need to be administered under the supervision of a physician. Under currently applicable law, drugs that are not usually self-administered may be eligible for coverage by the Medicare program if:

- they are "incidental" to a physician's services,
- they are "reasonable and necessary" for the diagnosis or treatment of the illness or injury for which they are administered according to accepted standard of medical practice,
- they are not excluded as immunizations, and
- they have been approved by the FDA.

There may be significant delays in obtaining insurance coverage for newly-approved drugs, and insurance coverage may be more limited than the purpose for which the drug is approved by the FDA. Moreover, eligibility for insurance coverage does not imply that any drug will be reimbursed in all cases or at a rate that covers our costs, including research, development, manufacture, sale and distribution. Interim payments for new drugs, if applicable, may also not be sufficient to cover our costs and may not be made permanent. Reimbursement may be based on payments for other services and may reflect budgetary constraints or imperfections in Medicare data. Net prices for drugs may be reduced by mandatory discounts or rebates required by government health care programs or private payors and by any future relaxation of laws that presently restrict imports of drugs from countries where they may be sold at lower prices than in the United States. Third-party payors often rely upon Medicare coverage policy and payment limitations in setting their own reimbursement rates. Our inability to promptly obtain coverage and profitable reimbursement rates from both government-funded and private payors for new drugs that we develop could have a material adverse effect on our operating results, our ability to raise capital needed to develop products, and our overall financial condition.

Additionally, third-party payors are increasingly attempting to contain health care costs by limiting both coverage and the level of reimbursement for medical products and services. A number of legislative and regulatory proposals to change the healthcare system in the United States and other major healthcare markets have been proposed in recent years. These proposals have included prescription drug benefit legislation recently enacted in the United States and healthcare reform legislation enacted by certain states. Levels of reimbursement may decrease in the future, and future legislation, regulation or reimbursement policies of third-party payors may adversely affect the demand for and price levels of our products. If our customers are not reimbursed for our products, they may reduce or discontinue purchases of our products, which could have a material adverse effect on our business, financial condition and results of operations.

Some states and localities have established drug importation programs for their citizens, and federal drug import legislation has been introduced in Congress. The Medicare Prescription Drug Plan legislation, which became law in December 2003, required the Secretary of Health and Human Services to promulgate

regulations for drug reimportation from Canada into the United States under some circumstances, including when the drugs are sold at a lower price than in the United States. The Secretary, however, retained the discretion not to implement a drug reimportation plan if he finds that the benefits do not outweigh the costs, and has so far declined to approve a reimportation plan. Proponents of drug reimportation may attempt to pass legislation that would directly allow reimportation under certain circumstances. Legislation or regulations allowing the reimportation of drugs, if enacted, could decrease the price we receive for any products that we may develop and adversely affect our future revenues and prospects for profitability.

If we fail to attract, hire and retain qualified personnel, we may not be able to design, develop, market or sell our products or successfully manage our business.

We are highly dependent on our named executive officers and the SAB Members. The continued service of our named executive officers and SAB Members is critical to our success. We have entered into employment agreements with our named executive officers, all of which can be terminated by such persons on short or no notice. The loss of any of our named executive officers or SAB Members, or our inability to identify, attract, retain and integrate additional qualified key personnel, could make it difficult for us to manage our business successfully and achieve our business objectives.

Competition for skilled research, product development, regulatory and technical personnel also is intense, and we may not be able to recruit and retain the personnel we need. The loss of the services of any key research, product development, regulatory, and technical personnel, or our inability to hire new personnel with the requisite skills, could restrict our ability to develop our product candidates.

We use biological and hazardous materials and if we do not comply with laws regulating the protection of the environment and health and human safety, our business could be adversely affected.

Our research and development activities involve the controlled use of potentially harmful biological materials as well as hazardous materials, chemicals and various radioactive compounds. We cannot completely eliminate the risk of accidental contamination or injury; we could be held liable for any damages that result, and any liability could exceed our resources. We are subject to federal, state and local laws and regulations governing the use, storage, handling and disposal of these materials and specific waste products. We are also subject to numerous environmental, health and workplace safety laws and regulations, including those governing laboratory procedures, exposure to blood-borne pathogens and the handling of biohazardous materials. The cost of compliance with these laws and regulations could be significant and may adversely affect capital expenditures to the extent we are required to procure expensive capital equipment to meet regulatory requirements.

We are also subject to numerous environmental, health and workplace safety laws and regulations, including those governing laboratory procedures, exposure to blood-borne pathogens and the handling of biohazardous materials. We maintain workers' compensation insurance to cover us for costs and expenses we may incur due to injuries to our employees resulting from the use of these materials. The limits of our workers' compensation insurance are mandated by state law, and our workers' compensation liability is capped at these state-mandated limits. We do not maintain insurance for environmental liability or toxic tort claims that may be asserted against us in connection with our storage or disposal of biological, hazardous or radioactive materials. Additional federal, state and local laws and regulations affecting our operations may be adopted in the future. We may incur substantial costs to comply with, and substantial fines or penalties if we violate any of these laws or regulations.

Risks Relating to a Publicly Traded Company and Future Financing Needs

We may be unable to achieve some or all of the benefits that we expected to achieve from our separation from CytRx or to maintain the benefits we previously had as a combined company.

As a separate company, we believe that our business will benefit from, among other things, an enhanced ability to compete with other companies dedicated to developing proprietary RNAi therapeutics. However, we may not be able to achieve some or all of the benefits that we expected to achieve as a separate company. For

example, we may not be able to raise funds as a separate company that might have been available to a combined company which may have offered a broader investment opportunity to a wider range of potential investors. Nor will we have the direct benefit of CytRx's relationships with sources of financing. Furthermore, in the past, the business risks associated with our RNAi research and development activities were mitigated, to some extent, by the other technologies and research and development activities of CytRx. As a separate company, we will be more susceptible to specific risks relating to RNAi technologies, and will not have the benefit of the diversification of business and technology risks.

In addition, as we prepared to operate as a separate company, we had to bear the cost of establishing our own accounting, human resources and other administrative functions. We may not be able to continue to perform or engage third parties to provide these functions with the same level of expertise and on the same or more favorable terms as they were provided by CytRx in the past. As a result, we could incur additional expenses for such services, and in such event, our business and operations may be adversely affected.

You may have difficulty evaluating our business, because we have no history as a separate company and our historical financial information may not be representative of our results as a separate company.

The historical financial information included in this annual report does not necessarily reflect the financial condition, results of operations or cash flows that we would have achieved as a separate company during the periods presented or those that we will achieve in the future. Prior to the contribution of our RNAi assets from CytRx, our RNAi research and development activities were conducted by CytRx as part of its broader operations, rather than as an independent division or subsidiary, and were primarily conducted through sponsored research arrangements rather than through internal activities. CytRx also performed various corporate functions relating to our business, as discussed above. Our historical financial information reflects allocations of corporate expenses from CytRx for these and similar functions. We believe that these allocations are comparable to the expenses we would have incurred had we operated as a separate company, although we may incur higher expenses as a separate company.

We may not be able to effectively operate as a separate company.

We are a discovery-stage company with limited operating history. We will focus solely on developing and, if we obtain regulatory approval for our product candidates, commercializing therapeutic products based upon RNAi technologies, and there is no assurance that we will be able to successfully implement our business plan. While our management collectively possesses substantial business experience, there is no assurance that, as a separate company, we will be able to manage our business effectively, or that we will be able to identify, hire and retain any needed additional management or scientific personnel to develop and implement our product development plans, obtain third-party contracts or any needed financing, or achieve the other components of our business plan.

The obligations associated with being an independent public company will require significant resources and management attention.

As a publicly traded company, we are subject to the reporting requirements of the U.S. Securities Exchange Act of 1934, as amended (the "Exchange Act"), and the Sarbanes-Oxley Act of 2002. In addition, the Exchange Act requires that we file annual, quarterly and current reports. Our failure to prepare and disclose this information in a timely manner could subject us to penalties under federal securities laws, expose us to lawsuits and restrict our ability to access financing. The Sarbanes-Oxley Act requires that we, among other things, establish and maintain effective internal controls and procedures for financial reporting and we are presently evaluating our existing internal controls in light of the standards adopted by the Public Company Accounting Oversight Board. In conjunction with BDO Seidman, LLP, our independent registered public accounting firm, we have begun to evaluate our internal control procedures and our auditors have recently identified certain material weaknesses in our internal controls related to the timely reconciliation of our ledgers and preparation and review of our stock option expense calculations. While we do not believe this will be an ongoing problem for us, since as of January 1, 2008 all of our accounting functions have been transferred from CytRx to us, we are making every effort to ensure that all such functions going forward will be executed

in a full and timely manner, and that our internal controls and procedures will be in compliance with the PCAOB standards. However, we cannot provide assurances that these efforts will remedy all of the noted material weaknesses that we have inherited from CytRx, or any other potential material weaknesses that have yet to be identified. It is possible that we or our independent registered public accounting firm may identify additional significant deficiencies or material weaknesses in our internal control over financial reporting in the future. Any failure or difficulties in implementing and maintaining these controls could cause us to fail to meet the periodic reporting obligations or result in material misstatements in our financial statements.

Section 404 of the Sarbanes-Oxley Act requires annual management assessments of the effectiveness of our internal control over financial reporting, starting with our 2008 annual report that we will file with the SEC in 2009. In preparation for this, we may identify deficiencies that we may not be able to remediate in time to meet the deadline for compliance with the requirements of Section 404. Our failure to satisfy the requirements of Section 404 on a timely basis could result in the loss of investor confidence in the reliability of our financial statements, which in turn could have a material adverse effect on our business and our common stock.

We may not be able to obtain sufficient financing, and may not be able to develop our product candidates.

We believe that we have sufficient working capital to fund our currently planned expenditures through the first quarter of 2009; however, in the future we may need to incur debt or issue equity in order to fund these expenditures as well as to make acquisitions and other investments. We cannot assure you that debt or equity financing will be available to us on acceptable terms or at all. If we cannot or are limited in the ability to incur debt, issue equity or enter in strategic collaborations, we may be unable to fund discovery and development of our product candidates, address gaps in our product offerings or improve our technology.

We anticipate that we will need to raise substantial amounts of money to fund a variety of future activities integral to the development of our business, which may include but are not limited to the following:

- to conduct research and development to successfully develop our RNAi technologies,
- to obtain regulatory approval for our products,
- to file and prosecute patent applications and to defend and assess patents to protect our technologies,
- to retain qualified employees, particularly in light of intense competition for qualified scientists,
- to manufacture products ourselves or through third parties,
- to market our products, either through building our own sales and distribution capabilities or relying on third parties, and
- to acquire new technologies, licenses or products.

We cannot assure you that any needed financing will be available to us on acceptable terms or at all. If we cannot obtain additional financing in the future, our operations may be restricted and we may ultimately be unable to continue to develop and potentially commercialize our product candidates.

Future financing may be obtained through, and future development efforts may be paid for by, the issuance of debt or equity, which may have an adverse effect on our stockholders or may otherwise adversely affect our business.

If we raise funds through the issuance of debt or equity, any debt securities or preferred stock issued will have rights, preferences and privileges senior to those of holders of our common stock in the event of a liquidation. In such event, there is a possibility that once all senior claims are settled, there may be no assets remaining to pay out to the holders of common stock. In addition, if we raise funds through the issuance of additional equity, whether through private placements or public offerings, such an issuance would dilute your ownership in us.

The terms of debt securities may also impose restrictions on our operations, which may include limiting our ability to incur additional indebtedness, to pay dividends on or repurchase our capital stock, or to make certain acquisitions or investments. In addition, we may be subject to covenants requiring us to satisfy certain financial tests and ratios, and our ability to satisfy such covenants may be affected by events outside of our control.

We expect to continue to incur significant research and development expenses, which may make it difficult for us to attain profitability, and may lead to uncertainty about or as to our ability to continue as a going concern.

Substantial funds were expended to develop our RNAi technologies, and additional substantial funds will be required for further research and development, including pre-clinical testing and clinical trials of any product candidates, and to manufacture and market any products that are approved for commercial sale. Because the successful development of our products is uncertain, we are unable to precisely estimate the actual funds we will require to develop and potentially commercialize them. In addition, we may not be able to generate enough revenue, even if we are able to commercialize any of our product candidates, to become profitable.

In the event that we are unable to achieve or sustain profitability or to secure additional financing, we may not be able to meet our obligations as they come due, raising substantial doubts as to our ability to continue as a going concern. Any such inability to continue as a going concern may result in our common stock holders losing their entire investment. There is no guaranty that we will become profitable or secure additional financing. We believe that we have adequate capital, in the form of cash on hand and short-term investments, to support our currently planned level of operations through the first quarter of 2009 during which time we expect to expend approximately $6.3 million on research and development activities and approximately $4.6 million on general and administrative expenses. Our financial statements contemplate that we will continue as a going concern and do not contain any adjustments that might result if we were unable to continue as a going concern. Changes in our operating plans, our existing and anticipated working capital needs, the acceleration or modification of our expansion plans, increased expenses, potential acquisitions or other events will all affect our ability to continue as a going concern.

Risks Related to Ownership of Our Common Stock

Because there was no public market for our common stock prior to March 12, 2008, the market price and trading volume of our common stock may be volatile

Prior to the distribution and the award, there was no trading market for our common stock and, as a result, the market price of our common stock could be volatile. The market price of our common stock could fluctuate significantly for many reasons, including the following factors:

- announcements of regulatory developments or technological innovations by us or our competitors,
- changes in our relationship with our licensors and other strategic partners,
- changes in our ownership or other relationships with CytRx,
- our quarterly operating results,
- developments in patent or other technology ownership rights,
- public concern regarding the safety of our products,
- government regulation of drug pricing, and
- general changes in the economy, the financial markets or the pharmaceutical or biotechnology industries.

In addition, factors beyond our control may also have an impact on the price of our stock. For example, to the extent that other large companies within our industry experience declines in their stock price, our stock

price may decline as well. In addition, when the market price of a company's common stock drops significantly, stockholders often institute securities class action lawsuits against the company. A lawsuit against us could cause us to incur substantial costs and could divert the time and attention of our management and other resources.

Future sales of our shares by CytRx or UMMS, or the possibility of such sales, could adversely affect our stock price.

CytRx owns 6,268,881 shares of our common stock, or approximately 49% of our outstanding shares. In connection with the Distribution, we agreed to include in the registration statement filed by us relating to the Distribution the shares being registered for resale from time to time by UMMS. We further agreed, subject to some exceptions, to keep the registration statement effective until the shares being offered thereby are eligible to be sold under Rule 144(k) under the Securities Act of 1933, as amended, or the "Securities Act," or such earlier date as of which all of the shares have been sold. We also have granted CytRx what are commonly known as "piggyback" registration rights to include our shares currently owned by CytRx, or owned by CytRx in the future as a result of a dividend or distribution with respect to shares currently owned by CytRx, in other registration statements that we may file with the SEC on behalf of our company or our security holders. The availability of our shares held by CytRx and UMMS for resale publicly, as well as any actual sales of these shares, could adversely affect the market price of our shares.

If the value of our shares owned by CytRx from time to time were to exceed 40% of the value of CytRx's total assets, CytRx may be deemed an "investment company" within the meaning of the Investment Company Act of 1940 and become subject to the stringent regulations applicable to investment companies. In this event, CytRx would likely seek to promptly sell or otherwise dispose of shares of our common stock in order to avoid becoming an inadvertent investment company. Any such sales or other disposition by CytRx of our shares, or the possibility of such sales or disposition, could adversely affect the market price of our shares.

We have granted CytRx preemptive rights to acquire shares that we may sell in the future, which may impair our ability to raise funds.

Under our agreement with CytRx and our founding stockholders, with some exceptions, CytRx has preemptive rights to acquire a portion of any new securities sold or issued by us so as to maintain its percentage ownership of us at the time of any such sale and issuance, which is currently approximately 49% of our outstanding shares. The exercise by CytRx of its preemptive rights may impair our ability to raise funds, or adversely affect the terms on which we are able to raise funds, as we may not be able to offer to new investors the quantity of our stock that they may desire to purchase.

CytRx's ownership of our common stock could delay or prevent a change in corporate control.

CytRx owns approximately 49% of our common stock, and has preemptive rights, as described above, to maintain its percentage ownership. CytRx has agreed with UMMS, us and our other founding stockholders to vote its shares of our common stock so that a majority of the members of our board of directors are not affiliated (as defined) with CytRx. However, by virtue of its stock ownership, CytRx may be able to significantly influence the outcome of matters required to be submitted to a vote of our stockholders, including any proposed amendments to our certificate of incorporation and approval of mergers and other significant corporate transactions. This concentration of ownership may adversely affect the market price of our common stock by:

- delaying, deferring or preventing a change in control of our company,
- impeding a merger, consolidation, takeover or other business combination involving our company, or
- discouraging a potential acquirer from making a tender offer or otherwise attempting to obtain control of our company.

CytRx could unilaterally effect a change of control of our company by selling or disposing of our shares owned by it.

If CytRx were to sell or otherwise dispose of all or a significant portion of our shares owned by it to a single buyer or group of affiliated buyers, it could effect a change of control of our company without the advice or participation by our board of directors or other stockholders, since transferees of the shares owned by CytRx will not be bound by CytRx's agreements with UMMS, us and our other founding stockholders not to vote our shares owned by it for the election of a majority of our board of directors who are affiliated with CytRx.

Anti-takeover provisions of our certificate of incorporation and by-laws and provisions of Delaware law could delay or prevent a change of control that you may favor.

Anti-takeover provisions of our certificate of incorporation and by-laws and provisions of Delaware law may discourage, delay or prevent a merger or other change of control that stockholders may consider favorable, or may impede the ability of the holders of our common stock to change our management. These provisions of our certificate of incorporation and by-laws, among other things:

- divide our board of directors into three classes, with members of each class to be elected for staggered three-year terms,
- limit the right of stockholders to remove directors,
- regulate how stockholders may present proposals or nominate directors for election at annual meetings of stockholders, and
- authorize our board of directors to issue preferred stock in one or more series, without stockholder approval.

In addition, Section 203 of the Delaware General Corporation Law provides that, subject to limited exceptions, persons that acquire, or are affiliated with a person that acquires, more than 15% of the outstanding voting stock of a Delaware corporation such as our company shall not engage in any business combination with that corporation, including by merger, consolidation or acquisitions of additional shares for a three-year period following the date on which that person or its affiliate crosses the 15% stock ownership threshold. Section 203 could operate to delay or prevent a change of control of our company.

We may acquire other businesses or form joint ventures that may be unsuccessful and could adversely dilute your ownership of our company.

As part of our business strategy, we may pursue future acquisitions of other complementary businesses and technology licensing arrangements. We also may pursue strategic alliances. We have no experience with respect to acquiring other companies and limited experience with respect to the formation of collaborations, strategic alliances and joint ventures. If we were to make any acquisitions, we may not be able to integrate these acquisitions successfully into our existing business and we could assume unknown or contingent liabilities. We also could experience adverse effects on our reported results of operations from acquisition related charges, amortization of acquired technology and other intangibles and impairment charges relating to write-offs of goodwill and other intangible assets from time to time following the acquisition. Integration of an acquired company also may require management resources that otherwise would be available for ongoing development of our existing business. We may not identify or complete these transactions in a timely manner, on a cost-effective basis, or at all, and we may not realize the anticipated benefits of any acquisition, technology license or strategic alliance.

To finance acquisitions, we may choose to issue shares of our common stock as consideration, which would dilute your ownership interest in us. Alternatively, it may be necessary for us to raise additional funds through public or private financings. Additional funds may not be available on terms that are favorable to us and, in the case of equity financings, may result in dilution to our stockholders. Any future acquisitions by us

also could result in large and immediate write-offs, the incurrence of contingent liabilities or amortization of expenses related to acquired intangible assets, any of which could harm our operating results.

ITEM 2. *PROPERTIES*

We recently entered into a lease agreement with Newgate Properties, LLC (an affiliate of Worcester Polytechnic Institute), dated September 25, 2007, for approximately 5,300 square feet of laboratory and office space at a new facility at 60 Prescott Street, Worcester, Massachusetts, for a term of 20 months. The monthly rental fee is $15,035. We completed our move into this space in December 2007, and we believe that the space will be suitable for our current needs.

ITEM 3. *LEGAL PROCEEDINGS*

None.

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

During the fourth quarter of fiscal year 2007, no matters were submitted to a vote of the security holders.

PART II

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

Our common stock is traded on the NASDAQ Capital Market under the symbol RXII. Trading of our common stock commenced on March 12, 2008, prior to that there was no established trading market. On March 6, 2008, the record date for the Distribution, there were 701 holders of record of common stock.

Dividends

We have never paid any dividends and do not anticipate paying any dividends on our common stock in the foreseeable future. We expect to retain future earnings, if any, for use in our development activities and the operation of our business. The payment of any future dividends will be subject to the discretion of our board of directors and will depend, among other things, upon our results of operations, financial condition, cash requirements, prospects and other factors that our board of directors may deem relevant. Additionally, our ability to pay future dividends may be restricted by the terms of any debt financing.

Recent Sales of Unregistered Securities, Use of Proceeds

Set forth below is information regarding shares of common stock and options granted by us within the past three years. Also included is the consideration, if any, received by us for such shares, options and warrants and information relating to the section of the Securities Act, or rule of the SEC under which exemption from registration was claimed.

Common Stock

On April 3, 2006, the following transactions took place: (i) CytRx contributed $500 in exchange for approximately 356,201 shares of our common stock; and (ii) each of Tariq Rana, Ph.D., Gregory Hannon, Ph.D., Michael Czech, Ph.D. and Craig C. Mello, Ph.D. each contributed $445 in exchange for 317,019 shares of our common stock. These transactions were exempt from registration under the Securities Act pursuant to Section 4(2) of the Securities Act, which exempts private issuances of securities in which the securities are not offered or advertised to the general public.

On January 8, 2007, CytRx assigned and contributed to us substantially all of its RNAi-related technologies and assets and we assumed primary responsibility for all future payments to UMMS and other obligations under the contributed licenses and assets in exchange for our issuance to CytRx of 7,040,318 shares of our common

stock, with a value of approximately $17.2 million. This transaction was exempt from registration under the Securities Act pursuant to Rule 506 of Regulation D, a safe harbor for private placement offerings promulgated under Section 4(2) of the Securities Act. The safe harbor was available for the issuance under Regulation D because of CytRx's qualification as an accredited investor (as defined in the Securities Act).

On January 10, 2007, we sold a total of 462,112 shares of our common stock to UMMS in exchange for certain licenses with an aggregate valuation equal to $2.3 million. These transactions were exempt from registration under the Securities Act pursuant to Rule 506 of Regulation D, a safe harbor for private placement offerings promulgated under Section 4(2) of the Securities Act. The safe harbor was available for the issuance under Regulation D because of UMMS's qualification as an accredited investor (as defined in the Securities Act).

On April 30, 2007, we issued 3,273,292 shares of our common stock to CytRx in exchange for $15.0 million and the settlement of our account payable to CytRx of approximately $2.0 million. This transaction was exempt from registration under the Securities Act pursuant to Rule 506 of Regulation D, a safe harbor for private placement offerings promulgated under Section 4(2) of the Securities Act. The safe harbor was available for the issuance under Regulation D because of CytRx's qualification as an accredited investor (as defined in the Securities Act).

Pursuant to a common stock offering approved by the Board of Directors on May 23, 2007, Mark J. Ahn, Ph.D., Stephen S. Galliker and Sanford J. Hillsberg each entered into a Subscription Agreement with us and each subscribed for and purchased 10,000 shares of our common stock for the purchase price of $5.00 per share. These transactions were exempt from registration under the Securities Act pursuant to Section 4(2) of the Securities Act, which exempts private issuances of securities in which the securities are not offered or advertised to the general public.

In September 2007, the actual expenses incurred by CytRx were finally determined to be approximately $3,000,000, and on September 25, 2007, we issued to CytRx 188,387 shares of our common stock as reimbursement of expenses incurred in excess of the $2,000,000 account payable reimbursed to CytRx on April 30, 2007 (described above), pursuant to terms set forth in that certain Contribution Agreement between us and CytRx, dated April 30, 2007. This transaction was exempt from registration under the Securities Act pursuant to Rule 506 of Regulation D, a safe harbor for private placement offerings promulgated under Section 4(2) of the Securities Act. The safe harbor was available for the issuance under Regulation D because of CytRx's qualification as an accredited investor (as defined in the Securities Act).

On November 30, 2007, our former CFO, Jim Warren, exercised an option to purchase 66,045 shares of common stock at a price per share of $5.00. The stock options underlying the shares purchased by Mr. Warren were issued pursuant to a written compensatory plan in reliance on the exemption provided by Rule 701 promulgated under the Securities Act. Mr. Warren received adequate information about us or had access, through employment or other relationships, to such information.

Options

On May 23, 2007, we issued to employees, directors and scientific advisory board members, 1,176,797 shares of common stock upon the exercise of stock options at a price of $5.00 per share under our 2007 Incentive Plan. The issuance of stock options and the common stock issuable upon the exercise of such options were issued pursuant to a written compensatory plan in reliance on the exemption provided by Rule 701 promulgated under the Securities Act. All recipients either received adequate information about us or had access, through employment or other relationships, to such information.

On July 11, 2007, we issued to Dmitry Samarsky, our Vice President of Technology and Business Development, 105,561 shares of common stock upon the exercise of stock options at a price of $5.00 per share under our 2007 Incentive Plan. The issuance of such stock options and the common stock issuable upon the exercise of such options were issued pursuant to a written compensatory plan in reliance on the exemption provided by Rule 701 promulgated under the Securities Act. Mr. Samarsky received adequate information about us or had access, through employment or other relationships, to such information.

On August 16, 2007, we issued to certain employees 68,335 shares of common stock upon the exercise of stock options at a price of $5.00 per share under our 2007 Incentive Plan. The issuance of stock options and the common stock issuable upon the exercise of such options were issued pursuant to a written compensatory plan in reliance on the exemption provided by Rule 701 promulgated under the Securities Act. All recipients either received adequate information about us or had access, through employment or other relationships, to such information.

On October 18, 2007, we issued to certain employees, 146,000 shares of common stock upon the exercise of stock options at a price of $5.00 per share under our 2007 Incentive Plan. The issuance of stock options and the common stock issuable upon the exercise of such options were issued pursuant to a written compensatory plan in reliance on the exemption provided by Rule 701 promulgated under the Securities Act. All recipients either received adequate information about us or had access, through employment or other relationships, to such information.

On January 10, 2008, we issued to each non-employee director an option to purchase 25,000 shares of common stock at an exercise price of $5.00 per share, such amount being determined by the RXi Board of Directors as not less than the fair market value of the Company's common stock on such date. The issuance of stock options and the common stock issuable upon the exercise of such options were issued pursuant to a written compensatory plan in reliance on the exemption provided by Rule 701 promulgated under the Securities Act. All recipients either received adequate information about us or had access, through their relationships as directors, to such information.

Use of Proceeds

Our partial spin-off from CytRx resulting from the distribution of our common stock owned by CytRx was effected through a Registration Statement on Form S-1 (File No. 333-147009), that was declared effective by the Securities and Exchange Commission on February 14, 2008. We have registered 5,016,430 shares of common stock with a par value of $0.0001, of which 4,526,624 were distributed to shareholders of CytRx and 27,694 were to be used for the award by CytRx of shares to certain of its directors, officers and employees. The remaining 462,112 shares that were registered were held by UMMS, and we will not receive any proceeds from the sale of these shares. We did not receive any proceeds as a result of the registration of any of these shares.

Comparative Stock Performance Graph

The Company had no established trading market in 2007, and as such, no comparative stock performance graph has been included in this annual report on Form 10-K.

ITEM 6. *SELECTED FINANCIAL DATA*

The following selected historical financial information should be read in conjunction with "Management's Discussion and Analysis of Financial Condition and Results of Operations" and the financial statements and corresponding notes to financial statements included elsewhere in this annual report.

RXi was incorporated as Argonaut Pharmaceuticals, Inc., in Delaware, on April 3, 2006 by CytRx and our four scientific founders, and we changed our name to RXi Pharmaceuticals Corporation on November 28, 2006. From April 3, 2006 (date of incorporation) until January 8, 2007, no activities were conducted at the RXi level.

The financial statements of RXi included in this annual report for the periods through December 31, 2006 have been disaggregated, or "carved-out," of the consolidated financial statements of CytRx, as our "predecessor," which were audited by BDO Seidman, LLP, an independent registered public accounting firm. These carved-out financial statements form what we refer to herein as the financial statements of the predecessor, and include both direct and indirect expenses. The historical direct expenses consist primarily of the various costs for technology license agreements, sponsored research agreements and fees paid to scientific advisors. Indirect expenses represent expenses incurred by CytRx on behalf of RXi that have been allocated to RXi. The indirect expenses are based upon (1) estimates of the percentage of time spent by individual CytRx employees

working on RXi matters by year and (2) allocations of various expenses associated with each employee including salary, benefits, rent associated with an employee's office space, accounting and other general and administrative expenses. The percentage of time spent by individual CytRx employees was then multiplied by the allocation of various expenses associated with those employees to develop an allocation of expense per employee and the sum of such allocations for these employees equals the total expense allocation for the year. RXi's financial information as of December 31, 2006, and 2007 and for the year ended December 31, 2007 are referred to in this annual report as the financial information of the successor, and includes expenses incurred by RXi in its RNAi therapeutic programs, as well as an allocation of corporate services provided by CytRx. In addition, the net intercompany activities between the predecessor and CytRx have been accumulated into a single caption entitled "Parent Company's Net Deficit."

The periods ended December 31, 2006 and 2005 as well as the cumulative financial information for the period from January 1, 2003 (date of inception) through December 31, 2006 for our predecessor and the financial information of the successor as of December 31, 2007 and 2006 and the cumulative financial information for the period from January 1, 2003 (date of inception) to December 31, 2007 have been audited by our independent registered public accounting firm, BDO Seidman, LLP, which also previously audited CytRx's consolidated financial statements for the years ended December 31, 2007, 2006 and 2005.

In 2003, CytRx entered into several technology license agreements with UMMS related to RNAi technologies. CytRx subsequently entered into other RNAi-related technology agreements with UMMS and other parties, as well as four sponsored research agreements pursuant to which CytRx funded RNAi research activities. Three of these sponsored research agreements were with UMMS and one of the sponsored research agreements was with Massachusetts General Hospital. On January 8, 2007, RXi entered into a contribution agreement with CytRx under which CytRx assigned and contributed to RXi substantially all of its RNAi related technologies and assets, and we commenced operations in January 2007.

Management believes the assumptions underlying the carve-out financial information are reasonable; however, RXi's financial position, results of operations and cash flows may have been materially different if it was operated as a stand-alone entity as of and for the periods presented.

We generated no revenues during the years ended December 31, 2007, 2006, 2005 or 2004. Accordingly, for accounting purposes we are considered a development stage company.

RXi PHARMACEUTICALS CORPORATION
FIVE YEAR FINANCIAL SUMMARY

	Period from January 1, 2003 (Date of Inception) Through December 31, 2007	For the Year Ended December 31 2007	Period from January 1, 2003 (Date of Inception) Through December 31, 2006	For the Year Ended December 31 2006	For the Year Ended December 31 2005	For the Year Ended December 31 2004	For the Year Ended December 31 2003
	(Successor)	(Successor)	(Predecessor)	(Predecessor)	(Predecessor)	(Predecessor)	(Predecessor)
	(In thousands, except share and per share amounts)						
Statements of Operations Data:							
Revenue	$ —	$ —	$ —	$ —	$ —	$ —	$ —
Expenses:							
Research and development	15,288	6,747	8,541	1,772	2,080	2,814	1,877
General and administrative	6,166	4,666	1,500	633	129	458	278
Operating loss	(21,454)	(11,413)	(10,041)	(2,405)	(2,209)	(3,272)	(2,155)
Interest income	448	448	—	—	—	—	—
Loss before income taxes	(21,006)	(10,965)	(10,041)	(2,405)	(2,209)	(3,272)	(2,155)
Income taxes	(25)	(25)	—	—	—	—	—
Net loss	$(21,031)	$ (10,990)	$(10,041)	$(2,405)	$(2,209)	$(3,272)	$(2,155)
Basic and diluted loss per share	N/A	$ (0.99)	N/A	N/A	N/A	N/A	N/A
Weighted average shares, basic and diluted	N/A	11,113,137	N/A	N/A	N/A	N/A	N/A

	As of December 31 2007	As of December 31 2006	As of December 31 2006	As of December 31 2005	As of December 31 2004	As of December 31 2003
	(Successor)	(Successor)	(Predecessor)	(Predecessor)	(Predecessor)	(Predecessor)
Balance Sheet Data:						
Cash and cash equivalents	$ 1,763	$ 2	$ —	$ —	$ —	$ —
Short term investments	9,952	—	—	—	—	—
Total current assets	11,737	2	—	—	—	—
Working capital	10,413	2	(318)	(500)	(968)	(89)
Total assets	12,147	2	57	50	—	—
Due to parent	(207)	—	—	—	—	—
Total stockholders' equity	$10,823	$ 2	$ —	$ —	$ —	$ —
Parent company's net deficit	$ —	$—	$(268)	$(450)	$(968)	$(89)

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

You should read the following discussion in conjunction with the RXi and predecessor carve-out financial statements and the notes to financial statements included elsewhere in this annual report. The carved-out financial statements were derived from the consolidated financial statements of CytRx to include the historical operations being transferred to RXi and have been labeled as "predecessor" throughout this annual report. This "Management's Discussion and Analysis of Financial Condition and Results of Operations" section contains forward-looking statements. Please see "Forward-Looking Statements" for a discussion of the uncertainties, risks and assumptions associated with these statements. Our actual results and the timing of certain events could differ materially from those anticipated in these forward-looking statements as a result of certain factors,

including those discussed below and elsewhere in this annual report, particularly under the heading "Risk Factors."

Overview

We are a discovery-stage biopharmaceutical company pursuing proprietary therapeutics based on RNA interference, or RNAi, a naturally occurring cellular mechanism that has the potential to effectively and selectively interfere with, or "silence," expression of targeted disease-associated genes. We intend to initially focus on certain neurodegenerative diseases, metabolic diseases, and oncology. By utilizing our expertise in RNAi and the RNAi technology platform we have licensed from prominent researchers, we believe we will be able to discover and develop lead compounds and move them into and through development for potential commercialization more efficiently than traditional drug development approaches.

We were formed in 2006 by CytRx and four prominent RNAi researchers, including Dr. Craig Mello, who was awarded the 2006 Nobel Prize in Medicine for his co-discovery of RNAi. From 2003 through 2006, CytRx sponsored therapeutic RNAi research at UMMS and Massachusetts General Hospital. We commenced operations in January 2007 after CytRx contributed to us its portfolio of RNAi therapeutic assets in exchange for approximately 7.04 million shares of our common stock on January 8, 2007. These assets consisted primarily of RNAi licenses and related intellectual property, and a nominal amount of equipment. The cost of the licenses had previously been expensed by CytRx as in-process research and development and was recorded in the predecessor financial statements at cost.

To date, our principal activities have consisted of recruiting an RNAi-focused management and scientific and clinical advisory team which has focused on assessing and acquiring additional RNAi technologies, performing discovery and pre-clinical research, developing clinical strategies, exploring potential development partnerships and completing our organizational activities.

We have not generated revenue to date and may not generate revenue in the foreseeable future, if ever. We expect to incur significant operating losses as we advance our product candidates through the drug development and regulatory process. In addition to increasing research and development expenses, we expect general and administrative costs to increase related to operation as a public company and as we add personnel. We will need to generate significant revenues to achieve profitability and might never do so. In the absence of product revenues, our potential sources of operational funding are expected to be the proceeds from the sale of equity, funded research and development payments and payments under collaborative agreements. We believe that we have sufficient cash, cash equivalents and short-term investments to fund our currently planned business activities through the first quarter of 2009, during which time we expect to expend approximately $6.3 million on research and development activities and approximately $4.6 million on general and administrative expenses.

The Founding and Funding of RXi

On April 30, 2007, we issued approximately 3,273,000 additional shares of our common stock to CytRx at $5.19 per share, based in part, upon the advice of the third-party valuation advisor and assuming the issuance of 462,112 shares to UMMS pursuant to our license agreements with them, in exchange for CytRx's additional investment of $17.0 million. On September 25, 2007, we issued an additional 188,387 shares of common stock to CytRx at $5.19 per share to satisfy in full certain reimbursement amounts owed to CytRx by us. CytRx owned approximately 49% of our outstanding shares of common stock immediately following the Distribution and Award. In the event that we propose to sell or issue shares of RXi common stock in the future, CytRx will have the right to purchase a portion of such shares sufficient to maintain its percentage ownership at the time of such sale or issuance. This right will terminate on the earlier of January 8, 2012 or the first date at which CytRx owns less than 10% of our outstanding shares.

Research and Development

We are currently focusing on the areas of neurological disease, metabolic disease, and oncology. In order to support the advancement of RNAi compounds into these therapeutic areas, our initial research programs,

which we intend to pursue over the course of the next 12 months, are designed (1) to directly deliver the RNAi compound into a compartment, such as into the cerebral spinal fluid of the spinal cord for our initial disease target, ALS, and (2) to optimize the delivery method and technology necessary to make RNAi compounds available at the appropriate disease site by systemic administration, as for our programs in diabetes, obesity or cancer. Since we commenced operations, research and development has comprised a significant proportion of our total operating expenses and is expected to comprise the majority of our spending for the foreseeable future.

There are risks in any new field of drug discovery that preclude certainty regarding the successful development of a product. We cannot reasonably estimate or know the nature, timing and costs of the efforts necessary to complete the development of, or the period in which material net cash inflows are expected to commence from, any product candidate. Our inability to make these estimates results from the uncertainty of numerous factors, including but not limited to:

- our ability to advance product candidates into pre-clinical research and clinical trials;
- the scope and rate of progress of our pre-clinical program and other research and development activities;
- the scope, rate of progress and cost of any clinical trials we commence;
- the cost of filing, prosecuting, defending and enforcing patent claims and other intellectual property rights;
- clinical trial results;
- the terms and timing of any collaborative, licensing and other arrangements that we may establish;
- the cost and timing of regulatory approvals;
- the cost of establishing clinical and commercial supplies of our product candidates and any products that we may develop;
- the cost and timing of establishing sales, marketing and distribution capabilities;
- the effect of competing technological and market developments; and
- the effect of government regulation and insurance industry efforts to control healthcare costs through reimbursement policy and other cost management strategies.

Failure to complete any stage of the development of our product candidates in a timely manner could have a material adverse effect on our operations, financial position and liquidity. A discussion of the risks and uncertainties associated with completing our projects on schedule, or at all, and the potential consequences of failing to do so, are set forth under the heading "Risk Factors" in this annual report.

Licenses

We have entered into relationships with academic institutions and research foundations and may seek to enter into additional licenses with pharmaceutical and biotechnology companies. We also may enter into strategic alliances to expand our RNAi intellectual property portfolio and to potentially accelerate our development programs by gaining access to technology and funding, including equity sales, license fees and other revenues. For each product that we develop that is covered by the patents licensed to us pursuant to one of the license agreements we have entered into, including the material licenses discussed below, we are obligated to make additional payments upon the attainment of certain specified product development milestones.

University of Massachusetts Medical School and Imperial College

As part of the January 8, 2007 contribution of assets by CytRx, we became a party to a number of exclusive and non-exclusive license agreements with UMMS. The exclusive license agreements from UMMS

cover potential applications of proprietary RNAi technology in the treatment of ALS, obesity, type 2 diabetes and cancer. As consideration for these licenses, CytRx made cash payments to UMMS totaling $171,000 and issued a total of approximately 1,548,000 shares of CytRx common stock at the fair market price on the date of the transaction of approximately $0.99 per share, or $1.5 million, for financial statement purposes. Pursuant to these licenses assigned from CytRx, we have assumed the obligation to pay annual license maintenance fees in an aggregate amount of $130,000. Additionally, we were assigned from CytRx a license from the Imperial College of Science, Technology & Medicine. This license provides the exclusive rights to intellectual property covering a drug screening method using RIP 140, which, according to a June 2004 study published in the *Proceedings of the National Academy of Sciences of the United States of America*, is a nuclear hormone corepressor believed to regulate fat accumulation. As consideration for the license, CytRx made cash payments to Imperial College totaling $87,000 and issued a total of 75,000 shares of CytRx common stock, valued at the market price of CytRx common stock at the date of the transaction of $1.44 per share for financial statement purposes, or $108,000. Pursuant to this license we have assumed the obligation to make royalty payments based on sales of products developed using this technology.

The drug screening technology licensed from Imperial College and the RNAi technology licensed from UMMS had not yet achieved technological feasibility at the time of their license by CytRx, had no alternative future uses and, therefore, no separate economic value and, accordingly, the total value of the consideration was expensed by CytRx as research and development for the year ended December 31, 2004. In accordance with accounting for transfers between entities under common control, such licenses were transferred onto our books and records with a zero cost basis.

Further, we have directly entered into one non-exclusive license agreement, three exclusive license agreements and an invention disclosure agreement with UMMS for which we paid cash of $453,000 and issued 462,112 shares of our common stock valued at $2.3 million. The invention disclosure agreement has an initial term of three years and provides the option to negotiate licenses to certain RNAi technologies discovered at UMMS. Pursuant to the four license agreements, we paid up-front fees in an aggregate amount of $77,500 and additional license fees in an aggregate amount of $175,000 upon the completion of the $17 million financing from CytRx. Further, we have agreed to pay annual license maintenance fees in an aggregate amount of $42,500 commencing on January 1, 2008.

Additionally, in connection with all of our licenses with UMMS, including those assigned to us by CytRx as well as those entered into directly between us and UMMS, we are obligated to pay specified royalties on net sales of products covered by the licensed patents, subject to minimum annual royalties. Beginning on January 1, 2012, the minimum annual royalty payments for all UMMS licenses, in the aggregate, will be $210,000 and beginning on January 1, 2016, the minimum annual royalty payments for all UMMS licenses, in the aggregate, will be $365,000. Furthermore, in connection with all of our licenses with UMMS, we are obligated to expend at least $3,300,000 per year, in the aggregate, for the development of products in connection with the licensed technology. For the licenses we entered into directly with UMMS, this obligation continues until the earlier of three years after the effective date of the licenses or the commencement of a Phase II clinical trial on a product developed in connection with the licensed technology.

Cold Spring Harbor

We have also directly entered into a license agreement with Cold Spring Harbor Laboratory ("CSHL") for shRNA (small hairpin RNA), for which we paid $50,000 and agreed to make future milestone and royalty payments upon successful development and commercialization of products. CSHL has also agreed to grant a non-exclusive license in the research field to up to three companies that qualify as bona fide collaborators with us, provided that, each such additional licensee shall pay CSHL an additional license fee of $100,000 and an annual license maintenance fee of $100,000. Furthermore, CSHL has agreed to grant a non-exclusive license in the therapeutic field to up to three companies that qualify as co-marketers, except that each such co-marketer licensee shall pay to CSHL an additional license fee of $250,000 and an annual license maintenance fee of $75,000.

As consideration for the license granted to us by CSHL, we agreed to pay $50,000 and an additional $50,000 upon the earlier of the granting of a specified patent application or the one year anniversary of the effective date of the license agreement with CSHL. Additionally, beginning on the one year anniversary of the effective date of the license agreement with CSHL, and continuing on each anniversary thereafter during the term of the agreement, we agreed to pay to CSHL an annual fee of $75,000. Finally, we agreed to pay CSHL a royalty payment dependent on net sales of the products covered by the license agreement with CSHL.

Basis of Presentation

RXi was incorporated as Argonaut Pharmaceuticals, Inc., in Delaware, on April 3, 2006 (date of incorporation) by CytRx and our four scientific founders, and we changed our name to RXi Pharmaceuticals Corporation on November 28, 2006. From April 3, 2006 until January 8, 2007, no activities were conducted at the RXi level.

The financial statements of RXi included in this annual report for the periods through December 31, 2006 have been disaggregated, or "carved-out," of the consolidated financial statements of CytRx, as our "predecessor," which were audited by BDO Seidman, LLP, an independent registered public accounting firm. These carved-out financial statements form what we refer to herein as the financial statements of the predecessor, and include both direct and indirect expenses. The historical direct expenses consist primarily of the various costs for technology license agreements, sponsored research agreements and fees paid to scientific advisors. Indirect expenses represent expenses incurred by CytRx on behalf of RXi that have been allocated to RXi. The indirect expenses are based upon (1) estimates of the percentage of time spent by individual CytRx employees working on RXi matters by year and (2) allocations of various expenses associated with each employee including salary, benefits, rent associated with an employee's office space, accounting and other general and administrative expenses. The percentage of time spent by individual CytRx employees was then multiplied by the allocation of various expenses associated with those employees to develop an allocation of expense per employee and the sum of such allocations for these employees equals the total expense allocation for the year. RXi's financial information as of December 31, 2006 and 2007 are referred to in this annual report as the financial information of the successor, and includes expenses incurred by RXi in its RNAi therapeutic programs, as well as an allocation of corporate services provided by CytRx. In addition, the net intercompany activities of the predecessor and CytRx have been accumulated into a single caption entitled "Parent Company's Net Deficit."

In 2003, CytRx entered into several technology license agreements with UMMS related to RNAi technologies. CytRx subsequently entered into other RNAi-related technology agreements with UMMS and other parties, as well as four sponsored research agreements pursuant to which CytRx funded RNAi research activities. Three of these sponsored research agreements were with UMMS and one of the sponsored research agreements was with Massachusetts General Hospital. On January 8, 2007, RXi entered into a contribution agreement with CytRx under which CytRx assigned and contributed to RXi substantially all of its RNAi related technologies and assets, and we commenced operations in January 2007.

Management believes the assumptions underlying the carve-out financial information are reasonable; however, RXi's financial position, results of operations and cash flows may have been materially different if it was operated as a stand-alone entity as of and for the periods presented.

Financial Information

The periods ended December 31, 2006 and 2005 as well as the cumulative financial information for the period from January 1, 2003 (date of inception) through December 31, 2006 for our predecessor and the financial information of the successor as of December 31, 2007 and 2006 and the cumulative financial information for the period from January 1, 2003 (date of inception) to December 31, 2007 have been audited by our independent registered public accounting firm, BDO Seidman, LLP, which also previously audited CytRx's consolidated financial statements for the years ended December 31, 2007, 2006 and 2005.

Critical Accounting Policies and Estimates

Use of Estimates

Management's discussion and analysis of our financial condition and results of operations include the predecessor's financial statements for the periods through December 31, 2006, and the successor's financial statements for the period ended December 31, 2007. The preparation of these financial statements requires management to make estimates, allocations and judgments that affect the reported amounts of assets, liabilities, revenues and expenses, and related disclosure of contingent assets and liabilities. On an ongoing basis, management evaluates its estimates, including those related to impairment of long-lived assets, accrued liabilities and certain expenses. We base our estimates about the carrying values of assets and liabilities that are not readily apparent from other sources on historical experience and on other assumptions believed to be reasonable under the circumstances. Actual results may differ materially from these estimates under different assumptions or conditions. Additionally, the financial information included here may not necessarily reflect the financial position, operating results, changes in our invested equity and cash flows in the future or what they would have been had we been a separate, stand-alone entity during the periods presented.

Our significant accounting policies are summarized in Note 2 to our financial statements. We believe the following critical accounting policies involve significant judgments and estimates used in the preparation of our financial statements.

Revenue Recognition

To date, we have not recognized any revenue. Nonrefundable license fee revenue is recognized when collection is reasonably assured, when no continuing involvement on our part is required and payment of the license fee represents the culmination of the earnings process. Nonrefundable license fees received subject to future performance by us, or credited against future payments due us, are deferred and recognized when we have met our performance obligations, or upon termination of the agreement and all related obligations thereunder. Our revenue recognition policy may require us in the future to defer significant amounts of revenue.

Research and Development Expenses

Research and development costs are expensed as incurred and consist of direct and overhead-related expenses. Expenditures to acquire technologies, including licenses, which are utilized in research and development and that have no alternative future use are expensed when incurred. Technology we develop for use in our products is expensed as incurred until technological feasibility has been established after which it is capitalized and depreciated.

Stock-Based Compensation

Prior to January 1, 2006, CytRx accounted for its stock based compensation plans under the recognition and measurement provisions of Accounting Principles Board No. 25, Accounting for Stock Issued to Employees ("APB 25"), and related interpretations for all awards granted to employees. Under APB 25, when the exercise price of options granted to employees equals the market price of the common stock on the date of grant, no compensation expense is recorded. When the exercise price of options granted to employees is less than the market price of the common stock on the date of grant, compensation expense is recognized over the vesting period. CytRx did not allocate any APB No. 25 stock compensation expense to the predecessor for the years ended December 31, 2005 and 2004.

The statement of expenses for our predecessor as of and for the year ended December 31, 2006 reflects the impact of Statement of Accounting Standard ("SFAS") 123(R) "Share-Based Payment (Revised 2004)" ("SFAS 123(R)") on CytRx. Share-based compensation expense recognized by CytRx related to the predecessor under SFAS 123(R) for the year ended December 31, 2006 was $46,000 and was part of the allocable general and administrative expenses of CytRx. Such amounts have been reduced by our estimate of forfeitures

of all unvested awards. Results for periods prior to January 1, 2006 have not been restated to retrospectively apply SFAS 123(R).

We have adopted SFAS 123(R), and compensation cost for all share-based payments, based on the grant date fair value estimated in accordance with the provisions of SFAS 123(R), is recognized as an expense over the requisite service period.

The fair value of each option grant is estimated using the Black-Scholes option-pricing model, with the following weighted average assumptions used for grants during the year ended December 31, 2007: risk-free interest rate of 4.50%; expected volatility of 108.7%; expected life of the options of 6.0 years; and no dividend. Based on CytRx's historical experience, we estimated an annualized forfeiture rate of 4.0% for options granted to employees and 2.1% for options granted to senior management and no forfeiture rate for options issued to directors. Any change in actual forfeitures from our historical experience could result in a corresponding change in the amount of compensation expenses recorded in any single quarterly or annual period.

We account for equity instruments issued to non-employees in accordance with the provisions of SFAS 123(R), Emerging Issues Task Force Issue ("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" and EITF 00-18, "Accounting Recognition for Certain Transactions involving Equity Instruments Granted to Other Than Employees, as amended," which require that such equity instruments be recorded at their fair value on the measurement date. The measurement of share-based compensation generally is subject to periodic adjustment as the underlying equity instruments vest.

Non-employee share-based compensation charges generally are amortized over the vesting period on a straight-line basis. In certain circumstances, option grants to non-employees are immediately vested and have no future performance requirements by the non-employee and the total share-based compensation charge is recorded in the period of the measurement date.

Valuation of Common Stock

Management of CytRx determined that the aggregate fair value of the technologies and assets contributed to us was approximately $17.2 million as of January 8, 2007 based, in part, upon the advice of Sanli Pastore & Hill, Inc., an independent third-party valuation advisor, engaged by management of CytRx for this purpose. The actual fair value of the contributed technologies and assets as of January 8, 2007 may have been different. Based on this valuation by CytRx, CytRx was issued a total of 7,040,318 shares, at a price of $2.45 per share. For financial reporting purposes, we recorded the technologies and assets contributed to us at the historical cost basis of CytRx as of January 8, 2007 of $48,000.

In determining the value of the assets of RXi, management of CytRx considered the definition of fair market value, as: "The price at which the property would change hands between a willing buyer and a willing seller when the former is not under any compulsion to buy and the latter is not under any compulsion to sell, both parties having reasonable knowledge of the relevant facts." CytRx management relied primarily upon the "reproduction cost valuation method," which included analysis of five components of cost: (i) material, (ii) labor, (iii) overhead, (iv) developer's profit, and (v) entrepreneurial incentive. CytRx management also considered the "market approach valuation method," which included analysis of the increase in the market stock price of CytRx common stock on the date of the announcement that CytRx had contributed its RNAi assets to us and the current market conditions for RNAi-based companies, but accorded less weight (10%) to this method than to the reproduction cost valuation method (90%).

Subsequently, on April 30, 2007, we issued 3,273,292 additional shares of our common stock to CytRx in exchange for CytRx's investment in of $17.0 million. Management of CytRx and RXi determined that the fair market value of RXi as of April 30, 2007 was approximately $45 million and the value of our common stock as of this date was $5.00 per share, based in part, upon the further advice of the third-party valuation advisor originally engaged by management of CytRx in connection with the January 8, 2007 contribution and assuming the issuance of 462,112 shares to UMMS pursuant to our license agreements with them. The fair

market value was determined based on a combination of the reproduction cost approach discussed above, as well as the "market capitalization increase approach" and the "guidelines public company method — book value multiplier approach" discussed below.

Due to the fact that we are a discovery stage company and the amounts, if any, of future revenues remained uncertain and projected revenues and profits could not be made, it was determined that the reproduction cost approach was one appropriate analysis to undertake as cost approach methods are generally applicable when the subject intangible asset is new and when it is a fungible property. The reproduction cost valuation method was elected, which estimates the cost to construct, at current market price as of the date of the analysis, an exact duplicate or replica of the subject intangible asset, using the same materials, production standards, design layout, and quality of workmanship as the subject intangible asset. As stated above, the reproduction intangible asset will include the same adequacies, superadequacies, and obsolescence as the subject intangible asset. The reproduction cost valuation method includes analysis of five components of cost: (i) material, (ii) labor, (iii) overhead, (iv) developer's profit and (v) entrepreneurial incentive. Because the reproduction cost approach may not reflect the earning power of new technology or the ultimate market share that may be obtained, it was determined that only limited consideration should be given to this approach and its value was weighted at 10%

The CytRx market approach valuation method included an analysis of the increase in market capitalization since January 8, 2007 and a comparison of CytRx's market capitalization to three other RNAi based companies, as well as significant public announcements by CytRx occurring since January 8, 2007 and general public news announcements relating to RNAi technology since January 8, 2007. Based on these factors and taking into account potential market overreaction and other news in non-RNAi operations, only limited consideration to this approach to valuation was given and its value was weighted at 10%.

The guideline public company method — book value multiplier valuation approach involves an evaluation of market transactions in business securities that can provide objective, empirical data for developing valuation ratios to apply in a business valuation. The valuation process for RXi applied a comparative analysis of RXi with the following publicly traded companies in the same industry: Sirna Therapeutics, Inc., Alnylam Pharmaceuticals, Inc. and Nastech Pharmaceuticals Co Inc. The relationship of the market value of invested capital of each guideline company was applied to each company's respective underlying net asset value in order to obtain market value of invested capital to book value multiple. The market value of invested capital to book value multiple calculated from the guideline companies method was then applied to obtain a pre-money fair market value of our total assets. Because this method of valuation is most appropriate when comparing companies with similar operations when no future income-stream projections are available, management weighted this approach's value at 80%.

Our common stock was registered and began trading publicly on March 11, 2008. As a result, the actual value of a common share may be materially different than the fair value per share determined using any of the prior valuations discussed above.

As of December 31, 2007, we had outstanding a total of 1,335,184 options to purchase common stock, granted to various employees, directors, consultants and SAB Members pursuant to our 2007 Incentive Plan, which is described above and in Note 10 of the Notes to Financial Statements included in this annual report. On May 23, 2007, we granted a total of 1,176,797 options to purchase common stock to certain employees, directors and SAB Members. These options have an exercise price of $5.00 per share, as the RXi Board of Directors determined that the fair market value of the shares had not changed since the April 30, 2007 determination discussed above. On July 11, 2007, we granted to another employee an option to purchase 105,561 shares of common stock at an exercise price of $5.00 per share, as again, the RXi Board of Directors determined that the fair market value of the shares had not changed since the April 30, 2007 determination. Additionally, on August 16, 2007, we granted to certain employees a total of 68,335 shares of common stock upon the exercise of stock options with an exercise price of $5.00 per share, as upon such grant the RXi Board of Directors determined that the fair market value of the shares had not changed since the April 30, 2007 determination. On October 18, 2007, we granted certain employees a total of 146,000 options to purchase common stock at an exercise price of $5.00 per share, as the RXi Board of Directors determined that the fair market value of the shares had not changed since the April 30, 2007 determination.

Impairment of Long-Lived Assets

We review long-lived assets for impairment on an annual basis, as of December 31, or on an interim basis if an event occurs that might reduce the fair value of such assets below their carrying values. An impairment loss would be recognized based on the difference between the carrying value of the asset and its estimated fair value, which would be determined based on either discounted future cash flows or other appropriate fair value methods. If our estimates used in the determination of either discounted future cash flows or other appropriate fair value methods are not accurate as compared to actual future results, we may be required to record an impairment charge.

Results of Operations

Year Ended December 31, 2007 Compared with the Years Ended December 31, 2006 and 2005

For the year ended December 31, 2007, our net loss was $11.0 million, compared to a net loss of $2.4 million for the year ended December 31, 2006. The loss increased by $8.6 million or approximately 358%. We incurred net losses of approximately $2.4 million and $2.2 million for the years ended December 31, 2006 and 2005, respectively, based on the methodology used in carving out our financial information from CytRx as described elsewhere in this annual report. Reasons for the variations in the losses between the periods are discussed below.

Revenue

We generated no revenues during the years ended December 31, 2007, 2006, and 2005. We also anticipate that no revenue from sales of products will be generated for the year ending December 31, 2008 and that we will not generate revenue from sales of products for the foreseeable future. Accordingly, for accounting purposes we consider ourselves to be a development stage company.

Research and Development Expense

	2007 (Successor)	2006 (Predecessor)	2005 (Predecessor)
		(In thousands)	
Research and development expense	$3,273	$1,298	$1,929
Common stock and stock options issued for research and development expense	120	—	—
Research and development non-employee stock-based compensation expense	1,043	212	151
Fair value of common stock issued in exchange for licensing rights	2,311	262	—
Total research and development expense	$6,747	$1,772	$2,080

Research and development expense consists primarily of costs related to (i) the UMMS license agreements, (ii) the collaboration and invention disclosure agreements pursuant to which UMMS agreed to disclose certain inventions to CytRx and us and to provide CytRx and us with the right to acquire an option to negotiate exclusive licenses for those disclosed technologies, (iii) the sponsored research agreements with both UMMS and Massachusetts General Hospital, and (iv) the compensation for our SAB members. We expect research and development expenses to increase substantially for the foreseeable future as we engage in discovery and development activities for RNAi therapeutics. Total research and development expenses for the year ended December 31, 2007 were $6.7 million of our total expenses incurred. For the year ended December 31, 2006, total research and development expenses were $1.8 million of total expenses. The $4.9 million increase in total research and development expense between the two years is explained below.

Research and development expense increased $2.0 million, or 154%, from $1.3 million in the year ended December 31, 2006, to $3.3 million in the year period ended December 31, 2007. This increase was due to the

start up costs of setting up the RXi laboratory in Worcester, Massachusetts, hiring research and development staff, including our Vice President of Pharmaceutical Development, and fees to UMMS and Cold Spring Harbor which were partially offset by a $828,000 decrease in expenses for sponsored research agreements. For the year ended December 31, 2007, we made no payments for sponsored research agreements, while in the year ended December 31, 2006 we spent $828,000 on such agreements. In addition, acquired in-process research and development expense was $830,000 for the year ended December 31, 2007, when we had no similar expense during the year ended December 31, 2006. This expense consisted of $430,000 in cash (which does not include the additional expense of $2.3 million in stock referred to in "Fair value of RXi common stock issued in exchange for licensing rights") paid to UMMS and a total of $400,000 to other parties for the right to additional intellectual property.

Research and development expenses decreased $631,000, or 32.7%, from $1.9 million for the year ended December 31, 2005, to $1.3 million for the year ended December 31, 2006. The decrease was mainly due to a $609,000 decrease in sponsored research agreements expense partially offset by increases in other research and development expenses.

Research and Development Non-Employee Stock-Based Compensation Expense

As compensation to members of our RNAi scientific advisory board and consultants, and in connection with the acquisition of RNAi technology, we issued shares of common stock and stock options to purchase shares of our common stock. For financial statement purposes, we valued these shares of common stock and stock options at their fair value. Fluctuation in SAB stock-based compensation expense results from variations in the quantity, vesting and valuation of common stock options granted to SAB Members.

Non-cash research and development expenses for the year ended December 31, 2007 was $1.0 million, compared to non-cash research and development expenses of $212,000 for the same period in the prior year. The increase in research and development expense to non-employee stock based compensation expense of $788,000, or 372%, was due to an increase in stock option expense for SAB Members.

Non-cash research and development expenses increased $61,000, or 40.4%, from $151,000 for the year ended December 31, 2005, to $212,000 for the year ended December 31, 2006. The increase was due to an increase in stock option expense for SAB Members.

Fair Value of Common Stock Issued in Exchange for Licensing Rights

Fair value of RXi common stock issued in exchange for licensing rights increased $2.0 million, or 763% from $262,000 for the year ended December 31, 2006 to $2.3 million for the year ended December 31, 2007. This expense consisted of $2.3 million in stock, valued for financial statement purposes at $5.00 per share, referred to above in "Research and Development Expense" paid to UMMS for the right to additional intellectual property.

Fair value of CytRx common stock issued in exchange for licensing rights increased $262,000 for the year ended December 31, 2006, compared to the year ended December 31, 2005, when we had no similar expense. The increase was due to a common stock grant to UMMS for a new license agreement in the year ended December 31, 2006, which was valued at $262,000, or $1.75 per share. No similar grant was made in the year ended December 31, 2005.

General and Administrative Expense

	Years Ended December 31,		
	2007 (Successor)	2006 (Predecessor) (In thousands)	2005 (Predecessor)
General and administrative expense	$3,735	$633	$129
Common stock and stock options issued for general and administrative expense	931	—	—
Total general and administrative expense	$4,666	$633	$129

General and administrative expenses include all direct and indirect administrative salaries and general corporation expenses. Indirect expenses have been allocated based upon (1) estimates of the percentage of time spent by individual CytRx employees working on our matters and (2) allocations of various expenses associated to each employee including salary, benefits, rent associated with an employee's office space, accounting and other general and administrative expenses. The percentage of time spent by individual CytRx employees was then multiplied by the amount of various expenses associated to the various employees to develop an allocation of expense per employee. The expense allocation per individual employee is then summed to come to the total expense allocation for the year. In addition, general and administrative expense include certain expenses incurred with the formation of RXi which are directly associated with us, such as legal and accounting expenses, as well as other similar expenses.

General and administrative expense increased $3.1 million, or 490%, from $633,000 for the year ended December 31, 2006, to $3.7 million for the year ended December 31, 2007. This increase resulted from the expense of establishing RXi as a separate public company, and included $1.6 million in staff-related costs, legal and accounting expenses of $1.3 million, consulting and other professional services expense of $150,000, Board of Directors fees and expenses of $200,000, and rent expense of $100,000. The allocation of CytRx expense increased $373,000, or 210%, from $178,000 for the year ended December 31, 2006, to $551,000 for the year ended December 31, 2007. The increase in the allocation of expense was directly due to the increased time CytRx's management spent on our matters.

The expense of common stock and stock options issued for general and administrative costs increased $931,000 in the year ended December 31, 2007, compared to the year ended December 31, 2006, when the expense was zero. This increase was due to the issuance of stock options to our employees and directors.

General and administrative expense increased $504,000, or 390.7%, from $129,000 for the year ended December 31, 2005 to $633,000 for the year ended December 31, 2006. This increase was related to positioning us to function as a stand-alone company and included increased legal expense in the amount of $195,000 for general corporate matters and additional expense allocations (based upon estimates of additional time spent by certain members of the CytRx management) of CytRx management's expense of $89,000, or 100%, from $89,000 in the year ended December 31, 2005, to $178,000 for the year ended December 31, 2006.

The higher percentage of general and administrative expense as a percentage of the overall expense for the year ended December 31, 2007 compared to the year ended December 31, 2006 reflects our beginning to operate on a stand-alone basis. Total general and administrative expense was $633,000 for the year ended December 31, 2006 and $129,000 for the year ended December 31, 2005. General and administrative expense as a percentage of total expense for the years ended December 31, 2007, 2006 and 2005 was 41.0%, 26.3% and 5.8%, respectively, of the total expense. The relatively low general and administrative expense levels for the prior years are indicative of the fact that the research activities were performed by independent third parties, which required less managerial oversight and administrative activity during the predecessor period as compared to the successor period. We expect general and administrative expense to increase for the foreseeable future as we operate as an independent public company.

From time to time, we expect to issue shares of our common stock or warrants or options to purchase shares of our common stock to consultants and other service providers in exchange for services. For financial

statement purposes, we will value these shares of common stock, common stock options, and warrants at the fair value, or at the value of the services received, whichever is more reliably measurable.

Interest Income

Interest income for the year ended December 31, 2007 was $448,000 due to the interest earned on the net $15.0 million of cash paid to us for additional equity. In prior periods we had no interest income because CytRx met our funding requirements and we had no separate cash, cash equivalents or short-term investments. We expect to have interest income in future periods based on our account balances from our funding by CytRx, and potentially from additional capital we may raise in the future or that we may receive from partners.

Income Taxes

Prior to January 2007, we operated as an integral part of CytRx. The tax benefits and associated research tax credits related to the carved-out expenses benefit CytRx since the carved-out RXi activities are recorded in the consolidated financial statements of CytRx. Because the carve-out tax benefits belong to CytRx, we are not given credit for the tax losses or research and development tax credits in the accompanying financial statements. RXi, the successor company, has incurred tax losses since it began operations. A tax benefit would have been recorded for losses incurred since January 8, 2007; however, due to the uncertainty of realizing these assets, a valuation allowance was recognized which fully offset the deferred income tax assets.

Liquidity and Capital Resources

In April 2007, we issued 3,273,292 shares of common stock (valued at approximately $5.00 per share, based in part, upon the advice of the third-party valuation advisor and assuming the issuance of 462,112 shares to UMMS pursuant to our license agreements with them) in exchange for $15.0 million in cash from CytRx and the settlement of our inter-company account payable due to CytRx of approximately $2.0 million. To date, we have relied exclusively upon equity financing from CytRx and short term temporary (for periods of approximately a month) advances from CytRx to finance our business and operations. We have not had any revenue since inception nor are any revenues expected for the foreseeable future; however, it will be necessary for us to fund our operations, including general and administrative expenses as well as expenditures for research and development. We believe that we have adequate capital, in the form of cash on hand and short-term investments, to support our currently planned level of operations through the first quarter of 2009 during which time we expect to expend approximately $6.3 million on research and development activities and approximately $4.6 million on general and administrative expenses. In the future, we will be dependent on obtaining financing from third parties in order to maintain our operations and to meet our obligations to UMMS and other licensors. We currently have no commitments from any third parties to provide us with capital or additional funding. We cannot assure that additional debt or equity or other funding will be available to us on acceptable terms, or at all. If we fail to obtain additional funding when needed, we would be forced to scale back, or terminate, our operations, or to seek to merge with or to be acquired by another company.

Net Cash Flow from Operating Activities

Net cash used in operating activities was approximately $6.0 million for the year ended December 31, 2007. This use of cash resulted primarily from a net loss of $11.0 million, less the add back of non-cash items of $2.3 million related to common stock issued for license rights, $2.1 million related to stock-based compensation, $36,000 related to depreciation, $172,000 related to non cash interest earned and $689,000 related to changes in current liabilities.

Net Cash Flow from Investing Activities

Net cash used in investing activities was approximately $10.0 million for the year ended December 31, 2007, which primarily included the purchase of United States Treasury Bills held as short-term investments in

the amount of $11.8 million, the purchase of equipment and furnishings in the amount of $229,000, offset by the redemption of United States Treasury Bills held as short-term investments in the amount of $2 million.

Net Cash Flow from Financing Activities

Net cash provided by financing activities was $17.8 million for the year ended December 31, 2007, which represented proceeds of $15.5 million from the issuance of common stock, $2.0 million in cash advances from CytRx, and $330,000 from the exercise of common stock options.

Contractual Obligations

We acquire assets still in development and enter into research and development arrangements with third parties that often require milestone and royalty payments to the third party contingent upon the occurrence of certain future events linked to the success of the asset in development. Milestone payments may be required, contingent upon the successful achievement of an important point in the development life-cycle of the pharmaceutical product (e.g., approval of the product for marketing by a regulatory agency). If required by the arrangement, we may have to make royalty payments based upon a percentage of the sales of the pharmaceutical product in the event that regulatory approval for marketing is obtained. Because of the contingent nature of these payments, they are not included in the table of contractual obligations.

These arrangements may be material individually, and in the event that milestones for products covered by these arrangements are reached, the aggregate charge to expense could be material to the results of operations in any one period. In addition, these arrangements often give us the discretion to unilaterally terminate development of the product, which would allow us to avoid making the contingent payments; however, we are unlikely to cease development if the compound successfully achieves clinical testing objectives. Contractual obligations that will require future cash payments as of December 31, 2007 are as follows:

	Non-Cancelable			Cancelable	
	Operating Leases(1)	Employment Agreements(2)	Subtotal	License Agreements(3)	Total
Years ending December 31,					
2008	180	942	1,122	716	1,838
2009	105	448	553	666	1,219
2010	—	290	290	616	906
2011	—	105	105	816	921
2012	—	—	—	1,126	1,126
thereafter	—	—	—	10,325	10,325
Total	$285	$1,785	$2,070	$14,265	$16,335

(1) Operating leases are primarily facility and equipment related obligations with third-party vendors. Operating lease expenses during the years ended December 31, 2007 and 2006 were approximately $244,000 and $2,000, respectively.

(2) Employment agreement obligations include management contracts, as well as scientific advisory board member compensation agreements. Certain agreements provide for minimum salary levels, adjusted annually at the discretion of RXi's Board of Directors, as well as for minimum annual bonuses.

(3) License agreements primarily relate to our obligations with UMMS associated with RNAi and, for future periods, represent minimum annual royalty payment obligations.

We apply the disclosure provisions of Financial Accounting Standards Board ("FASB") Interpretation No. ("FIN") 45, "Guarantor's Accounting and Disclosure Requirements for Guarantees, Including Indirect Guarantees of Indebtedness of Others" ("FIN 45"), to its agreements that contain guarantee or indemnification clauses. We provide (i) indemnification of varying scope and size to certain investors, licensors and other parties for certain losses suffered or incurred by the indemnified party in connection with various types of

third-party claims; and (ii) indemnifications of varying scope and size to officers and directors against third party claims arising from the services they provide to us. These indemnifications give rise only to the disclosure provisions of FIN 45. To date, we have not incurred costs as a result of these obligations and we do not expect to incur material costs in the future, and we maintain liability insurance that is expected to be applicable to costs that may arise pursuant to these obligations. We have not accrued any liabilities in our financial statements related to these indemnifications.

Recently Issued Accounting Standards

On July 13, 2006, the FASB issued Interpretation No. 48, *Accounting for Uncertainty in Income Taxes*, an interpretation of FASB Statement No. 109 ("FIN No. 48"), to create a single model to address accounting for uncertainty in tax positions. FIN No. 48 clarifies the accounting for income taxes by prescribing a minimum recognition threshold in which a tax position be reached before financial statement recognition. FIN No. 48 also provides guidance on derecognition, measurement, classification, interest and penalties, accounting in interim periods, disclosure and transition. FIN No. 48 is effective for fiscal years beginning after December 15, 2006. We adopted FIN No. 48 as of January 1, 2007, as required. The adoption of FIN No. 48 did not have an impact on our financial position and results of operations.

In September 2006, the FASB issued Statement of Financial Accounting Standards ("SFAS") No. 157, *Fair Value Measurements* ("SFAS No. 157"). SFAS No. 157 defines fair value, establishes a framework for measuring fair value in accordance with generally accepted accounting principles, and expands disclosures about fair value measurements. SFAS No. 157 does not expand the use of fair value in any new circumstances. In February 2008, the FASB issued Staff Position No. FAS 157-1, which amended SFAS No. 157 to exclude SFAS No. 13, *Accounting for Leases* , and other accounting pronouncements that address fair value measurements for purposes of lease classification or measurement under Statement 13. However, this scope exception does not apply to assets acquired and liabilities assumed in a business combination. Also in February 2008, the FASB issued Staff Position No. FAS 157-2, which delayed the effective date of SFAS No. 157 for non-financial assets and liabilities, except those items recognized at fair value on an annual or more frequently recurring basis to fiscal years beginning after November 15, 2008 and interim periods within those fiscal years. We do not expect SFAS No. 157 will have a significant impact on our financial statements.

In February 2007, the FASB issued SFAS No. 159, *The Fair Value Option for Financial Assets and Financial Liabilities* ("SFAS No. 159"). SFAS No. 159 permits entities to choose to measure many financial assets and financial liabilities at fair value. Unrealized gains and losses on items for which the fair value option has been elected are reported in earnings. SFAS No. 159 is effective for fiscal years beginning after November 15, 2007. We do not expect SFAS No. 159 will have a significant impact on our financial statements.

In June 2007, the FASB ratified the consensus on EITF Issue No. 06-11, *Accounting for Income Tax Benefits of Dividends on Share-Based Payment Awards* ("EITF 06-11"). EITF 06-11 requires companies to recognize the income tax benefit realized from dividends or dividend equivalents that are charged to retained earnings and paid to employees for non-vested equity-classified employee share-based payment awards as an increase to additional paid-in capital. EITF 06-11 is effective for fiscal years beginning after September 15, 2007. The adoption is not expected to have a significant impact on our financial statements.

In June 2007, the FASB ratified the consensus reached on EITF Issue No. 07-3, *Accounting for nonrefundable Advance Payments for Goods or Services Received for Use in Future Research and Development Activities* ("EITF 07-3"), which requires that nonrefundable advance payments for goods or services that will be used or rendered for future research and development activities be deferred and amortized over the period that the goods are delivered or the related services are performed, subject to an assessment of recoverability. EITF 07-3 will be effective for fiscal years beginning after December 15, 2007. We do not expect the adoption of EITF 07-3 will have an impact on our financial statements.

In December 2007, the SEC issued Staff Accounting Bulletin ("SAB") No. 110 which expresses the views of the Staff regarding use of a "simplified method, as discussed in SAB No. 107, in developing an

estimate of expected term of "plain vanilla" share options in accordance with Statement of Financial Accounting Standards No. 123, *Share Based Payment*. SAB No. 110 will allow, under certain circumstances, the use of the simplified method beyond December 31, 2007 when a company is unable to rely on the historical exercise data. We do not anticipate the adoption of SAB 110 will have a material impact on our financial statements,

Off-Balance Sheet Arrangements

We have not entered into off-balance sheet financing arrangements, other than operating leases.

ITEM 7A. *QUANTITATIVE AND QUALITATIVE DISCLOSURE ABOUT MARKET RISK*

Quantitative and Qualitative Disclosures about Market Risk

The primary objective of our investment activities is to preserve our capital to fund operations. We also seek to maximize income from our investments without assuming significant risk. To achieve our objectives, we maintain a portfolio of cash equivalents and investments in a variety of securities of high credit quality. As such, our primary exposure to market risk is interest income sensitivity, which is affected by the general levels of U.S. interest rates particularly because a significant portion of our investments are in short-term debt securities issued by the U.S. government and institutional money market funds. As of December 31, 2007, we had cash, cash equivalents and short-term investments of $11.7 million. We actively monitor changes in interest rates. We have no foreign currency or commodity investments. Due to the short-term duration of our investments in cash and cash equivalents and the low risk associated with our investments in high credit quality securities, we would not expect our operating results or cash flows to be affected to any significant degree by the effect of a sudden change in market interest rates on our securities portfolio. If interest rates had varied by 100 basis points in the year ended December 31, 2007, it would not have had a material effect on our results of operations or cash flows for the period.

ITEM 8. *FINANCIAL STATEMENTS*

The financial statements of RXi included in this annual report for the periods through December 31, 2006 have been disaggregated, or "carved-out," of the financial statements of CytRx, as our "predecessor," which were audited by BDO Seidman, LLP, an independent registered public accounting firm. These carved-out financial statements form what we refer to herein as the financial statements of the predecessor, and include both direct and indirect expenses. The historical direct expenses consist primarily of the various costs for technology license agreements, sponsored research agreements and fees paid to scientific advisors. Indirect expenses represent expenses incurred by CytRx on behalf of RXi that have been allocated to RXi. The indirect expenses are based upon (1) estimates of the percentage of time spent by individual CytRx employees working on RXi matters by year and (2) allocations of various expenses associated with each employee including salary, benefits, rent associated with an employee's office space, accounting and other general and administrative expenses. The percentage of time spent by individual CytRx employees was then multiplied by the allocation of various expenses associated with those employees to develop an allocation of expense per employee and the sum of such allocations for these employees equals the total expense allocation for the year. RXi's financial information as of December 31, 2006, and 2007 and for the year ended December 31, 2007 are referred to in this annual report as the financial information of the successor, and includes expenses incurred by RXi in its RNAi therapeutic programs, as well as an allocation of corporate services provided by CytRx. In addition, the net intercompany activities between the predecessor and CytRx have been accumulated into a single caption entitled "Parent Company's Net Deficit."

The periods ended December 31, 2006 and 2005 as well as the cumulative financial information for the period from January 1, 2003 (date of inception) through December 31, 2006 for our predecessor and the financial information of the successor as of December 31, 2007 and 2006 and the cumulative financial information for the period from January 1, 2003 (date of inception) to December 31, 2007 have been audited by our independent registered public accounting firm, BDO Seidman, LLP, which also previously audited CytRx's consolidated financial statements for the years ended December 31, 2007, 2006 and 2005.

Page No.

Index to Financial Statements

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Board of Directors and Stockholders
RXi Pharmaceuticals Corporation
Worcester, Massachusetts

We have audited the accompanying statements of assets, liabilities and parent company's net deficit of the predecessor carve-out entity to RXi Pharmaceuticals Corporation (the 'Company'), a development stage company, as of December 31, 2006 and the related statements of expenses, parent company's net deficit, and cash flows for each of the two years in the period ended December 31, 2006 and the statements of expenses, parent company's net deficit and cash flows for the period from January 1, 2003 (date of inception) to December 31, 2006, and the balance sheets of the successor entity, RXi Pharmaceuticals Corporation, as of December 31, 2007 and 2006 and the related statements of expenses, stockholders' equity and cash flows for the year ended December 31, 2007 and the statements of expenses, stockholders' equity and cash flows for the period from January 1, 2003 (date of inception) to December 31, 2007. 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 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. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. Our audits included consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion. An audit also 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, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the predecessor carve-out entity to RXi Pharmaceuticals Corporation at December 31, 2006 and the results of the predecessor carve-out entity to RXi Pharmaceuticals Corporation's operations and cash flows for each of the two years in the period ended December 31, 2006 and for the period from January 1, 2003 (date of inception) to December 31, 2006, and the financial position of RXi Pharmaceuticals Corporation as of December 31, 2007 and 2006 and the results of the Company's operations and cash flows for the year ended December 31, 2007 and for the period from January 1, 2003 (date of inception) to December 31, 2007, in conformity with accounting principles generally accepted in the United States of America.

As more fully described in Note 2 to the financial statements, effective January 1, 2006, the Company adopted Statement of Financial Accounting Standard No. 123 (revised 2004), *Share-based Payment*.

/s/ BDO SEIDMAN, LLP

BDO Seidman, LLP
Los Angeles, California
April 15, 2008

RXi PHARMACEUTICALS CORPORATION

BALANCE SHEETS AS OF DECEMBER 31, 2007 AND 2006 AND STATEMENT OF ASSETS, LIABILITIES AND PARENT COMPANY'S NET DEFICIT AS OF DECEMBER 31, 2006

(A Development Stage Company)

	As of December 31,		
	2007	2006	2006
	Successor		Predecessor
	(Amounts in thousands, except per share data)		
ASSETS			
Current assets:			
Cash and cash equivalents	$ 1,763	$ 2	$ —
Short term investments, at amortized cost	9,952	—	—
Prepaid expenses	22	—	7
Total current assets	11,737	2	7
Equipment and furnishings, net	344	—	—
Deposits	66	—	50
Total assets	$ 12,147	$ 2	$ 57
LIABILITIES, STOCKHOLDERS' EQUITY AND PARENT COMPANY'S NET DEFICIT			
Current liabilities:			
Accounts payable	$ 55	$—	$ 134
Accrued expense and other current liabilities	1,037		191
Income taxes payable	25	—	—
Due to Parent	207	—	—
Total current liabilities	1,324	—	325
Commitments and contingencies (Note 9)	—	—	—
Stockholders' equity:			
Common stock, $0.0001 par value; 50,000,000 shares authorized; 12,684,432 and 1,624,278 shares issued and outstanding at December 31, 2007 and 2006, respectively	1	—	—
Additional paid-in capital	21,812	2	—
Deficit accumulated during the developmental stage	(10,990)	—	—
Total stockholders' equity	10,823	2	—
Parent company's net deficit	—	—	(268)
Total liabilities, stockholders' equity and parent company's net deficit	$ 12,147	$ 2	$ 57

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

RXi PHARMACEUTICALS CORPORATION AND PREDECESSOR CARVE-OUT

STATEMENTS OF EXPENSES
(A Development Stage Company)

	Period from January 1, 2003 (Date of Inception) to December 31, 2007	Year Ended December 31, 2007	Period from January 1, 2003 (Date of Inception) to December 31, 2006	Years Ended December 31,	
				2006	2005
	(Successor)	(Successor)	(Predecessor)	(Predecessor)	
	(Amounts in thousands, except per share data)				
Revenues	$ —	$ —	$ —	$ —	$ —
Expenses:					
Research and development expense	8,804	3,273	5,531	1,298	1,929
Common stock and stock options issued for research and development expense	120	120	—	—	—
Research and development non-employee stock-based compensation expense	2,410	1,043	1,367	212	151
Fair value of common stock issued in exchange for licensing rights	3,954	2,311	1,643	262	—
Total research and development expense	15,288	6,747	8,541	1,772	2,080
General and administrative	5,235	3,735	1,500	633	129
General and administrative employee stock-based compensation	931	931	—	—	—
Total general and administrative expense	6,166	4,666	1,500	633	129
Operating loss	(21,454)	(11,413)	(10,041)	(2,405)	(2,209)
Interest income	448	448	—	—	—
Loss before income taxes	$(21,006)	(10,965)	(10,041)	(2,405)	(2,209)
Income taxes	(25)	(25)	—	—	—
Net loss	$(21,031)	$ (10,990)	$(10,041)	$(2,405)	$(2,209)
Net loss per common share:					
Basic and diluted loss per share	$ N/A	$ (.99)	NA	NA	NA
Weighted average common shares outstanding: basic and diluted	N/A	11,113,137	NA	NA	NA

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

RXi PHARMACEUTICALS CORPORATION AND PREDECESSOR CARVE-OUT

STATEMENT OF STOCKHOLDERS' EQUITY FOR THE PERIOD FROM APRIL 3, 2006 TO DECEMBER 31, 2007 AND PARENT COMPANY'S NET DEFICIT FOR THE PERIOD FROM DECEMBER 31, 2003 TO DECEMBER 31, 2007

(A Development Stage Company)

Predecessor	Common Stock Shares Issued	Common Stock Amount	Additional Paid-In Capital	Deficit Accumulated During Development Stage	Parent Company's Net Deficit	Total
	(Amounts in thousands, except per share data)					
Balance at December 31, 2003	—	$—	$ —		$ (89)	$ (89)
Net loss	—	—	—		(3,272)	(3,272)
Net transactions with Parent	—	—	—		2,393	2,393
Balance at December 31, 2004	—	—	—		(968)	(968)
Net loss	—	—	—		(2,209)	(2,209)
Net transactions with Parent	—	—	—		2,727	2,727
Balance at December 31, 2005	—	—	—		(450)	(450)
Net Loss	—	—	—		(2,405)	(2,405)
Net transactions with Parent	—	—	—		2,587	2,587
Balance at December 31, 2006	—	$—	$ —		$ (268)	$ (268)
Successor						
Balance at April 3, 2006	—	$—	$ —	$ —		$ —
Issuance of common stock	1,624,278	—	2	—		2
Balance at December 31, 2006	1,624,278	—	2	—		2
Common stock issued to CytRx for contribution of RXi and other assets	7,040,318	1	47	—		48
Common stock issued for cash	3,273,292	—	15,348	—		15,348
Common stock issued to CytRx for reimbursement of expenses	188,387	—	978	—		978
Expenses incurred by CytRx for RXi	—	—	831	—		831
Common stock issued to UMMS for additional intellectual properties	462,112	—	2,311	—		2,311
Common stock issued to directors	30,000	—	150	—		150
Common stock issued upon exercise of stock options	66,045	—	331			331
Stock based compensation for directors and employees	—	—	1,048	—		1,048
Stock based compensation expense for services	—	—	766	—		766
Net loss	—	—	—	(10,990)		(10,990)
Balance at December 31, 2007	12,684,432	$ 1	$21,812	$(10,990)		$ 10,823

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

RXi PHARMACEUTICALS CORPORATION AND PREDECESSOR CARVE-OUT

STATEMENTS OF CASH FLOWS
(A Development Stage Company)

	Period from January 1, 2003 (Date of Inception) through December 31, 2007	Year Ended December 31, 2007	Period from January 1, 2003 (Date of Inception) through December 31, 2006	Year Ended December 31, 2006	Year Ended December 31, 2005
	(Successor)	(Successor)	(Predecessor)	(Predecessor)	(Predecessor)
	(Amounts in thousands, except per share data)				
Cash flows from operating activities:					
Net loss	$(21,031)	$(10,990)	$(10,041)	$(2,405)	$(2,209)
Adjustment to reconcile net loss to net cash used in operating activities:					
Depreciation expense	36	36	—	—	—
Non-cash interest earned	(172)	(172)			
Stock option expense	3,463	2,094	1,369	212	151
Fair value of common stock issued in exchange for licensing rights	3,954	2,311	1,643	262	—
Changes in assets and liabilities:					
Prepaid expenses	(22)	(15)	(7)	(7)	—
Accounts payable	55	(79)	134	(232)	(421)
Accrued expenses and other current liabilities	959	768	191	58	(47)
Total adjustments	8,273	4,943	3,330	293	(317)
Net cash used in operating activities	(12,758)	(6,047)	(6,711)	(2,112)	(2,526)
Cash flows from investing activities:					
Purchase of short-term investments	(11,757)	(11,757)	—	—	—
Proceeds from short-term investments	1,977	1,977			
Cash paid for purchase of equipment and furnishings	(229)	(229)			
Cash paid for lease deposit	(66)	(16)	(50)	—	(50)
Net cash used in investing activities	(10,075)	(10,025)	(50)	—	(50)
Cash flows from financing activities:					
Net proceeds from issuance of common stock	15,500	15,498	—	—	—
Net proceeds from exercise of common stock options	330	330	—	—	—
Cash advances from Parent, net	8,766	2,005	6,761	2,112	2,576
Net cash provided by financing activities	24,596	17,833	6,761	2,112	2,576
Net increase in cash and cash equivalents	1,763	1,761	—	—	—
Cash and cash equivalents at the beginning of period	—	2	—	—	—
Cash and cash equivalents at end of period	$ 1,763	$ 1,763	$ —	$ —	$ —
Supplemental disclosure of cash flow information:					
Cash received during the periods for interest	$ 274	$ 274	$ —	$ —	$ —
Supplemental disclosure of non-cash investing and financing activities:					
Settlement of corporate formation expenses in exchange for common stock	$ 978	$ 978	$ —	$ —	$ —
Allocation of management expenses	$ 551	$ 551	$ —	$ —	$ —
Equipment and furnishings exchanged for common stock	$ 48	$ 48	$ —	$ —	$ —
Acquisition of equipment and furnishings through accrued liabilities	$ 103	$ 103	$ —	$ —	$ —
Non-cash lease deposit	$ 50	$ 50	$ —	$ —	$ —

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

1. Nature of Business

RXi Pharmaceuticals Corporation ("RXi", the "Company" or the "Successor") was formed by CytRx Corporation ("CytRx" or the "Parent") and four prominent RNAi researchers, including Craig C. Mello, Ph.D., who was awarded the 2006 Nobel Prize in Medicine for his co-discovery of RNAi. The purpose of forming RXi was to act as a discovery-stage biopharmaceutical company pursuing the development of proprietary therapeutics based on RNAi for the treatment of human diseases, including certain neurodegenerative diseases, metabolic diseases and oncology. By utilizing our expertise in RNAi and the RNAi technology platform we have licensed from prominent researchers, we believe we will be able to efficiently identify lead compounds and advance towards clinical development of commercially marketable compounds. Subsequent to the formation of RXi in 2006 and until the contribution in early 2007 of various RNAi therapeutic intellectual properties and equipment and furnishings by CytRx, RXi was an inactive company with no transactions.

In 2003, CytRx entered into several technology license agreements with University of Massachusetts Medical School, or UMMS, related to RNAi technologies. CytRx subsequently entered into other RNAi-related technology agreements. Three of these sponsored research agreements were with UMMS and one of the sponsored research agreements was with Massachusetts General Hospital.

RXi was incorporated as Argonaut Pharmaceuticals, Inc., in Delaware, on April 3, 2006 by CytRx and our four scientific founders, and we changed our name to RXi Pharmaceuticals Corporation on November 28, 2006. From April 3, 2006 (date of incorporation) until January 8, 2007, no business was conducted at the RXi level. On January 8, 2007, RXi entered into a contribution agreement with CytRx under which CytRx assigned and contributed to RXi substantially all of its RNAi-related technologies and assets and we commenced operations in February 2007; these contributed assets were recorded by RXi at the historical cost basis of $48,000.

On June 19, 2007, the Company effected a 1,781.006-for-1 stock split of our outstanding common stock. All share data, unless otherwise indicated, give retroactive effect to this stock split.

Because the RNAi activities prior to 2007 were conducted by CytRx, the financial statements of RXi for the periods through December 31, 2006, have been disaggregated, or "carved-out," of the financial statements of CytRx. These carved-out financial statements form what we refer to herein as the financial statements of the "Predecessor," and include both direct and indirect expenses. The historical direct expenses consist primarily of the various costs for technology license agreements, sponsored research agreements and fees paid to scientific advisors. Indirect expenses represent expenses incurred by CytRx on behalf of RXi; that have been allocated to RXi. The indirect expenses are based upon (1) estimates of the percentage of time spent by individual CytRx employees working on RXi matters, and (2) allocations of various expenses associated with each employee including salary, benefits, rent associated with an employee's office space, accounting and other general and administrative expenses. The percentage of time spent by individual CytRx employees is then multiplied by the allocation of various expenses associated with those employees to develop an allocation of expense per employee and the sum of such relocations for these employees equals the total expense allocation for the year. RXi's financial information from and after January 8, 2007 is referred to in these financial statements as the financial information of the "Successor" and includes expenses incurred by RXi in its RNAi therapeutic programs, as well as an allocation of corporate services provided by CytRx. In addition, the net intercompany activities between Predecessor and CytRx have been accumulated into a single caption entitled "Parent Company's Net Deficit."

Management believes the assumptions underlying the allocations of indirect expenses in the carve-out financial information are reasonable; however, RXi's financial position, results of operations and cash flows

may have been materially different if it was operated as a stand-alone entity as of and for the periods presented.

Since we are a discovery-stage biopharmaceutical company, we generated no revenues during the years ended December 31, 2007, 2006 or 2005. Accordingly, for accounting purposes we are considered a development stage company.

To date, RXi's principal activities have consisted of acquiring RNAi-related assets, securing exclusive and non-exclusive rights to develop RNAi therapeutics by licensing key RNAi technologies and patent rights, developing research and clinical development plans for our RNAi therapeutic platform, assessing and negotiating licenses to additional therapeutic RNAi technology, recruiting a RNAi-focused management and scientific/clinical advisory team and completing our organizational activities.

We have not generated any revenues to date nor do we expect to generate any revenues in the foreseeable future. We believe, with the $15.0 million equity (net of $2.0 million of expense reimbursement) investment that CytRx made on April 30, 2007, that we have adequate capital, in the form of cash on hand and short-term investments, to support our currently planned level of operations through the first quarter of 2009 during which time we expect to expend approximately $6.3 million on research and development activities and approximately $4.6 million on general and administrative expenses. In the future, we will be dependent on obtaining financing from third parties in order to maintain our operations and to meet our obligations to UMMS and other licensors. We currently have no commitments from any third parties to provide us with capital or additional funding. We cannot assure that additional debt or equity or other funding will be available to us on acceptable terms, or at all. If we fail to obtain additional funding when needed, we would be forced to scale back, or terminate, our operations, or to seek to merge with or to be acquired by another company. We expect to incur significant and increasing operating losses for the foreseeable future as we advance our product candidates from discovery through pre-clinical studies and clinical trials and seek regulatory approval and potential commercialization. In addition to these increasing research and development expenses, we expect general and administrative costs to increase as we add personnel and begin to operate as a public company. We will need to generate significant revenues to achieve profitability and may never do so.

2. Summary of Significant Accounting Policies

Basis of Presentation — For the two year period ended December 31, 2006, and the period from January 1, 2003 (date of inception) to December 31, 2006, the Predecessor financial statements consist of various transactions of CytRx Corporation which were identified as direct expenses related to RNAi therapeutics and disaggregated ("carved-out") from CytRx's financial statements. In addition, various indirect costs related to RNAi therapeutics (mainly senior management and accounting) were estimated and included as part of the Predecessor carved-out financial statements. For the period from April 3, 2006 (date of incorporation) through December 31, 2007, RXi was operating as a subsidiary of CytRx. The Successor financial statements as of December 31, 2006 and 2007 and the period from April 3, 2006 (date of incorporation) to December 31, 2007 were compiled from RXi's books and records as well as an allocation of indirect costs from CytRx for overhead and general administrative costs (that have been allocated based upon estimates developed by CytRx's management and include corporate salaries, benefits, accounting, rent, and other general and administrative expenses). There are no Successor financial statements for the period from April 3, 2006 (date of incorporation) to December 31, 2006 as there was no activity.

Cash Equivalents — The Company considers all highly-liquid debt instruments with an original maturity of 90 days or less to be cash equivalents. Cash equivalents consist primarily of amounts invested in money market accounts.

Fair Value of Financial Instruments — The carrying amounts reported in the balance sheets for cash equivalents, prepaid expenses, accounts payable and accrued liabilities approximate their fair values.

Equipment and Furnishings — Equipment and furnishings are stated at cost and depreciated using the straight-line method based on the estimated useful lives (generally three to five years for equipment and furniture) of the related assets.

Impairment of Long-Lived Assets — The Company reviews long-lived assets, including finite lived intangible assets, for impairment on an annual basis, as of December 31, or on an interim basis if an event occurs that might reduce the fair value of such assets below their carrying values. An impairment loss would be recognized based on the difference between the carrying value of the asset and its estimated fair value, which would be determined based on either discounted future cash flows or other appropriate fair value methods.

Patents and Patent Application Costs — Although the Company believes that its patents and underlying technology have continuing value, the amount of future benefits to be derived from the patents is uncertain. Patent costs are therefore expensed as incurred.

Basic and Diluted Loss per Common Share — Basic and diluted loss per common share are computed based on the weighted average number of common shares outstanding. Common share equivalents (which consist of options) are excluded from the computation of diluted loss per share since the effect would be antidilutive. Common share equivalents which could potentially dilute basic earnings per share in the future, and which were excluded from the computation of diluted loss per share, totaled approximately 1.3 million shares at December 31, 2007. Because the Predecessor had no shares outstanding during the years ended December 31, 2004 through December, 31, 2006, a loss per common share could not be calculated.

Shares Reserved for Future Issuance — As of December 31, 2007, the Company has reserved approximately 1.3 million of its authorized but unissued shares of common stock for future issuance pursuant to its employee stock option plans issued to consultants and employees.

Share-based Compensation — CytRx accounted for its stock based compensation plans under the recognition and measurement provisions of Accounting Principles Board ("APB") No. 25, "Accounting for Stock Issued to Employees" ("APB 25"), and related interpretations for all awards granted to employees prior to January 1, 2006. Under APB 25, when the exercise price of options granted to employees equals the market price of the common stock on the date of grant, no compensation expense is recorded. When the exercise price of options granted to employees is less than the market price of the common stock on the date of grant, compensation expense is recognized over the service period which is typically the vesting period. CytRx did not allocate any APB 25 stock compensation expense to the Predecessor for the years ended December 31, 2005 and 2004.

The statement of expense for our Predecessor as of and for the year ended December 31, 2006, reflects the accounting for share-based payments in accordance with Statement of Financial Accounting Standard ("SFAS") 123(R) "Share-based Payment" ("SFAS 123(R)") as adopted by CytRx using the modified prospective method on January 1, 2006. Such amounts have been reduced by an estimate of forfeitures of unvested awards. Results for periods prior to January 1, 2006, have not been restated to retroactively apply SFAS 123(R).

The following table illustrates the pro forma effect on the Predecessor's net loss (net loss per share was not calculated due to the Predecessor not having any shares outstanding) as if CytRx had applied the fair value recognition of SFAS No. 123, *Accounting for Stock-Based Compensation* ("SFAS 123"), to options granted under CytRx's stock plans for the years ended December 31, 2005 and 2004. The pro forma impact of stock based employee compensation expense was allocated to the Predecessor in a similar manner as other indirect expenses. For purposes of this presentation, the value of the options is estimated using a Black-Scholes option pricing model and recognized as an expense on a straight-line basis over the options' vesting periods. Numbers presented are in thousands.

	Year Ended December 31, 2005
Net loss, as reported	$(2,209)
Total stock-based employee compensation expense determined under fair-value based method for all awards	(54)
Pro forma net loss	$(2,263)

	2005
Weighted average risk free interest rate	4.10%
Volatility factors of the expected market price of CytRx's common stock	109%
Expected lives (years)	8
Weighted average years outstanding	4.8
Dividend yields	0%

RXi adopted SFAS 123(R) using the prospective method and the guidance in the Securities and Exchange Commission's ("SEC") Staff Accounting Bulletin ("SAB") 107 relating to the adoption of SFAS 123(R). SFAS 123(R) requires the measurement and recognition of compensation expense for all share-based payment awards made to employees, non-employee directors, and consultants, including employee stock options. Stock compensation expense based on the grant date fair value estimated in accordance with the provisions of SFAS 123(R) is recognized as an expense over the requisite service period.

For stock options granted as consideration for services rendered by non-employees, the Company recognizes compensation expense in accordance with the requirements of SFAS 123(R), Emerging Issues Task Force ("EITF") Issue No. 96-18, "Accounting for Equity Instruments that are Issued to Other Than Employees for Acquiring, or in Conjunction with Selling, Goods or Services" and EITF 00-18 "Accounting Recognition for Certain Transactions involving Equity Instruments Granted to Other Than Employees," as amended.

Non-employee option grants that do not vest immediately upon grant are recorded as an expense over the vesting period of the underlying stock options. At the end of each financial reporting period prior to vesting, the value of these options, as calculated using the Black-Scholes option pricing model, will be re-measured using the fair value of the Company's common stock and the non-cash compensation recognized during the period will be adjusted accordingly. Since the fair market value of options granted to non-employees is subject to change in the future, the amount of the future compensation expense will include fair value re-measurements until the stock options are fully vested. The Company recognized $1.0 million, $474,000 and $150,000, of stock based compensation expense related to non-employee stock options for the years ended December 31, 2007, 2006 and 2005, respectively.

Valuations — During the year ended December 31, 2007, RXi entered into a number of noncash transactions with third parties in which shares were exchanged for either intellectual properties or services. These transactions included (1) the contribution by CytRx to RXi of various technologies and assets in exchange for 7,040,000 shares of common stock on January 8, 2007, which was recorded by RXi at the historical cost basis of

CytRx of $48,000, (2) the investment by CytRx in RXi of $17.0 million of cash in exchange for 3,273,000 of additional shares of common stock on April 30, 2007, (3) the contribution by UMMS to RXi of various intellectual properties in exchange for 462,000 shares of common stock on April 30, 2007 which was recorded by RXi as an in process research and development expenditure of $2,311,000, (4) the granting under the RXi Pharmaceuticals Corporation 2007 Incentive Plan ("2007 Plan") of 1,177,000 options for common stock to employees on May 23, 2007, and (5) the granting under the 2007 Plan of 105,561 options on July 11, 2007, 68,335 options on August 16, 2007, and 146,000 options on October 18, 2007 for common stock to employees.

To properly account for these transactions a value needs to be given to either the shares given up or the intellectual properties or services received, whichever is more readily determinable. Since our stock is not publicly traded, a market value for our stock is not readily available. To assist in this matter, the Board of Directors hired Sanli Pastore & Hill, Inc., an independent third party valuation firm, for the purpose of valuing the transactions at January 8, 2007, April 30, 2007, August 16, 2007, and October 18, 2007. The valuation analysis at January 8, 2007, valued the various technologies and assets contributed to RXi based upon the "reproduction cost approach." The fair market value of RXi as of April 30, 2007, August 16, 2007 and October 18, 2007 were determined based upon a combination of the reproduction cost approach used in the January 8, 2007, as well as the "market capitalization approach" and the "guidelines public company method — book value multiplier approach."

Because we are a discovery stage company and the amounts, if any, of future revenues remained uncertain and projected revenues and profits could not be made, it was determined that the reproductive cost approach was the appropriate analysis as cost approach methods are generally applicable when the subject intangible asset is newer and when it is a fungible property. The "reproduction cost" valuation method was selected, which estimates the cost to construct, at current market price as of the date of the analysis, an exact duplicate or replica of the subject intangible asset, using the same materials, production standards, design layout, and quality of workmanship as the subject intangible asset. The reproduction intangible asset will include the same adequacies, superadequacies, and obsolescence as the subject intangible asset. The reproduction cost valuation method includes analysis of five components of cost: (i) material, (ii) labor, (iii) overhead, (iv) developer's profit, and (v) entrepreneurial incentive. Because the reproductive cost approach may not reflect the earning power of new technology or the ultimate market share that may be obtained, it was determined that only limited consideration should be given to this approach and its value was weighted at 10%.

The market capitalization increase approach includes an analysis (i) of the increase in our market capitalization since the date of the announcement that CytRx had contributed its RNAi assets to us (January 8, 2007) and (ii) a comparison of CytRx's market capitalization to three other RNAi-based companies, as well as significant public announcements by CytRx occurring since January 8, 2007, and general public news announcements relating to RNAi technology since January 8, 2007 to April 30, 2007, and then to each of August 16, 2007 and October 18, 2007. Based on these factors and taking into account potential market overreaction and other news in non-RNAi operations, only limited consideration to this approach to valuation was given and its value was weighted at 10%.

The guideline public company method — book value multiplier approach involves an evaluation of market transactions in business securities that can provide objective, empirical data for developing valuation ratios to apply in a business valuation. The valuation process for RXi applies a comparative analysis of RXi with publicly traded companies in the same industry, such as Sirna Therapeutics, Inc., Alnylam Pharmaceuticals, Inc and Nastech Pharmaceuticals Co, Inc. The relationship of the market value of invested capital of each guideline company was applied to each company's respective underlying net asset value in order to obtain market value of invested capital to book value multiple. The market value of invested capital to book value multiple calculated from the guideline companies method was then applied to obtain a pre-money fair market value of our total assets. Because this method of valuation is most appropriate when comparing companies with similar operations when no future income-stream projections are available, management weighted this approach value at 80%.

As of December 31, 2007, the Company had a total of 1,335,184 outstanding options on common stock to various employees, directors, consultants and SAB Members pursuant to our 2007 Plan. These options have an exercise price of $5.00 per share as the RXi Board determined that the fair market value of the shares had not changed since the April 30, 2007, August 16, 2007 and October 18, 2007 valuations.

Research and Development Expenses — Research and development consists of direct and overhead-related research activities and are expensed as incurred. Expenditures to acquire technologies, including licenses, which are utilized in research and development and which have no alternative future use are expensed when incurred. Technology we develop for use in our products is expensed as incurred until technological feasibility has been established.

Income Taxes — Neither RXi or the Predecessor file separate income tax returns, but instead are included in the income tax returns filed by CytRx. For purposes of the Predecessor carve-out financial statements, no tax provision has been provided as the Predecessor is not a legal entity, and any tax benefits resulting from the operations of the Predecessor are included in CytRx's consolidated financial statements and income tax returns. Prior to the March 2008 distribution, the Company was included in the consolidated income tax return of CytRx Corporation. After the distribution the Company will file its own stand alone income tax returns.

RXi recognizes liabilities or assets for the deferred tax consequences of temporary differences between the tax basis of assets or liabilities and their reported amounts in the financial statements in accordance with SFAS No. 109, *Accounting for Income Taxes ("SFAS 109").* These temporary differences will result in taxable or deductible amounts in future years when the reported amounts of the assets or liabilities are recovered or settled. SFAS 109 requires that a valuation allowance be established when management determines that it is more likely than not that all or a portion of a deferred asset will not be realized. RXi evaluates the realizability of its net deferred income tax assets and valuation allowances are provided as necessary. During this evaluation, RXi reviews its forecasts of income in conjunction with other positive and negative evidence surrounding the realizability of its deferred income tax assets to determine if a valuation allowance is required. Adjustments to the valuation allowance will increase or decrease RXi's income tax provision or benefit.

Concentrations of Credit Risk — Financial instruments that potentially subject the Company to significant concentrations of credit risk consist principally of cash, cash equivalents and short-term investments. As of December 31, 2007, all of the Company's cash, cash equivalents and short-term investments were maintained in a large well-capitalized financial institution. The Company's investment policy disallows investment in any debt securities rated less than "investment grade" by national ratings services. The Company has not experienced any losses on its deposits of cash and cash equivalents or its short-term investments.

Use of Estimates — The preparation of the financial statements in accordance with United States generally accepted accounting principles requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. Significant estimates include the inputs used in the calculations of values using the Black-Scholes model for common stock options granted to employees, directors, consultants and other organizations, the estimate of common stock option forfeitures, the accrual for research and development expenses as well as commitments and contingencies. Actual results could materially differ from those estimates.

Indirect General and Administrative Allocations — Both the Predecessor and Successor have received services and support from CytRx. The Predecessor's operations and to a lesser extent the Successor were dependent upon CytRx's ability to perform these services and support functions. The costs associated with these services and support functions, which included some members of management, legal and accounting, have been allocated to the both the Predecessor and Successor indirect expenses based upon (1) estimates of the percentage of time spent by individual CytRx employees working on RXi matters by year, and (2) allocations of various expenses associated to each employee including salary, benefits, rent associated with an employee's office space, accounting and other general and administrative expenses. The percentage of time spent by individual CytRx

employees was then multiplied times the allocation of various expenses associated with the various employees to develop an allocation of expense per employee. The expense allocation per individual employee was then summed to come to the total expense allocation for the year. Corporate expense allocations were:

	For the Years Ended December 31,		
	2007 (Successor)	2006 (Predecessor) (In thousands)	2005 (Predecessor)
Executive	$285	$115	$60
Accounting	141	24	14
Legal	125	39	15
Total	$551	$178	$89

Parent Company's Net Deficit — The Parent Company's Net Deficit of the Predecessor consists of CytRx's initial investment in RXi and subsequent changes in RXi's net investment resulting from RXi being an integrated part of CytRx. All disbursements for the Predecessor were made by CytRx. In addition, CytRx allocated certain indirect general and administrative expenses to both the Predecessor and Successor as disclosed in *Indirect General and Administrative Allocations* above.

3. Recent Accounting Pronouncements

On July 13, 2006, the Financial Accounting Standards Board ("FASB") issued Interpretation No. 48, *Accounting for Uncertainty in Income Taxes*, an interpretation of FASB Statement No. 109 ("FIN No. 48"), to create a single model to address accounting for uncertainty in tax positions. FIN No. 48 clarifies the accounting for income taxes by prescribing a minimum recognition threshold in which a tax position be reached before financial statement recognition. FIN No. 48 also provides guidance on derecognition, measurement, classification, interest and penalties, accounting in interim periods, disclosure and transition. FIN No. 48 is effective for fiscal years beginning after December 15, 2006. The Company adopted FIN No. 48 as of January 1, 2007, as required. The adoption of FIN No. 48 did not have an impact on the Company's financial position and results of operations.

In September 2006, the FASB issued Statement of Financial Accounting Standards ("SFAS") No. 157, *Fair Value Measurements* ("SFAS No. 157"). SFAS No. 157 defines fair value, establishes a framework for measuring fair value in accordance with generally accepted accounting principles, and expands disclosures about fair value measurements. SFAS No. 157 does not expand the use of fair value in any new circumstances. In February 2008, the FASB issued Staff Position No. FAS 157-1, which amended SFAS No. 157 to exclude SFAS No. 13, *Accounting for Leases* , and other accounting pronouncements that address fair value measurements for purposes of lease classification or measurement under Statement 13. However, this scope exception does not apply to assets acquired and liabilities assumed in a business combination. Also in February 2008, the FASB issued Staff Position No. FAS 157-2, which delayed the effective date of SFAS No. 157 for non-financial assets and liabilities, except those items recognized at fair value on an annual or more frequently recurring basis to fiscal years beginning after November 15, 2008 and interim periods within those fiscal years. We do not expect SFAS No. 157 will have a significant impact on our financial statements.

In February 2007, the FASB issued SFAS No. 159, *The Fair Value Option for Financial Assets and Financial Liabilities* ("SFAS No. 159"). SFAS No. 159 permits entities to choose to measure many financial assets and financial liabilities at fair value. Unrealized gains and losses on items for which the fair value option has been elected are reported in earnings. SFAS No. 159 is effective for fiscal years beginning after November 15, 2007. We do not expect SFAS No. 159 will have a significant impact on our financial statements.

In June 2007, the FASB ratified the consensus on EITF Issue No. 06-11, *Accounting for Income Tax Benefits of Dividends on Share-Based Payment Awards* ("EITF 06-11"). EITF 06-11 requires companies to recognize the income tax benefit realized from dividends or dividend equivalents that are charged to retained earnings and paid to employees for non-vested equity-classified employee share-based payment awards as an increase to additional paid-in capital. EITF 06-11 is effective for fiscal years beginning after September 15, 2007. The adoption is not expected to have a significant impact on our financial statements.

In June 2007, the FASB ratified the consensus reached on EITF Issue No. 07-3, *Accounting for nonrefundable Advance Payments for Goods or Services Received for Use in Future Research and Development Activities* ("EITF 07-3"), which requires that nonrefundable advance payments for goods or services that will be used or rendered for future research and development activities be deferred and amortized over the period that the goods are delivered or the related services are performed, subject to an assessment of recoverability. EITF 07-3 will be effective for fiscal years beginning after December 15, 2007. We do not expect the adoption of EITF 07-3 will have an impact on our financial statements.

In December 2007, the SEC issued Staff Accounting Bulletin ("SAB") No. 110 which expresses the views of the Staff regarding use of a "simplified method, as discussed in SAB No. 107, in developing an estimate of expected term of "plain vanilla" share options in accordance with Statement of Financial Accounting Standards No. 123, *Share Based Payment*. SAB No. 110 will allow, under certain circumstances, the use of the simplified method beyond December 31, 2007 when a company is unable to rely on the historical exercise data. We do not anticipate the adoption of SAB 110 will have a material impact on our financial statements,

4. Short-term Investments

The Company has purchased zero coupon U.S. Treasury Bills at a discount. These securities mature within the next twelve months. They are classified as held-to-maturity and under Statement of Financial Accounting Standards No. 115, *Investments in Debt Securities,* are measured at amortized cost since the Company has the intent and ability to hold these securities to maturity. The interest income has been amortized at the effective interest rate.

5. Development Stage Supplemental Equity Disclosure

Summarized below are the Company's equity (common stock and common stock options) transactions since the Company's inception.

Type of Security	Date of Issuance	Shares of Common Stock	Dollar Amount of Consideration (In thousands)	Price per Share or Exercise Price per Share	Counter Party to Transaction	Nature of Non-Cash Consideration	Basis for Assigning Cost
Common Stock	April 3, 2006	1,624,278	$ 2	$0.002	Founders	NA	Cash
Common Stock	January 8, 2007	7,040,318	48	$0.007(A)	CytRx	Contributed Assets	Predecessor Cost
Common Stock	April 30, 2007	3,273,292	15,348	$ 5.19(B)	CytRx	NA	Cash
Common Stock	April 30, 2007	462,112	2,311	$ 5.00	UMMS	Intellectual Properties	Independent third-party valuation
Common Stock	August 18, 2007	30,000	150	$ 5.00	Directors	—	Cash
Common Stock	September 28, 2007	188,387	978	$ 5.19	CytRx	NA	Independent third-party valuation
Common Stock	November 21, 2007	66,045	331	$ 5.00	Exercise of Stock Options	NA	Cash
Sub-total Common Stock issued		12,684,432	$19,168				
Common Stock Options	May 23, 2007	461,294(C)	1,730	$ 5.00	Employees and Non-employees	Professional & Employee services	Independent third-party valuation
Common Stock Options	July 11, 2007	13,195(D)	37	$ 5.00	Employees and Non-employees	Professional & Employee services	Independent third-party valuation
Common Stock Options	August 16, 2007	4,084(E)	18	$ 5.00	Employee and Non-employees	Professional & Employee services	Independent third-party valuation
Common Stock Options	October 18, 2007	17,250(F)	28	$ 5.00	Employees and Non-employees	Professional & Employee services	Independent third-party valuation
Sub-total of Common Stock Options Vested		495,823	1,813				
Sub-total of Dollar Amount of Consideration			$20,981				
Contributed Capital(G)			831		CytRx	Allocation of Management Expenses	Cost
Additional Paid-in Capital			$21,812				

(A) Transactions between related parties are accounted for at the historical cost of CytRx, with the intellectual property which was previously expensed on CytRx's books being recorded at zero cost and equipment and furnishings being recorded at $48,000.

(B) RXi received gross proceeds of $17.0 million for the issuance of the 3,273,292 shares of common stock which equals $5.19 per share. The gross proceeds were reduced by a reimbursement to CytRx of (1) $1.3 million for RXi's pro rata share of offering costs related to the April 17, 2007 private placement conducted by CytRx to

fund its capital contribution to the Company and (2) $363,000 of expenses incurred on behalf of RXi for the year ended December 31, 2006. Net proceeds to RXi after these charges was $15.3 million or $4.69 a share.

(C) Common grant underlying options granted is 1,176,797 and the vested portion of the common stock option grants at December 31, 2007 was 461,294.

(D) Common stock underlying options granted is 105,561 and the vested portion of the common stock option grant at December 31, 2007 was 13,195.

(E) Common stock underlying options granted is 68,335 and the vested portion of the common stock option grant at December 31, 2007 was 4,084.

(F) Common stock underlying options granted is 146,000 and the vested portion of the common stock option grant at December 31, 2007 was 17,250.

(G) RXi received an additional contribution from CytRx of $551,000, which represents time and expense incurred by CytRx management in the collaboration of our financial statements, and in addition includes $280,000 of options to a SAB Member.

6. Deposits

At December 31, 2007 and 2006 (successor) and 2006 (predecessor) the Company had $66,000, $50,000 and $50,000, respectively, on deposit with landlords related to leased facilities, all of which are classified as Deposits.

7. Equipment and Furnishings, net

Prior to January 2007, CytRx outsourced all of its RNAi therapeutic research and development activities to third parties, therefore there were no laboratory equipment or furnishings used by CytRx in the development of RNAi therapeutics. On January 8, 2007, CytRx contributed general lab equipment and furnishings to RXi. The contributed general lab equipment and furnishings were valued at approximately $48,000, which was CytRx's depreciated cost basis on the date of transfer.

	As of December 31,		
	2007 (Successor)	2006 (Successor) (In thousands)	2006 (Predecessor)
Equipment and furnishings	$370	$—	$—
Less — accumulated depreciation	(26)	—	—
Property and equipment, net	$344	$—	$—

Depreciation expense for the year ended December 31, 2007 was approximately $36,000. There was no depreciation expense for the twelve month periods ended December 31, 2006 and 2005.

8. Accrued Expenses and Other Current Liabilities

Accrued expenses and other current liabilities are summarized below (in thousands).

	As of December 31,		
	2007 (Successor)	2006 (Successor) (In thousands)	2006 (Predecessor)
Professional fees	$ 397	$—	$176
Research and development costs	102	—	10
Payroll related costs	360	—	—
Equipment and furnishings	103	—	—
Rent	29	—	—
Other	46	—	5
Total accrued expenses and other current liabilities	$1,037	$—	$191

9. Commitments and Contingencies

The Company acquires assets still in development and enters into research and development arrangements with third parties that often require milestone and royalty payments based on the progress of the asset through development stages. Milestone payments may be required, for example upon approval of the product for marketing by a regulatory agency. In certain agreements, RXi is required to make royalty payments based upon a percentage of the sales. Because of the contingent nature of these payments, they are not included in the table of contractual obligations.

These arrangements may be material individually, and in the unlikely event that milestones for multiple products covered by these arrangements were reached in the same period, the aggregate charge to expense could be material to the results of operations. In addition, these arrangements often give RXi the discretion to unilaterally terminate development of the product, which would allow RXi to avoid making the contingent payments; however, RXi is unlikely to cease development if the compound successfully achieves clinical testing objectives. The Company's contractual obligations that will require future cash payments as of December 31, 2006 are as follows (in thousands):

		Non-Cancelable		Cancelable	
Years Ending December 31,	Operating Leases(1)	Employment Agreements(2)	Subtotal	License Agreements(3)	Total
2008	180	942	1,122	716	1,838
2009	105	448	553	666	1,219
2010	—	290	290	616	906
2011	—	105	105	816	921
2012	—	—	—	1,126	1,126
thereafter	—	—	—	10,325	10,325
Total	$285	$1,785	$2,070	$14,265	$16,335

(1) Operating leases are primarily facility and equipment related obligations with third party vendors. Operating lease expenses during the year ended December 31, 2007 and 2006, were approximately $264,000 and $2,000, respectively. Facility lease expenses during the twelve months ended December 31, 2005 was $2,000.

(2) Employment agreement obligations include management contracts, as well as scientific advisory board member compensation agreements. Certain agreements, which have been revised from time to time,

provide for minimum salary levels, adjusted annually at the discretion of the Compensation Committee, as well as for minimum bonuses that are payable.

(3) License agreements generally relate to our obligations with UMMS associated with RNAi and, for future periods, represent minimum annual royalty payment obligations. Included in the 2007 license obligations was an approximate $2.3 million payment made in RXi common stock to UMMS during the second quarter of 2007.

The Company applies the disclosure provisions of FASB Interpretation No. ("FIN") 45, "Guarantor's Accounting and Disclosure Requirements for Guarantees, Including Indirect Guarantees of Indebtedness of Others" ("FIN 45"), to its agreements that contain guarantee or indemnification clauses. The Company provides (i) indemnifications of varying scope and size to certain investors and other parties for certain losses suffered or incurred by the indemnified party in connection with various types of third-party claims; and (ii) indemnifications of varying scope and size to officers and directors against third party claims arising from the services they provide to us. These indemnifications give rise only to the disclosure provisions of FIN 45. To date, the Company has not incurred costs as a result of these obligations and does not expect to incur material costs in the future. Accordingly, the Company has not accrued any liabilities in its financial statements related to these indemnifications.

10. Stock Based Compensation

As of December 31, 2007, an aggregate of 2.75 million shares of common stock were reserved for issuance under the RXi Pharmaceuticals Corporation 2007 Incentive Plan, including 1,335,184 shares subject to outstanding common stock options granted under this plan and approximately 1,348,771 shares available for future grants. The administrator of the plan determines the times which an option may become exercisable. Vesting periods of options granted to date include vesting upon grant to vesting at the end of a five year period. The options will expire, unless previously exercised, not later than ten years from the grant date.

RXi issued options to purchase approximately 1,496,693 shares of its common stock during 2007. The fair value of the common stock options granted in the year listed in the table below was estimated using the Black-Scholes option-pricing model, based on the following assumptions:

	2007
Weighted average risk free interest rate	4.50%
Weighted average volatility	108.7%
Expected lives (years)	6
Expected dividend yield	0%

The fair value of RXi's common stock and RXi's expected common stock price volatility assumption is based upon a valuation conducted by Sanli Pastore & Hill, an independent third party valuation firm engaged by the RXi's Board of Directors, which determined the RXi corporate valuation and analyzed the volatility of a basket of comparable companies. The expected life assumptions were based upon the simplified method provided for under SAB 107, which averages the contractual term of RXi's options of ten years with the average vesting term of three years for an average of six years. The dividend yield assumption of zero is based upon the fact that RXi has never paid cash dividends and presently has no intention of paying cash dividends. The risk-free interest rate used for each grant was also based upon prevailing short-term interest rates. Based on CytRx's historical experience, RXi has estimated an annualized forfeiture rate of 4.0% for options granted to its employees, 2.1% for options granted senior management and no forfeiture rate for the directors. RXi will record additional expense if the actual forfeitures are lower than estimated and will record a recovery of prior expense if the actual forfeiture rates are higher than estimated. Under provisions of SFAS 123(R), RXi recorded $1.0 million of employee stock-based compensation for the year ended December 31, 2007. No amounts relating to employee stock-based compensation have been capitalized. As of December 31, 2007, there was $2.1 million of unrecognized compensation cost related to outstanding options granted to employees

that is expected to be recognized as a component of RXi's operating expenses through 2011. Compensation costs will be adjusted for future changes in estimated forfeitures.

At December 31, 2007, the unrecognized compensation expense related to unvested common stock options granted to employees and non-employee directors is expected to be recognized as expense over a weighted-average period of 1.8 years. Presented below is RXi's common stock activity:

	Stock Options 2007	Weighted Average Exercise Price 2007
Outstanding — beginning of year	—	$ —
Granted	1,496,693	5.00
Exercised	(66,045)	5.00
Forfeited	(95,464)	5.00
Outstanding — end of year	1,335,184	5.00
Exercisable at end of year	495,823	$5.00

A summary of the activity for nonvested stock options as of December 31, and changes during the year is presented below:

	Stock Options 2007	Weighted Average Grant Date Fair Value per Share 2007
Nonvested at January 1,	—	$ —
Granted	1,496,693	3.50
Vested	(495,823)	3.40
Exercised	(66,045)	3.58
Pre-vested forfeitures	(95,464)	3.58
Nonvested at December 31,	839,361	$3.54

The following table summarizes significant ranges of outstanding stock options at December 31, 2007:

Range of Exercise Prices	Number of Options	Weighted Average Remaining Contractual Life (years)	Weighted Average Exercise Price	Number of Options Exercisable	Weighted Average Contractual Life	Weighted Average Exercise Price
$5.00	1,335,184	9.43	$5.00	495,823	9.37	$5.00

The aggregate intrinsic value of outstanding options as of December 31, 2007 is negligible. The aggregate intrinsic value is calculated based on the positive difference between the closing fair market value of RXi's common stock on December 31, 2007 and the exercise price of the underlying options.

Non-employee option grants that do not vest immediately upon grant are recorded as an expense over the vesting period of the underlying stock options. At the end of each financial reporting period prior to vesting, the value of these options, as calculated using the Black-Scholes option pricing model, will be re-measured using the fair value of RXi's common stock and the non-cash compensation recognized during the period will be adjusted accordingly. Since the fair market value of options granted to non-employees is subject to change in the future, the amount of the future compensation expense will include fair value re-measurements until the stock options are fully vested. RXi used an independent third-party valuation firm to estimate the fair market value of RXi's common stock and used the common stock fair market value as an input into the calculation of fair value of the common stock options granted using the Black-Scholes option-pricing model. Under

provisions of SFAS 123(R), EITF 96-18, RXi recorded approximately $1.0 million of stock based compensation expense related to non-employee stock options for the year ended December 31, 2007 in respect of RXi.

The fair value of non-employee stock options at the date of grant was estimated based on the following assumptions:

	2007
Weighted average risk free interest rate	4.39%
Dividend yields	0%
Weighted average volatility	109.4%
Expected lives (years)	6

The fair value of RXi's common stock and RXi's expected common stock price volatility assumption is based upon Sanli Pastore & Hill, Inc.'s valuation that determined the RXi corporate valuation and analyzed the volatility of a basket of comparable companies. The expected life assumptions were based upon the simplified method provided for under SAB 107, which averages the contractual term of RXi's options of ten years with the average vesting term for an average of six years. The dividend yield assumption of zero is based upon the fact that RXi has never paid cash dividends and presently has no intention of paying cash dividends. The risk-free interest rate used for each grant was also based upon prevailing short-term interest rates.

At December 31, 2007, there remained approximately $489,000 of unrecognized compensation expense related to unvested common stock options granted to non-employees is expected to be recognized as expense over a weighted-average period of 1.8 years. Presented below is RXi's common stock activity:

	Stock Options 2007	Weighted Average Exercise Price 2007
Outstanding — beginning of year	—	$ —
Granted	357,318	5.00
Exercised	—	—
Forfeited	—	—
Outstanding — end of year	357,318	5.00
Exercisable at end of year	221,883	$5.00

11. Income Taxes

The components of federal and state income tax expense for the years ended December 31, 2007 and 2006 of the Successor were as follows (in thousands):

	As of December 31, 2007	2006
Current		
Federal	—	—
State	25	—
Deferred		
Federal	(3,520)	—
State	(1,146)	—
Total deferred	(4,666)	—
Valuation allowance	4,666	—
Total income tax expense	$ 25	$ —

The components of net deferred tax assets as of December 31, 2007 and 2006 were as follows (in thousands):

	As of December 31, 2007	2006
Net operating loss carryforwards	$ 3,028	$ —
Tax credit carryforwards	223	—
Non-qualified stock based compensation	512	—
Other	4	
Licensing deduction deferral	899	
Gross deferred tax assets	4,666	
Valuation allowance	(4,666)	—
Net deferred tax asset	$ —	$ —

The provision for income taxes differs from the provision computed by applying the Federal statutory rate to net loss before income taxes as follows (in thousands):

	Years Ended December 31, 2007	2006
Expected federal income tax benefit	$(3,945)	$ —
Non-qualified stock compensation	184	—
Effect of change in valuation allowance	4,666	—
State income tax credits	(160)	—
State income taxes after credits	(727)	—
Other	7	—
	$ 25	$ —

RXi's operating results have been included in CytRx's consolidated U.S. Federal and state income tax returns. The provision for income taxes in the year ended December 31, 2007 financial statements have been

determined on a separate income tax return basis. As of December 31, 2007, the Company had Federal and state NOL's of $7.5 million and $0.7 million, respectively, which are available to offset future taxable income and begin expiring in 2028.

Based on an assessment of all available evidence including, but not limited to the fact the RXi operating results have been included in CytRx consolidated U.S. Federal and State income tax return, the Company's limited operating history in its core business and lack of profitability, uncertainties of the commercial viability of its technology, the impact of government regulation and healthcare reform initiatives, and other risks normally associated with biotechnology companies, the Company has concluded that it is more likely than not that these net operating loss carryforwards and credits will not be realized and, as a result, a 100% deferred income tax valuation allowance has been recorded against these assets.

12. License Agreements

During the year ended December 31, 2007, RXi entered into a license agreement with Cold Spring Harbor Laboratory for shRNA (small hairpin RNA), for which we paid $50,000 and agreed to make future milestone and royalty payments upon successful development and commercialization of products, and four exclusive license agreements and an invention disclosure agreement with UMMS for which we paid cash of $453,000 and issued 462,112 shares of our common stock valued at $2.3 million, or $5.00 per share. For each RNAi product developed in connection with the license granted by CSHL, the possible aggregate milestone payments equal $2,650,000. The invention disclosure agreement has an initial term of three years and provides the option to negotiate licenses to certain RNAi technologies discovered at UMMS.

On August 29, 2007, RXi entered into a license agreement with TriLink Biotechnologies, Inc. for three RNAi chemistry technologies for all therapeutic RNAi applications, for which we paid $100,000 and agreed to pay yearly maintenance fees of $30,000, as well as future clinical milestone payments and royalty payments based on sales of therapeutic products developed from the licensed technologies.

In October 2007, we entered into a license agreement with Dharmacon, Inc. (now part of Thermo Fisher Scientific Inc.), pursuant to which we obtained an exclusive license to certain RNAi sequences to a number of target genes for the development of our rxRNA compounds. Further, we have obtained the right to license additional RNAi sequences, under the same terms, disclosed by Thermo Fisher Scientific Inc. in its pending patent applications against target genes and have received an option for exclusivity for other siRNA configurations. As consideration for this license, we paid an up-front fee of $150,000 and agreed to pay future clinical milestone payments and royalty payments based on sales of siRNA compositions developed in connection with the licensed technology.

In November 2007, we entered into a license agreement with Invitrogen IP Holdings, Inc. pursuant to which we were granted rights under four patents relating to RNA target sequences, RNA chemical modifications, RNA configurations and/or RNA delivery to cells. As consideration for this license, we paid an up-front fee of $250,000 and agreed to pay yearly maintenance fees of the same amount beginning in 2008. Further, we are obligated to pay a fee for each additional gene target added to the license as well as a fee on the first and second anniversaries of the date we were granted consent to add the gene target to the list of those covered by the license. We have also been granted, for each gene target, an option to secure pre-clinical rights and/or the clinical rights, for which we would be required to pay additional fees. Further, we are required to make future clinical milestone payments and royalty payments based on sales of therapeutic products developed from the licensed technologies.

13. Related Party Transactions

On January 8, 2007, we entered into a Contribution Agreement with CytRx under which CytRx assigned and contributed to us substantially all of its RNAi-related technologies and assets. The assigned assets consisted primarily of CytRx's licenses from UMMS and from the Carnegie Institution of Washington relating to fundamental RNAi technologies, as well as equipment situated at CytRx's Worcester, Massachusetts laboratory. In connection with the contribution of the licenses and other assets, we assumed primary responsibility for all payments to UMMS and other obligations under the contributed licenses and assets. We recorded the assigned assets at CytRx's historical cost basis of $48,000 on the date of contribution and issued to CytRx 7,040,318 shares of our common stock at $0.007 per share, which represented approximately 56% of our issued and outstanding shares of common stock.

On January 8, 2007, we entered into a letter agreement ("Reimbursement Agreement") with CytRx under which we agreed to reimburse CytRx, following our initial funding, for all organizational and operational expenses ("Formation Expenses") incurred by CytRx in connection with our formation, initial operations and funding. As of April 30, 2007, the date that CytRx contributed $17,000,000 to us in exchange for 3,273,292 shares of our common stock at approximately $5.19 per share, CytRx had advanced approximately $2,000,000 to us for which we were obligated to reimburse CytRx, and as such CytRx retained such amount from payment for the contribution as reimbursement for that advance. In addition, as part of the final settlement of the reimbursement agreement, it was agreed that we still owed CytRx $978,000 in excess of the original $2,000,000. The additional approximately $978,000 owed to CytRx was settled for 188,387 additional shares of our stock at approximately $5.19 per share, which was determined by negotiated terms set in the Reimbursement Agreement and does not necessarily reflect the fair market value of the shares.

On December 27, 2007, we entered into a letter agreement with CytRx under which we and CytRx agreed to a "fee-sharing" arrangement for expenses related to the preparation of the registration statement that included the Distribution and Award prospectuses, and our application for the listing of our common stock on the NASDAQ Capital Market. Pursuant to this agreement, we agreed to reimburse CytRx an amount equal to the sum of (i) $30,000 plus (ii) 50% of the total relevant fees and expenses paid by CytRx to certain financial services professionals, including BDO Seidman, LLP. The total amount of the expenses to be reimbursed to CytRx as of December 31, 2007 is approximately $207,000. Also under this agreement CytRx agreed to reimburse us 50% of the total relevant fees and expenses paid by us to our financial printer, our transfer agent and our legal counsel. Reimbursements for all payments made as of a mutually-determined date were to be made within five (5) days following the distribution date and any subsequent reimbursement payments will be made upon thirty (30) days' notice. In addition, CytRx continued to incur expenses on our behalf since the April 30, 2007, investment for which we reimburse them.

On February 15, 2007, we entered into a letter agreement with CytRx and certain of our current stockholders. Under the stockholders agreement, we agreed to grant to CytRx preemptive rights to acquire any new securities, as defined therein, that we propose to sell or issue so that CytRx may maintain its percentage ownership of us. The preemptive rights will become effective if CytRx owns at any time less than 50% of our outstanding shares of common stock, and will expire on January 8, 2012 or such earlier time at which CytRx owns less than 10% of our outstanding common stock. Under this letter agreement, CytRx also undertakes to vote its shares of our stock in the election of our directors and dispose of their shares of our stock in accordance with the terms of its letter agreement with UMMS described above. CytRx has further agreed in this letter agreement to approve of actions that may be adopted and recommended by our board of directors to facilitate any future financing.

On April 30, 2007, we entered into a Registration Rights Agreement with CytRx. Under the Registration Rights Agreement, we agreed, with certain exceptions, that at any time after our common stock is registered under the Exchange Act, if CytRx shall so request, to use best efforts to cause all of our shares issued to

CytRx pursuant to the Contribution Agreement to be registered under the Securities Act. All expenses incurred in connection with any such registration will be borne by us.

One of the members of our Board of Directors is the President, Chief Executive Officer and a member of the Board of Directors for CytRx.

Our current President and Chief Executive Officer ("CEO"), prior to his employment by the Company, was a consultant to RXi from August 2006 till the date of his employment. This consulting contract resulted in payments to the CEO's consulting firm of approximately $229,000, of which $154,000 was recorded in the first nine months ended September 30, 2007 and $75,000 was recorded in the year ended December 31, 2006, in consulting fees and reimbursement in the accompanying Successor and Predecessor's financial statements. As the CEO is the sole owner of the consulting firm, the approximate dollar value of his interest in this consulting contract is also approximately $229,000.

Our former Chief Financial Officer, prior to his employment by the Company, was a consultant to CytRx, working on RXi related matters from August 2006 through April 2007. This consultancy resulted in payments to the former CFO of approximately $98,000 in consulting fees and reimbursement of which $63,000 was recorded in the year ended December 31, 2007, and $35,000 was recorded in the year ended December 31, 2006, in the accompanying Successor and Predecessor's financial statements.

The Chairman of our board of directors is a partner with Troy & Gould Professional Corporation ("Troy & Gould") which has represented CytRx since 2003. Payments by CytRx to Troy & Gould for its representation of CytRx on RXi related matters and recorded in the accompanying Successor and Predecessor's financial statements for the twelve months ended December 31, 2007, 2006, and 2005 were $129,000, $18,000, and $3,000, respectively.

On February 26, 2007, we entered into Scientific Advisory Board Agreements (the "SAB Agreements"), with four of our founders. At the time of the execution of the SAB Agreements, each of the founders were beneficial owners of more than five percent of our outstanding stock. Pursuant to the SAB Agreements, on May 23, 2007, we granted to each of the founders a stock option under the 2007 Plan to purchase 52,832 shares of our common stock. In addition, under the SAB Agreements, we will grant each of the founders a stock option under the 2007 Plan to purchase 52,832 shares of our common stock on February 26, 2008, February 26, 2009 and February 26, 2010 with a per share exercise price equal to the closing price of such stock on the public market on the date of grant unless a founder terminates a SAB Agreement without good reason (as defined) or we terminate a SAB Agreement with cause (as defined) in which case no further option grants will be made to the founder. If our common stock is not publicly available on the dates specified above, our Board of Directors will grant the stock options to the founders at the first scheduled board meeting after such date and the per share exercise price of the options will be determined in good faith by our Board of Directors. All options granted pursuant to the SAB Agreements are fully vested on the date of grant and have a term of ten years. The fair value of stock options under the SAB Agreement for each founder is approximately $175,000 which was estimated using the Black-Scholes option-pricing model, based on the following assumptions. Due to the fact that we have no history of stock trading, our expected stock-price volatility assumption is based on a combination of implied volatilities of similar entities whose share or option prices are publicly traded. We used a weighted-average expected stock price volatility of 108.7%. The expected life assumption is based on a simplified method provided for under SAB 107, which averages the contractual term of the Company's options (10 years) with the ordinary vesting term (immediately). The dividend yield of zero is based on the fact that we have no present intention to pay cash dividends. The risk free rate of 4.51% used for each grant is equal to the zero coupon rate in effect at the time of the grant for instruments with similar expected life. Included in the accompanying financial statements for RXi for the year ended December 31, 2007, is $701,930 of expense related to this grant of these stock options.

Additionally, pursuant to a letter agreement between us and each founder dated as of April 30, 2007 ("SAB Letters"), in further consideration of the services to be rendered by the founders under the SAB Agreements, we granted additional stock options on May 23, 2007 under the 2007 Plan to each of the founders to purchase 26,416 shares of our common stock. Unless a founder terminates a SAB Agreement without good reason (as defined) or we terminate a SAB Agreement with cause (as defined), the options granted pursuant to the SAB Letters will fully vest from and after April 29, 2012 and will have a term of ten years from the date of grant. The fair market value of stock options under the SAB Agreement for each founder is approximately $96,000, which was estimated using the Black-Scholes option-pricing model, based on the following assumptions. Due to the fact that we have no history of stock trading, our expected stock price volatility assumption is based on a combination of implied volatilities of similar entities whose share or option prices are publicly traded. We used a weight-average expected stock-price volatility of 108.7%. The expected life assumption is based on a simplified method provided for under SAB 107, which averages the contractual term of the Company's options (10 years) with the ordinary vesting term (immediately). The dividend yield of zero is based on the fact that we have no present intention to pay cash dividends. The risk free rate of 4.55% used for each grant is equal to the zero coupon rate in effect at the time of the grant for instruments with similar expected life. Included in the accompanying financial statements for RXi for the year ended December 31, 2007, is $38,370 of expense related to these stock options.

14. Employee Benefit Plan

RXi sponsors a 401(k) retirement savings plan (the "Plan"). Participation in the Plan is available to full-time employees who meet eligibility requirements. Eligible employees may defer a portion of their salary as defined by Internal Revenue Service regulations.

15. Subsequent Events

In January 2008, we granted options to purchase 25,000 shares of common stock to each non-employee member of our board of directors. These options had an exercise price of $5.00 per share, as the RXi Board of Directors determined that the fair market value of the shares had not changed since the April 30, 2007 determination. Each of these options vest over a one year period and will expire not later than 10 years from the grant date.

In March 2008, CytRx Corporation, our largest shareholder, announced a stock distribution of our common shares to holders of CytRx common stock. All holders of CytRx common shares as of March 6, 2008 were awarded the distribution of one share of our common stock for every 20.05 shares of CytRx common stock they held. CytRx currently owns 49% of our outstanding common stock.

In March 2008, we initiated trading of our common stock on the NASDAQ Capital Markets under the symbol RXII.

In March 2008, we entered into a lease obligation for certain laboratory equipment in the amount of $35,000. The term of the lease is for two years at an interest rate of 0%. The lease includes a purchase option of $1 at the end of the lease term.

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

None

ITEM 9A. *CONTROLS AND PROCEDURES*

Evaluation of Disclosure Controls and Procedures

Rule 13a-15(e) under the Securities and Exchange Act of 1934, as amended (the "Exchange Act"), defines the term "disclosure controls and procedures" as those controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the Securities and Exchange Commission rules and forms and that such information is accumulated and communicated to the company's management, including its principal executive and principal financial officers, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosure.

In connection with its audit of our financial statements for the year ended December 31, 2007, BDO Seidman LLP, our independent registered public accounting firm, identified certain material weaknesses in our internal control over financial reporting. Pursuant to standards established by the Public Company Accounting Oversight Board, a "material weakness" is a "significant deficiency or combination of significant deficiencies that results in more than a remote likelihood that a material misstatement of the annual or interim financial statements will not be presented or detected." The material weaknesses that BDO Seidman identified were related to the timely reconciliation of our ledgers and preparation and review of our stock option expense calculations. Based on the evaluation of the effectiveness of our disclosure controls and procedures, and in light of the deficiencies described above, our Chief Executive Officer and Chief Financial Officer concluded that our disclosure controls and procedures were not effective as of December 31, 2007.

There have been no changes in our internal controls over financial reporting during the fourth quarter of the year ended December 31, 2007 that have materially affected, or are reasonably likely to materially affect, our internal controls over financial reporting.

Exemption from Management's Report on Internal Control Over Financial Reporting for 2007

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 the rules of the Securities and Exchange Commission for newly public companies.

ITEM 9B. *OTHER INFORMATION*

None

PART III

ITEM 10. *DIRECTORS AND EXECUTIVE OFFICERS OF THE REGISTRANT*

Our Directors, Executive Officers and Scientific Advisory Board Members

Our board of directors currently is comprised of five members, which is divided into three classes. Each director will serve for a term ending on the date of the third annual meeting following the annual meeting at which such director was elected, except that the initial director in Class I, Tod Woolf, will serve for a term ending on the date of the annual meeting in 2008, the initial directors in Class II, Mark J. Ahn and Stephen S. Galliker, will serve for a term ending on the date of the annual meeting in 2009, and the initial directors in Class III, Sanford J. Hillsberg and Steven A. Kriegsman, will serve for a term ending on the date of the annual

meeting in 2010, with each director to hold office until his or her successor is duly elected and qualified. The following table sets forth information as to persons who serve as our directors and executive officers:

Name	Position	Age
Sanford J. Hillsberg(1)(2)	Chairman of the Board of Directors	59
Tod Woolf, Ph.D.	President and Chief Executive Officer, Director	43
Mark. J. Ahn, Ph.D.(1)(2)(3)	Director	45
Stephen S. Galliker(1)(2)(3)	Director	61
Stephen A. Kriegsman(3)	Director	66
Stephen J. DiPalma	Chief Financial Officer and Secretary	49
Pamela Pavco, Ph.D.	Vice President of Pharmaceutical Development	51
Dmitry Samarsky, Ph.D.	Vice President of Technology and Business Development	41

(1) Member of our Nominating and Governance Committee

(2) Member of our Audit Committee

(3) Member of our Compensation Committee

The Executive Officers named above were appointed by the Board of Directors to serve in such capacities until their respective successors have been duly appointed and qualified, or until their earlier death, resignation or removal from office.

Sanford J. Hillsberg has been the Chairman of our board of directors since 2007. Mr. Hillsberg has been an attorney with Troy & Gould Professional Corporation since 1976 and is a member of the firm's Management Committee. Mr. Hillsberg was a founder and until December 2007, served as a director and Secretary of ImmunoCellular Therapeutics, Ltd., a publicly-held biopharmaceutical company formed to develop cellular therapies, including dendritic cell-based vaccines for the treatment of brain and other cancers, and its predecessor company since February 2004. Mr. Hillsberg has also served as a director of Tempra Technology, Inc., a thermal research and development company, since 1997. Mr. Hillsberg served as a director and Secretary of Duska Therapeutics, Inc., a publicly-held biopharmaceutical company, and its predecessor company from 1999 until January 2006. He previously served as a director and Vice President of Medco Research, Inc., a then publicly-held pharmaceutical company. Mr. Hillsberg is a member of the Board of Governors of Cedars-Sinai Medical Center and has also previously served as a Commissioner of the Quality and Productivity Commission of the City of Los Angeles. Mr. Hillsberg holds a B.A. degree from the University of Pennsylvania and a J.D. degree from Harvard Law School. Troy & Gould, including Mr. Hillsberg, has represented CytRx since 2003.

Tod Woolf, Ph.D. has been our President and Chief Executive Officer and a director since 2007. Dr. Woolf has 20 years of experience developing and commercializing innovative biomedical technologies. He previously worked at numerous biotechnology companies including Ribozyme Pharmaceuticals (now Sirna Therapeutics), where he co-developed a number of lead therapeutic RNA compounds and developed Genbloc^{TM} RNA technology, which was spun out to create Atugen (now called Silence Therapeutics). In 1996 he founded and served as Chief Executive Officer of Sequitur, an RNAi company acquired by Invitrogen Corporation in 2003. At Sequitur, Dr. Woolf co-invented and commercialized STEALTH RNAi, one of the most widely used second-generation RNAi research products. Also at Sequitur, he established collaborations with over a dozen major pharmaceutical companies. From 2003 through 2006, Dr. Woolf was an advisor to Invitrogen and more recently has served as an advisor to Signet Laboratories prior to its acquisition by Covance, and has advised ProNai and Praecis Pharmaceuticals. Furthermore, beginning in 2004, Dr. Woolf has served as the President and owner of IPIFINI, Inc., a consulting company focused on technology development and from 2006 to 2007, Dr. Woolf acted as a consultant to CytRx with a focus on strategic advising in relation to its RNAi assets. Dr. Woolf earned his Masters and Ph.D. in Cellular and Development Biology at Harvard University from 1987 through 1991, where he performed work in the then-nascent field of RNA therapeutics.

Mark J. Ahn, Ph.D. has been one of our directors since 2007. Dr. Ahn is Professor and Chair, Science & Technology Management with a joint appointment from the faculties of Commerce & Administration and Science, Victoria University of Wellington. He is also a Principal of Pukana Partners, Ltd., a strategic consulting firm. Prior to that he was founder, President and Chief Executive Officer and a member of the Board of Directors for Hana Biosciences from 2003 to 2007. Prior to joining Hana, he served as Vice President, Hematology and corporate officer at Genentech, Inc. where he was responsible for commercial and clinical development of the Hematology franchise from 2001 through 2003. Dr. Ahn was also employed by Amgen and Bristol-Myers Squibb Company, holding a series of positions of increasing responsibility in strategy, general management, sales and marketing, business development, and finance. He also serves on the Board of Directors of Access Pharmaceuticals. Dr. Ahn received a BA and MBA from Chaminade University, where he currently serves on the Board of Governors. He was a graduate fellow in Economics at Essex University, and has a Ph.D. from the University of South Australia. Dr. Ahn is a Henry Crown Fellow at the Aspen Institute.

Stephen S. Galliker has been one of our directors since 2007. Mr. Galliker has served as the Executive Vice President, Finance and Administration, and Chief Financial Officer of Dyax Corp. since 1999. From 1996 to 1999, Mr. Galliker was the Chief Financial Officer of Excel Switching Corporation, a developer and manufacturer of open switching platforms for telecommunications networks, and was Excel's Vice President, Finance and Administration from 1997 to 1999. From 1992 to 1996, Mr. Galliker was employed by Ultracision, Inc., a developer and manufacturer of ultrasonically powered surgical instruments, where he served as Chief Financial Officer and Vice President of Finance until 1995, when he became Ultracision's Chief Operating Officer. Mr. Galliker is also a director of Osteotech, Inc., a medical device company. Mr. Galliker is a Certified Public Accountant and received a B.S. from Georgetown University and an M.B.A. from the University of Chicago.

Steven A. Kriegsman has been one of our directors since 2006. Mr. Kriegsman has been a director and the President and Chief Executive Officer of CytRx since July 2002. He previously served as Director and Chairman of Global Genomics from June 2000 until July 2002. Mr. Kriegsman is the Chairman of the Board and Founder of Kriegsman Capital Group LLC, a financial advisory firm specializing in the development of alternative sources of equity capital for emerging growth companies in the healthcare industry. He has advised such companies as SuperGen Inc., Closure Medical Corporation, Novoste Corporation, Miravant Medical Technologies and Maxim Pharmaceuticals. Mr. Kriegsman has a B.S. degree with honors from New York University in Accounting and completed the Executive Program in Mergers and Acquisitions at New York University, The Management Institute. Mr. Kriegsman was formerly a Certified Public Accountant with KPMG in New York City. From June 2003 until February 2008, he served as a Director, and he is the former Chairman of the Audit Committee of Bradley Pharmaceuticals, Inc. In February 2006, Mr. Kriegsman received the Corporate Philanthropist of the Year Award from the Greater Los Angeles Chapter of the ALS Association and in October 2006, he received the Lou Gehrig Memorial Corporate Award from the Muscular Dystrophy Association. Mr. Kriegsman has been active in various charitable organizations including the Biotechnology Industry Organization, the ALS Association, the Los Angeles Venture Association, the Southern California Biomedical Council, and the Palisades-Malibu YMCA.

Stephen J. DiPalma, MBA has been our Chief Financial Officer since September 2007. Mr. DiPalma has over twenty years of broad experience with emerging life science companies. He was founder, President and CEO of Catalyst Oncology, Inc., a specialty diagnostic company, from 2004 until its recent merger with a public diagnostics company. From 2002 to 2004, Mr. DiPalma was the Chief Financial Officer for Milkhaus Laboratories, a drug development company, and from 1998 to 2002, he was Chief Financial Officer for Phytera, Inc., an international biotech company involved in natural products-based drug discovery. Prior to Phytera, Mr. DiPalma was the Chief Financial Officer at Aquila Biopharmaceuticals, a public biotechnology company. From 1988 to 1995, he was the co-founder and Chief Financial Officer at Athena Diagnostics, a specialty diagnostic testing firm in the neurology field that subsequently merged with a public biotech company. Mr. DiPalma began working in the healthcare industry in 1985 in financial positions for a subsidiary of Baxter International. Mr. DiPalma earned an MBA from Babson College and holds a BS in finance and

information systems from the University of Massachusetts. He has also serves on the Board of Directors of Neuroptix Corporation.

Dmitry Samarsky, Ph.D. has been our Vice President of Technology and Business Development since June 2007. From 2005 through 2007, Dr. Samarsky was with Dharmacon, Inc. (now part of ThermoFisher Scientific), where his role was to develop, support and expedite technology development for the company's RNAi platform. From 2003 through 2005, Dr. Samarsky was employed by Invitrogen, formulating partnership models and providing BioDiscovery platform solutions for the drug discovery process. From 2001 through 2003, Dr. Samarsky was employed by Sequitur, Inc. where he had the role of developing and promoting Sequitur, Inc.'s antisense and RNAi technological platforms. Dr. Samarsky received his Ph.D. in biochemistry and molecular biology from the University of Massachusetts, Amherst in 1998. He then performed postdoctoral work with Dr. Michael R. Green, a Howard Hughes Medical Institute investigator at the University of Massachusetts Medical School, Worcester. During postdoctoral training, Dr. Samarsky was awarded a three year H. Arthur Smith Fellowship for Cancer Research. Dr. Samarsky has authored many publications, including research articles, reviews, book chapters and patent applications and has frequently advised, chaired and presented at various industrial and academic conferences and symposia.

Pamela Pavco, Ph.D. has been our Vice President of Pharmaceutical Development since March 2007. Dr. Pavco brings over 16 years of research and development experience in oligonucleotides to us. From 2002 to 2006, Dr. Pavco was Senior Director, R&D Project Management at Sirna Therapeutics, previously known as Ribozyme Pharmaceuticals, where she was responsible for the discovery research and development of Sirna-027, the first chemically modified siRNA to enter into clinical trials. Dr. Pavco also managed the alliance with Allergan that was initiated to continue discovery research in the area of ophthalmology and take Sirna-027 forward into Phase 2 clinical studies. While at Sirna, Dr. Pavco served various additional roles including Director of Biology Research and Director of Pharmacology and managed numerous corporate collaborations and internal programs developing therapeutic oligonucleotides in the fields of oncology, anti-angiogenesis, Hepatitis, respiratory disease and Huntington's disease. Dr. Pavco has authored numerous scientific articles and contributed to approximately 48 patents and patent applications in the oligonucleotide therapeutics field. Dr. Pavco received a Ph.D. in Biochemistry from Virginia Commonwealth University in 1983 and did her post-doctoral work at Duke University prior to joining Sirna Therapeutics. She is a member of the American Association of Cancer Research and the Association for Research and Vision in Ophthalmology.

Section 16(a) Beneficial Ownership Reporting Compliance

Section 16(a) of the Exchange Act requires our directors, executive officers and holders of more than 10% of its shares of common stock to file with the SEC initial reports of ownership of shares of common stock and reports of changes in such ownership. The SEC's rules require such persons to furnish us with copies of all Section 16(a) reports that they file. We were not a reporting company under the Exchange Act during the fiscal year ended December 31, 2007, and therefore Section 16(a) does not apply to any transactions during this period.

Code of Ethics

On July 11, 2007, we adopted a Code of Conduct applicable to all employees, including the principal executive officer, principal financial officer and principal accounting officer. A copy of the Code of Conduct is included as an exhibit in this Form 10-K as filed with the Securities and Exchange Commission.

Stockholder Nomination

There have been no material changes to the procedures by which stockholders may recommend nominees to the board of directors.

Director Independence

Our board of directors has reviewed the materiality of any relationship that each of our directors has with us, either directly or indirectly. Based on this review, the board has determined that Messrs. Hillsberg and Galliker and Dr. Ahn are "independent directors" as defined by NASDAQ.

Committees of the Board of Directors

We are governed by our board of directors. Our board of directors has established an Audit Committee and a Compensation Committee and a standing Nominating and Governance Committee

Audit Committee

The purposes of the Audit Committee are to (a) appoint, oversee and replace, if necessary, the independent auditor, (b) to assist the board of directors' oversight of the preparation of our financial statements, our compliance with legal and regulatory requirements, the independent auditor's qualifications and independence and the performance of our internal audit function and independent auditor, and (c) to prepare the report the SEC rules require to be included in our annual proxy statement. The Audit Committee is also responsible for the resolution of disagreements between management and the auditor regarding financial reporting. The members of the Audit Committee are Mr. Galliker (chair), Mr. Hillsberg and Dr. Ahn. We believe that each member satisfies the requirements, including independence, as established by the Rules of the NASDAQ Capital Market. The board of directors has determined that Mr. Galliker is an audit committee financial expert and that he satisfies the independence requirements of the Exchange Act.

Compensation Committee

The purposes of the Compensation Committee are to establish, implement and monitor our executive compensation program philosophy and practices. The Compensation Committee seeks to ensure that the total compensation paid to our named executive officers is fair, reasonable and competitive. The responsibilities of the Compensation Committee include reviewing and approving corporate goals and objectives relevant to executive officer compensation, evaluating executive officers with respect to those goals, recommending to the board of directors the adoption of new incentive compensation plans and equity-based plans and administering the current plans, reviewing our policies concerning perquisites, including severance, recommending compensation of members of the board of directors and board committees and reviewing and discussing the compensation discussion and analysis to be included in our SEC filings.

The members of the Compensation Committee are Mr. Kriegsman (chair), Dr. Ahn and Mr. Galliker. We believe that each of Dr. Ahn and Mr. Galliker satisfies the requirements, including independence, as established by the Rules of the NASDAQ Capital Market. We are relying upon the phase-in compliance period provided in Rule 4350(a)(5) of the NASDAQ Capital Market for Mr. Kriegsman's membership on the Compensation Committee.

The Compensation Committee charter is posted on the corporate governance section of our website at *http://www.rxipharma.com*. No material on our website is part of this annual report statement.

Nominating and Governance Committee

The purposes of the Nominating and Governance Committee are to (a) identify individuals qualified to become members of the board of directors, (b) select, or recommend that the board of directors select, the director nominees for the next annual meeting of stockholders, (c) develop and recommend to the board of directors a set of applicable corporate governance principles, and (d) oversee the evaluation of the board of directors and its dealings with management and appropriate committees of the board of directors. The responsibilities of the Nominating and Governance Committee include establishing a policy under which stockholders may recommend a candidate for consideration for nomination as a director, articulating expectations to each director, reviewing practices and policies with respect to directors, reviewing functions, duties and composition of the committees of the board of directors, reviewing polices with respect to significant

issues of corporate public responsibility, recommending processes for annual evaluations of the performance of the board of directors and Chief Executive Officer, reporting questions of possible conflicts of interest of board members and overseeing the maintenance and presentation to the board of directors of management's plans for succession to senior management positions. The members of the Nominating and Governance Committee are Dr. Ahn (chair), Mr. Galliker and Mr. Hillsberg. We believe that each member satisfies the requirements, including independence, as established by the Rules of the NASDAQ Capital Market.

ITEM 11. *EXECUTIVE COMPENSATION*

Compensation Discussion and Analysis

Overview of Executive Compensation Program

The Compensation Committee of our board of directors has responsibility for establishing, implementing and monitoring our executive compensation program philosophy and practices. The Compensation Committee seeks to ensure that the total compensation paid to our named executive officers is fair, reasonable and competitive. Generally, the types of compensation and benefits provided to named executive officers will be similar to those provided to any other officers. The individuals who serve as our Chief Executive Officer and Chief Financial Officer during 2007, as well as the other officers included in the table of directors and executive officers included in Item 10 of Part III of this annual report, are referred to as the "named executive officers."

Compensation Philosophy and Objectives

The Compensation Committee believes that an effective executive compensation program should provide base annual compensation that is reasonable in relation to individual executive's job responsibilities and reward the achievement of both annual and long-term strategic goals of our company. The Committee uses annual and other periodic cash bonuses to reward an officer's achievement of specific goals and stock options as a retention tool and as a means to align the executive's long-term interests with those of our stockholders, with the ultimate objective of improving stockholder value. The Committee evaluates both performance and compensation to maintain our company's ability to attract and retain excellent employees in key positions and to assure that compensation provided to key employees remains competitive relative to the compensation paid to similarly situated executives of comparable companies. To that end, the Compensation Committee believes executive compensation packages provided by us to our named executive officers should include both cash and share based compensation.

Because of the size of our company, the small number of executive officers in our company, and our company's financial priorities, the Compensation Committee has decided not to implement or offer any pension benefits, deferred compensation plans, or other similar plans for our executive officers. Accordingly, the components of the executive compensation consist of salary, year-end cash bonuses awarded based on the Compensation Committee's subjective assessment of each individual executive's job performance during the past year, stock option grants to provide executives with longer-term incentives, and may include occasional special compensation awards (either cash or stock options) to reward extraordinary efforts or results.

As a biopharmaceutical company engaged in developing potential products that, to date, have not generated significant revenues and are not expected to generate significant revenues or profits for at least several years, the Compensation Committee also takes our company's financial and working capital condition into account in its compensation decisions.

Role of Executive Officers in Compensation Decisions

The Compensation Committee oversees compensation decisions for the named executive officers and recommends compensation increases, bonuses and equity awards for our officers to our board of directors, which has final approval authority. Decisions regarding the non-equity compensation of any other officers would be proposed by the Chief Executive Officer and approved by the Compensation Committee.

The Compensation Committee and the Chief Executive Officer intend to annually review the performance of each named executive officer (other than the Chief Executive Officer, whose performance is reviewed only by the Compensation Committee). The conclusions reached and recommendations based on these reviews, including with respect to salary adjustments and annual award amounts, will be presented to our board of directors, who can exercise its discretion in modifying any recommended adjustments or awards to executives.

Setting Executive Compensation

Based on the foregoing objectives, the Compensation Committee has structured our company's annual cash and incentive-based cash and non-cash executive compensation to motivate executives to achieve the business goals set by our company, to reward the executives for achieving such goals, and to retain the executives. In doing so, the Compensation Committee has not employed outside compensation consultants. There is no pre-established policy or target for the allocation between either cash or non-cash incentive compensation or between the executive compensation components as described below.

2007 Executive Compensation Components

For 2007, the principal components of compensation for the executive officers are:

- base salary,
- performance-based cash compensation, and
- long-term equity incentive compensation.

Our compensation philosophies with respect to each of these components, including the basis for the compensation awarded to our named executive officers, are discussed below. In addition, although each element of compensation described below is considered separately by the Compensation Committee, the Compensation Committee's determination of each individual component takes into account the aggregate compensation package for each named executive officer.

Base Salary

The Company provides named executive officers and other employees with base salary to compensate them for services rendered during the fiscal year. Base salary ranges for the named executive officers are determined for each executive based on his or her position and responsibility. The base salaries of our named executive officers are reviewed annually by the Compensation Committee as part of the company's performance review process, as well as upon a change in job responsibility. Merit-based increases to salaries of our named executive officers will be based on the Compensation Committee's assessment of the individual's performance, and will be approved by our board of directors.

During its review of base salaries for executives, the Compensation Committee will primarily consider:

- the negotiated terms of each executive employment agreement,
- internal review of the executive's compensation, both individually and relative to other executive officers, and
- individual performance of the executive.

All of our current named executive officers were hired by us in 2007. The chart below sets forth the initial base salaries that were established for each of our named executive officers and the start date (and end date, if applicable) of employment for such officers.

Named Executive Officer	Base Salary for 2007	Term of Employment
Dr. Tod Woolf	$250,000	February 22, 2007 — present
Mr. Stephen DiPalma	$220,000	August 28, 2007 — present
Dr. Pamela Pavco	$198,000	March 7, 2007 — present
Dr. Dmitry Samarsky	$170,000	June 25, 2007 — present
Mr. James Warren	$200,000	May 23, 2007 — August 31, 2007

On February 22, 2007, we hired Dr. Tod Woolf as our President and Chief Executive Officer and established his base salary of $250,000 on an annualized basis. Dr. Woolf's base salary was approved by the Board, which at that time consisted solely of Mr. Kriegsman, and was negotiated based on Dr. Woolf's prior experience, his prior levels of compensation, competitive market factors and the amount of salary that our board of directors believed would be required to induce Dr. Woolf to join us.

Upon the Compensation Committee's recommendation, our board of directors approved the base salaries of Dr. Pavco, Dr. Samarsky, Mr. DiPalma and Mr. Warren as indicated in the chart above upon each officer's respective employment with us. For each of these officers, the base salaries were negotiated based on each officer's respective prior experience, prior levels of compensation, competitive market factors, the compensation packages of our other officers and the amount of salary that the Compensation Committee believed would be required to induce the officer to join us. No adjustments to these base salaries were made in 2007.

Performance-Based Compensation

The Compensation Committee has established an incentive compensation program with defined performance targets related to the achievement of corporate goals and objectives. Because our company currently does not generate revenues and has not commercially released any products, the Compensation Committee bases its performance and achievement compensation awards on the achievement of product development targets and milestones, effective fund-raising efforts, and effective management of personnel and capital resources, among other criteria. Currently, Mr. DiPalma and Dr. Samarsky are the only named executive officers for whom performance compensation awards are integrated into the terms of their employment agreements. As described in "Executive Compensation — Employment Agreements", Mr. DiPalma's top performance compensation award would be 30% of Mr. DiPalma's annual base salary and Dr. Samarsky's top performance compensation award would be 16.5% of Dr. Samarsky's annual base salary. The incentive compensation program established by the Compensation Committee provides for performance compensation awards ranging from 10% to 35% of annual base salary, and all full-time permanent employees are eligible to potentially receive performance compensation awards, depending on the Company's performance and the performance of the individual.

Long-Term Equity Incentive Compensation

Our long-term incentive compensation consists of the grant of stock options to all full-time permanent employees of the Company. The stock option program assists the Company to:

- establish the link between the creation of stockholder value and long-term executive incentive compensation,
- provide an opportunity for increased equity ownership by executives,
- function as a retention tool because of the vesting features included in all options granted by the Compensation Committee, and
- maintain competitive levels of total compensation.

We normally grant stock options to new employees when they join our Company based upon their position with us and their relevant prior experience. The options granted by our board of directors generally vest periodically over a period of three or four years of the ten-year option term. Upon termination of employment, employees have a 90-day period within which vested options may be exercised, except during

any severance period and except in the case of death (subject to a one-year limitation). Prior to the exercise of an option, the holder has no rights as a stockholder with respect to the shares subject to such option, including voting rights and the right to receive dividends or dividend equivalents. In addition to the initial option grants, our board of directors may grant additional options to retain, reward, or provide incentive for, our employees. In any determination of additional stock option grants, the Compensation Committee also considers individual and general corporate performance, which may include the attainment of product development milestones and attaining other annual corporate goals and objectives, comparative share ownership levels, the amount of equity awards, if any, previously granted to the executive, the vesting of such awards and total compensation awarded to each employee.

We expect that we will continue to provide new employees with initial option grants in the future to provide long-term compensation incentives and will continue to rely on performance-based and retention grants to provide additional incentives for current employees. Additionally, in the future, the Compensation Committee and our board may consider awarding additional or alternative forms of equity incentives, such as grants of restricted stock, restricted stock units and other performance-based awards. As discussed below, in the past, we have awarded common stock options at an exercise price equal to the RXi common stock fair market value of $5.00, based on the determination by the RXi Board of Directors that the valuation of the Company has not changed since the valuation of April 30, 2007, as discussed above in "Management's Discussion and Analysis of Financial Condition and Results of Operation — Critical Accounting Policies and Estimates — Valuation of Common Stock." It is our policy to award common stock options at an exercise price equal to the closing price of our common stock on the date of the grant. In certain limited circumstances, the Compensation Committee may recommend the grant of common stock options to an executive at an exercise price in excess of the closing price of the common stock on the grant date. For purposes of determining the exercise price of common stock options, the grant date is deemed to be the date on which the board of directors approves the common stock option grant.

We have no program, practice or plan to grant common stock options to our executive officers, including new executive officers, in coordination with the release of material nonpublic information. We also have not timed the release of material nonpublic information for the purpose of affecting the value of common stock options or other compensation to our executive officers, and we have no plan to do so.

In light of recent changes to the SEC's rules regarding executive compensation disclosure, we intend to consider whether it may be advisable to adopt formal policies and procedures regarding the granting of stock options.

During the year ended December 31, 2007, we have granted Dr. Woolf, Mr. DiPalma, Mr. Warren, Dr. Pavco and Dr. Samarsky each common stock options pursuant to their employment agreements under our 2007 Incentive Plan (described in more detail below). These common stock options were approved by our board and vest monthly and/or quarterly over three or four years, provided that each respective employee remains in our employ through such vesting periods. We granted Dr. Woolf 316,994 common stock options on May 23, 2007, 158,509 common stock options to Mr. Warren on May 23, 2007, 145,311 common stock options to Dr. Pavco on May 23, 2007, 105,561 common stock options to Dr. Samarsky on June 11, 2007 and 100,000 common stock options to Mr. DiPalma on October 18, 2007. Only Dr. Woolf and Mr. Warren's common stock options were intended to vest on a monthly basis, this vesting schedule was a product of negotiations between us and these officers at the time of their employment. The amounts of common stock options to be granted to the named executive officers were determined by the considerations mentioned in this section and individual negotiations with the named executive officers.

Ownership Guidelines

We have no requirement that each named executive officer maintain a minimum ownership interest in our company.

Retirement Plans, Perquisites and Other Personal Benefits

We have adopted a tax-qualified employee savings and retirement plan, the 401(k) Plan, for eligible United States employees. Eligible employees may elect to defer a percentage of their eligible compensation in the 401(k) Plan, subject to the statutorily prescribed annual limit. We may make matching contributions on behalf of all participants in the 401(k) Plan in an amount determined by our board of directors. We may also make additional discretionary profit sharing contributions in amounts as determined by the board of directors, subject to statutory limitations. Matching and profit-sharing contributions, if any, are subject to a vesting schedule; all other contributions are at all times fully vested. We intend the 401(k) Plan, and the accompanying trust, to qualify under Sections 401(k) and 501 of the Internal Revenue Code so that contributions by employees to the 401(k) Plan, and income earned (if any) on plan contributions, are not taxable to employees until withdrawn from the 401(k) Plan, and so that we will be able to deduct our contributions, if any, when made. The trustee under the 401(k) Plan, at the direction of each participant, invests the assets of the 401(k) Plan in any of a number of investment options.

We do not provide any of our executive officers with any perquisites or other personal benefits, other than benefits that we offer Dr. Woolf provided for in his employment agreement. See "Executive Compensation — Employment Agreements" below.

Termination-Based Compensation

We have agreements in place with our named executive officers that provide for acceleration of option vesting and severance payments upon termination of such officer's employment or a change of control of our company. In the event of a change of control, as defined, and as more fully described below in "Executive Compensation — Potential Payments upon Termination or Change of Control," certain provisions allow for acceleration of vesting in full of the options granted in such employment agreement. Pursuant to the change of control provisions in Dr. Pavco and Dr. Samarsky's employment agreements and as more fully described below in "Executive Compensation — Potential Payments upon Termination or Change of Control," if such officer is terminated due to a change of control, each is entitled to immediate vesting of the greater of (a) 50% of all unvested options or (b) 12 months of unvested options, as well as any accrued but unpaid salary and unused vacation time as of the date of termination, twelve months' of salary from the date of termination and continued participation at our cost in our employer sponsored group benefit plans in which the officer was participating as of the date of termination.

Compensation Committee Report

We have reviewed and discussed the Compensation Discussion and Analysis with management. Based on these reviews and discussions, we recommended to the Board that the Compensation Discussion and Analysis be included in this annual report on Form 10-K for the fiscal year ended December 31, 2007 for filing with the Securities and Exchange Commission.

Respectfully submitted,

Compensation Committee
Steven A. Kriegsman, Chairman
Mark J. Ahn
Stephen S. Galliker

Summary Compensation Table

The following table shows the compensation paid or accrued during the fiscal years ended December 31, 2007 and 2006 to (1) our Chief Executive Officer, (2) our Chief Financial Officer, (3) our former Chief Financial Officer, and (4) our two most highly compensated executive officers, other than our President and

Chief Executive Officer and our Chief Financial Officer. Amounts included under Options awards below represent the fair value of the award calculated under SFAS 123(R).

Name and Principle Position	Year	Salary	(1) Bonus	Option Awards	All Other Compensation	Total
Tod Woolf, Ph.D.	2006	$ —			$115,830(2)	$115,830
President and Chief Executive Officer	2007	$216,347	$87,500	$236,433	$ 33,302(3)	$573,582
Stephen J. DiPalma	2007	$ 76,396	$30,000	$ 47,893	$ 201(4)	$154,490
Chief Financial Officer and Secretary						
James Warren	2006				$ 45,900(5)	$ 45,900
Former Chief Financial Officer and Secretary	2007	$ 68,718	$ —	$253,045(9)	$113,721(6)	$435,484
Pamela Pavco, Ph.D.	2007	$162,762	$38,522	$104,390	$ 29,677(7)	$335,351
Vice President of Pharmaceutical Development						
Dmitry Samarsky, Ph.D.	2007	$ 86,961	$20,907	$ 50,556	$ 302(8)	$158,726
Vice President of Technology and Business Development						

(1) Year-end bonuses were accrued at December 31, 2007 and paid in January 2008.

(2) Consists of $115,830 in consulting fees paid by CytRx Corporation.

(3) Consists of $33,000 in consulting fees paid by CytRx Corporation and $302 in life insurance premiums paid by us.

(4) Consists of $201 in life insurance premiums paid by us.

(5) Consists of $45,900 in consulting fees paid by CytRx Corporation.

(6) Consists of $61,170 in consulting fees paid by CytRx Corporation, $50,000 in salary continuation paid by us following Mr. Warren's termination on August 31, 2007, $2,400 in benefit continuation paid by us following Mr. Warren's termination ($151 of this amount consisted of life insurance premiums) and $151 in life insurance premiums paid by us during Mr. Warren's employment with us.

(7) Consists of $29,375 in consulting fees paid by CytRx Corporation and $302 in life insurance premiums paid by us.

(8) Consists of $302 in life insurance premiums paid by us.

(9) Mr. Warren exercised these options on November 30, 2007.

RXi Pharmaceuticals Corporation's 2007 Incentive Plan

The RXi Pharmaceutical Corporation 2007 Incentive Plan, (the "2007 Incentive Plan"), was adopted by our board of directors on February 23, 2007 and approved by our stockholders on June 19, 2007. Under this plan, we may grant incentive common stock options, nonqualified stock options and restricted and unrestricted stock awards. A maximum of 2,750,000 shares of common stock are currently authorized for issuance under our 2007 Incentive Plan. As of December 31, 2007, 1,335,184 shares were subject to outstanding options under this plan, and 1,348,771 shares were available for future grant under this plan. The board of directors has appointed its Compensation Committee to act as the administrator of our 2007 Incentive Plan.

Subject to board approval, the administrator has the power to select the participants, establish the price, terms and conditions of each option, issue shares upon option exercises and interpret option agreements, and the administrator may at any time modify or amend the 2007 Incentive Plan in any respect, except where stockholders' approval is required by law or where such termination or modification or amendment affects the rights of an optionee under a previously granted option and such optionee's consent has not been obtained.

In the event of a change of control in which there is an acquiring or surviving entity, the administrator may provide for the assumption or substitution of some or all outstanding awards by the acquiror or survivor. In the absence of an assumption or substitution, each stock option will become fully exercisable prior to the transaction on a basis that gives the holder of the stock option a reasonable opportunity as determined by the administrator, to participate as a stockholder in the transaction following exercise, and the stock option will terminate upon consummation of the transaction. In the case of restricted stock, the administrator may require that any amounts delivered, exchanged or otherwise paid in respect of such stock in connection with the transaction be placed in escrow or otherwise made subject to such restrictions as the board of directors deems appropriate.

Immediately upon termination of employment of an employee, the unvested portion of any stock option will terminate and the balance, to the extent exercisable, will remain exercisable for the lesser of (i) a period of three months (90 days) or (ii) the period ending on the latest date on which such stock option could have been exercised without regard to this provision. The 2007 Incentive Plan provides exceptions for the vesting of options upon an individual's death or if the administrator determines that the termination of employment resulted for reasons that cast discredit on the individual.

Grants of Plan-Based Awards

The following table shows information regarding grants of equity awards during the fiscal year ended December 31, 2007 held by the executive officers named in the Summary Compensation Table.

Name	Grant Date	All Other Option Awards: Number of Securities Underlying Options (#)	Exercise or Base Price of Option Awards ($/Share)	Grant Date Fair Value of Stock and Option Awards
Tod Woolf, Ph.D. President and Chief Executive Officer	5/23/2007	316,994	$5.00	$1,135,314
Stephen J. DiPalma Chief Financial Officer and Secretary	10/18/2007	100,000	$5.00	$ 383,140
James Warren Former Chief Financial Officer and Secretary	5/23/2007	158,509(1)	$5.00	$ 567,700
Pamela Pavco, Ph.D. Vice President of Pharmaceutical Development	5/23/2007	145,311	$5.00	$ 530,312
Dmitry Samarsky, Ph.D. Vice President of Technology and Business Development	7/11/2007	105,561	$5.00	$ 381,592

(1) Represents the full number of shares granted to Mr. Warren in 2007. His employment terminated on August 31, 2007 and, pursuant to the terms of his employment agreement, he was entitled to the number of vested shares that he would have been entitled to for the full term of his employment agreement, or 66,045 shares. Mr. Warren exercised his options for 66,045 shares on November 30, 2007, for a total purchase price of $330,225.

Outstanding Equity Awards at Fiscal Year-End

The following table shows vested and unvested stock award grants outstanding on December 31, 2007, the last day of our fiscal year, to each of the executive officers named in the Summary compensation table:

	Option Awards			
Name	Number of Securities Underlying Unexercised Options (#) Exercisable	Number of Securities Underlying Unexercised Options (#) Unexercisable	Option Exercise Price ($)	Option Expiration Date
Tod Woolf, Ph.D.(1) ..... President and Chief Executive Officer	61,709	255,285	$5.00	5/23/2017
Stephen J. DiPalma(2) ..... Chief Financial Officer and Secretary	12,500	87,500	$5.00	10/18/2017
Pamela Pavco, Ph.D.(3) ..... Vice President of Pharmaceutical Development	27,246	118,065	$5.00	5/23/2017
Dmitry Samarsky, Ph.D.(4) ..... Vice President of Technology and Business Development	13,195	92,366	$5.00	7/11/2017

(1) The stock option grant to Dr. Woolf vests in 36 equal monthly installments of 8,804 shares beginning on June 23, 2007.

(2) The stock option grant to Mr. DiPalma vests in 16 equal quarterly installments of 6,250 shares beginning on November 28, 2007.

(3) The stock option grant to Dr. Pavco vests in 15 equal quarterly installments of 9,081.94 shares beginning on June 7, 2007, with a final installment of 9,081.90 shares vesting on March 7, 2011.

(4) The stock option grant to Dr. Samarsky vests in 16 equal quarterly installments of 6.25% of the shares underlying his stock option grant beginning on September 25, 2007; all installments will vest in an amount rounded down to nearest whole share except for the last installment which will be rounded up to equal the aggregate number of the then remaining unvested shares under the stock option grant.

Option Exercises and Stock Vested

The following table presents certain information concerning the exercise of options by one of the named executive officers during the fiscal year ended December 31, 2007.

	Option Awards	
Name	Number of Shares Acquired on Exercise (#)	Value Realized on Exercise ($)
James Warren ..... Former Chief Financial Officer and Secretary	66,045	$330,255

Pension Benefits

We do not have any qualified or non-qualified defined benefit plans.

Nonqualified Defined Compensation

We do not have any nonqualified defined compensation plans.

Potential Payments Upon Termination or Change of Control

The following table sets forth (a) quantitative estimates of the benefits that would accrue to each of our named executive officers if his or her employment is terminated without cause or if such employee terminates his or her employment for good reason (as more fully discussed for each individual officer below) on

December 31, 2007 and (b) the value of accelerated vesting of stock options in the event of a change of control (whether or not employment is terminated upon such change in control). Amounts below reflect potential payments pursuant to the employment agreements for such named executive officers.

Name and Principle Position	Salary Continuation (Termination)	Benefit Continuation (Termination)	Value of Accelerated Option Vesting (Termination)	Total (Termination)	Value of Accelerated Option Vesting Upon a Change in Control
Tod Woolf, Ph.D. ..... President and Chief Executive Officer	$250,000	$14,500	$449,000	$713,500	$978,098
Stephen J. DiPalma ..... Chief Financial Officer and Secretary	$110,000	$ 7,300	$ —	$117,300	$335,248
Pamela Pavco, Ph.D.(1) ..... Vice President of Pharmaceutical Development	$198,000	$ 2,100	$157,200	$357,300	$226,178
Dmitry Samarsky, Ph.D(1) ..... Vice President of Technology and Business Development	$ 85,000	$ 1,800	$ 57,200	$144,000	$176,945
James Warren(2) ..... Former Chief Financial Officer and Secretary	$ 50,000	$ 2,400	$141,458	$193,858	NA

(1) Each of Drs. Pavco and Samarsky are entitled to specified benefits in the event his or her employment is terminated without cause or he or she terminates his or her employment for good reason following a change in control, as further described below.

(2) Mr. Warren's employment with us was terminated as of August 31, 2007 and the amounts and values in the table above are the actual amounts and values received by Mr. Warren upon termination.

Tod Woolf, Ph.D.

Upon termination of Dr. Woolf's employment by us without cause (as defined) or by Dr. Woolf with good reason (as defined), he is entitled to payment of: (a) any accrued but unpaid salary and unused vacation as of the date of his termination and any unpaid bonus that may have been previously awarded to him prior to such date, both of which are due and payable upon the effective date of his termination, (b) an amount, due and payable within 10 days following his termination, equal to his annual base salary for the period of time which is equal to or the earlier of either (i) the 12-month anniversary of his termination date or (ii) the remainder of the term of the agreement but in no event less than six months and (c) continued participation, at our expense, during the six-month period in any of our sponsored group benefit plans in which Dr. Woolf was participating as of the date of termination. In addition, any options issued to Dr. Woolf under the 2007 Incentive Plan that would have vested through the earlier of (i) the 12-month anniversary of his termination date or (ii) the remainder of the term of the agreement but in no less than six months following the date of termination, will vest and become exercisable as of the date of his termination without cause.

Furthermore, in the event that either (a) a covered transaction, as defined in our 2007 Incentive Plan,occurs or (b) CytRx votes its shares of our common stock to elect individuals who are (i) employees, officers or directors of CytRx, (ii) employees, officers or directors of any entity that has a contractual business relationship with CytRx, or (iii) employees, officers, directors of any entity that has a contractual business relationship with any officer or director of CytRx to constitute a majority of our board of directors, any options issued to Dr. Woolf will vest in full and become exercisable. The fair value of stock options that would vest as a result of any of these events occurring is approximately $978,098. The fair value of the options, based on the following assumptions, was estimated using the Black-Scholes option-pricing model. Due to the fact that we have no history of stock trading, our company's expected stock-price volatility assumption is based on a combination of implied volatilities of similar entities whose share or option prices are publicly traded. We used a weighted-average expected stock-price volatility of 108.7%. The expected life

assumption is based on a simplified method provided for under SAB No. 107 ("SAB 107") regarding the Staff's interpretation of SFAS 123(R), which averages the contractual term of our options (10 years) with the ordinary vesting term (three years). The dividend yield of zero is based on the fact that we have no present intention to pay cash dividends. The risk-free rate of 4.55% used for each grant is equal to the zero coupon rate in effect at the time of the grant for instruments with similar expected life. Dr. Woolf's severance payments will only be triggered in the event that his employment is terminated by us without cause or by Dr. Woolf with good reason, which, for purposes of his employment agreement, means any of the following: (i) a material reduction in Dr. Woolf's duties, position, or responsibilities in effect immediately prior to such reduction, (ii) the reduction of Dr. Woolf's base salary or bonus opportunity by more than 5% relative to his salary and bonus opportunity in effect immediately prior to such reduction, (iii) a material reduction by us in the kind or level of benefits to which Dr. Woolf is entitled immediately prior to such reduction with the result that Dr. Woolf's overall benefits package is significantly reduced, (iv) without Dr. Woolf's express written consent, he is relocated to a facility or location more than 35 miles from our current facility in Worcester, Massachusetts, or (v) CytRx votes its shares of our common stock to elect individuals who are affiliates of CytRx to constitute a majority of our board of directors.

Stephen DiPalma

Upon termination of Mr. DiPalma's employment by us without cause (as defined) or by Mr. DiPalma with good reason (as defined), he is entitled to payment of: (a) any accrued but unpaid salary and unused vacation as of the date of his termination, (b) six months' salary from the date of termination (this period shall be referred to as the "Severance Period") in the form of salary continuation; and (c) continued participation, at our expense, during the Severance Period in any of our sponsored group benefit plans in which Mr. DiPalma was participating as of the date of termination.

In the event that Mr. DiPalma were to be terminated by us without cause, the value of his severance package at December 31, 2007, including salary and benefits is approximately $117,300. Mr. DiPalma's severance payments will only be triggered in the event that his employment is terminated by us without cause or by Mr. DiPalma with good reason, which, for purposes of his employment agreement, means any of the following: (i) a material reduction in Mr. DiPalma's compensation or benefits, and/or (ii) any change in Mr. DiPalma's position or title that is not agreeable to Mr. DiPalma. In addition to the payments upon termination of Mr. DiPalma, all options issued to Mr. DiPalma under his employment agreement will vest in full and become exercisable as to all of the shares covered thereby upon the occurrence of a covered transaction as defined in our 2007 Incentive Plan. The fair value of stock options that would vest as a result of a covered transaction is approximately $335,000. The fair value of the options, based on the following assumptions, was estimated using the Black-Scholes option-pricing model.

Due to the fact that we have no history of stock trading, our company's expected stock-price volatility assumption is based on a combination of implied volatilities of similar entities whose share or option prices are publicly traded. We used a weighted-average expected stock-price volatility of 109.4%. The expected life assumption is based on a simplified method provided for under SAB 107, which averages the contractual term of our options (10 years) with the ordinary vesting term (three years). The dividend yield of zero is based on the fact that we have no present intention to pay cash dividends. The risk-free rate of 4.39% used for each grant is equal to the zero coupon rate in effect at the time of the grant for instruments with similar expected life.

Pamela Pavco, Ph.D.

Upon termination of Dr. Pavco employment without cause (as defined) by us or by Dr. Pavco as a result of an involuntary termination, she is entitled to payment of (a) any accrued but unpaid salary and unused vacation as of the date of her termination, (b) her salary through March 7, 2008 if during the first six months of the initial term, 12 months' salary from the date of termination if between six and 18 months after March 27, 2007, no less than six and no more than 12 months' salary from the date of termination if between 18 and 24 months after March 27, 2007, and six months' salary then in effect if more than 24 months after

March 27, 2007 and (c) continued participation, at our expense, during the severance period (as defined) in any of our sponsored group benefit plans in which Dr. Pavco was participating as of the date of termination.

Additionally, any options issued to Dr. Pavco under our 2007 Incentive Plan, that would have vested during the severance period will vest and become exercisable as of the date of her termination without cause or as a result of involuntary termination. Furthermore, upon the occurrence of a covered transaction, as defined in our 2007 Incentive Plan, all options issued to Dr. Pavco under the 2007 Incentive Plan, will vest and become exercisable. In the event that Dr. Pavco was terminated from the Company without cause at December 31, 2007, the value of her severance package would be approximately $357,300, including salary and benefits of approximately $200,100 and the fair value of stock options that would vest as a result of this termination of approximately $157,200. In addition to the payments upon termination of Dr. Pavco, all options issued to Dr. Pavco under her employment agreement will vest in full and become exercisable as to all of the shares covered thereby upon the occurrence of a covered transaction as defined in our 2007 Incentive Plan. The fair of stock options that would vest as a result of a covered transaction is approximately $226,000. The fair value of the options, based on the following assumptions, was estimated using the Black-Scholes option-pricing model. Due to the fact that we have no history of stock trading, our expected stock-price volatility assumption is based on a combination of implied volatilities of similar entities whose share or option prices are publicly traded. We used a weighted-average expected stock-price volatility of 108.7%. The expected life assumption is based on a simplified method provided for under SAB 107, which averages the contractual term of the Company's options (ten years) with the ordinary vesting term (four years). The dividend yield of zero is based on the fact that we have no present intention to pay cash dividends. The risk-free rate of 4.55% used for each grant is equal to the zero coupon rate in effect at the time of the grant for instruments with similar expected life.

Dr. Pavco's severance payments will only be triggered in the event that her employment is terminated by us without cause or by Dr. Pavco herself as a result of an involuntary termination, which, for purposes of her employment agreement, means any of the following: (a) our breach of any material term of the employment agreement; provided that the first occasion of any particular breach shall not constitute such cause unless we have failed to cure such breach within 60 days after receiving written notice from Dr. Pavco stating the nature of such breach (b) a reduction in Dr. Pavco's salary (c) a reduction in Dr. Pavco's title, (d) the reduction of Dr. Pavco's duties from those typically assigned to a Vice President of a similarly situated biotechnology or pharmaceutical company.

In addition to the above, in the event we undergo a change of control (as defined) and Dr. Pavco's employment is terminated by us or by Dr. Pavco for involuntary termination, within one year after the change of control (other than for cause (as defined)), then: (i) the greater of (a) 50% of Dr. Pavco's unvested options shall vest immediately, or (b) 12 months' unvested options shall vest immediately, and (ii) Dr. Pavco will be entitled to (a) any accrued but unpaid salary and unused vacation time as of the date of such termination, (b) 12 months' of salary from the date of termination, payable in accordance with our normal payroll practice, and (c) continued participation, at our expense and cost, during those 12 months in any of our sponsored group benefit plans in which Dr. Pavco was participating as of the date of termination. In the event that Dr. Pavco was terminated following a change of control, the value of salary and benefits Dr. Pavco would be entitled to receive during those 12 months would be approximately $200,100. As any options held by Dr. Pavco's at the time of the change of control would vest immediately, the accelerated vesting provisions described above would only apply to options that may be issued to her after the change of control. Because the terms of any such options are unknown, the current fair value of stock options that would vest as a result of such termination cannot be calculated.

Dmitry Samarsky, Ph.D.

Upon termination of Dr. Samarsky employment without cause (as defined), he is entitled to payment of: (a) any accrued but unpaid salary and unused vacation as of the date of his termination (from the current year), (b) six (6) months' salary from the date of termination (this period shall be referred to as the 'Severance Period") in the form of salary continuation; and (c) continued participation, at our expense, during the Severance Period in any of our sponsored group benefit plans in which Dr. Samarsky was participating as of

the date of termination. In the event that Dr. Samarsky's employment was terminated from the Company without cause at December 31, 2007, the value of his severance package would be approximately $144,000, including salary and benefits of approximately $86,800 and the fair value of stock options that would vest as a result of this termination of approximately $57,200.

Upon the occurrence of a covered transaction, as defined in the 2007 Incentive Plan, any options issued to Dr. Samarsky under our 2007 Incentive Plan will fully vest and become exercisable. The fair value of stock options that would vest as a result of a covered transaction is approximately $177,000, which was estimated, based on the following assumptions, using the Black-Scholes option-pricing model. Due to the fact that we have no history of stock trading, our expected stock-price volatility assumption is based on a combination of implied volatilities of similar entities whose share or option prices are publicly traded. We used a weighted average expected stock-price volatility of 109.4%. The expected life assumption is based on a simplified method provided for under SAB 107, which averages the contractual term of our options (10 years) with the ordinary vesting term (4 years). The dividend yield of zero is based on the fact that we have no present intention to pay cash dividends. The risk-free rate of 4.39% used for each grant is equal to the zero coupon rate in effect at the time of the grant for instruments with similar expected life.

Employment Agreements

Tod Woolf, Ph.D.

We have entered into an employment agreement with Dr. Woolf under which he is engaged to continue his employment as our President and Chief Executive Officer through December 31, 2008. Dr. Woolf is entitled under his employment agreement to receive an annual base salary of $250,000. On May 23, 2007, after our initial funding and pursuant to the terms of his employment agreement, we granted Dr. Woolf an option to purchase 316,994 shares of our common stock at an exercise price of the then fair market value of $5.00 per share. See discussion above in "Management's Discussion and Analysis of Financial Condition and Results of Operation — Critical Accounting Policies and Estimates — Valuation of Common Stock." This option has a term of ten years and will vest in equal monthly installments over three years, subject to accelerated vesting if any of the following occur: (a) a covered transaction, as defined in the 2007 Incentive Plan, occurs or (b) CytRx votes its shares of our stock to elect individuals who are (i) employees, officers or directors of CytRx, (ii) employees, officers or directors of any entity that has a contractual business relationship with CytRx, or (iii) employees, officers, directors of any entity that has a contractual business relationship with any officer or director of CytRx to constitute a majority of our board of directors. Dr. Woolf also may be eligible for an annual discretionary bonus, which will be determined in our sole discretion. Under Dr. Woolf's employment agreement, CytRx agrees to indemnify and hold Dr. Woolf and IPIFINI, Inc., an entity affiliated with him, harmless for any claims which arise from his services as our President and Chief Executive Officer prior to the effective date of his employment agreement. Provisions in Dr. Woolf's agreement related to payments upon termination are described above in "Executive Compensation — Potential Payments Upon Termination or Change of Control."

Stephen DiPalma

We have entered into an employment agreement with Mr. DiPalma under which he is engaged to serve as our Chief Financial Officer. Mr. DiPalma is entitled under his employment agreement to receive an annual base salary of $220,000 and an annual performance bonus for the achievement of certain company and employee performance goals to be established by the Compensation Committee. The bonus for top performance against such established goals will be 30% of Mr. DiPalma's annual base salary. Pursuant to the terms of his employment agreement, on October 18, 2007 we granted Mr. DiPalma an option to purchase 100,000 shares of our common stock at an exercise price of the then fair market value of $5.00 per share. See discussion above in "Management's Discussion and Analysis of Financial Condition and Results of Operation — Critical Accounting Policies and Estimates — Valuation of Common Stock." The option will have a term of ten years and will vest and become exercisable in 16 equal quarterly installments beginning on August 28, 2007, subject to accelerated vesting in the event of a covered transaction, as defined in our 2007

Incentive Plan. Provisions in Mr. DiPalma's agreement related to payments upon termination are described above in "Executive Compensation — Potential Payments Upon Termination or Change of Control."

Pamela Pavco, Ph.D.

We have entered into an employment agreement with Dr. Pavco under which she is engaged to serve as our Vice President of Research and Development or Vice President of Pharmaceutical Development for a term of one year. Dr. Pavco is entitled under her employment agreement to receive an annual base salary of $198,000. On May 23, 2007, after the initial funding and pursuant to the terms of her employment agreement, we granted Dr. Pavco an option to purchase 145,311 shares of our common stock at an exercise price of the then fair market value of $5.00 per share. See discussion above in "Management's Discussion and Analysis of Financial Condition and Results of Operation — Critical Accounting Policies and Estimates — Valuation of Common Stock." The option will have a term of ten years and will vest and become exercisable in 16 equal quarterly installments beginning on June 7, 2007, subject to accelerated vesting in the event of a covered transaction, as defined in our 2007 Incentive Plan. Provisions in Dr. Pavco's agreement related to payments upon termination, a covered transaction and a change of control are described above in "Executive Compensation — Potential Payments Upon Termination or Change of Control."

Dmitry Samarsky, Ph.D.

We have entered into an employment agreement with Dr. Samarsky under which he is engaged to serve as our Vice President of Technology and Business Development. Dr. Samarsky is entitled under his employment agreement to receive an annual base salary of $170,000 and a performance bonus for the achievement of certain performance goals, with the target for top performance set at 16.5%. On June 11, 2007, we granted Dr. Samarsky an option to purchase 105,561 shares of our common stock at an exercise price of the then fair market value of $5.00 per share. See discussion above in "Management's Discussion and Analysis of Financial Condition and Results of Operation — Critical Accounting Policies and Estimates — Valuation of Common Stock." The option will have a term of ten years and will vest as to 6.25% of such shares on September 25, 2007 and on each of the next 15 quarterly anniversaries thereafter, subject to accelerated vesting in the event of a covered transaction, as defined in our 2007 Incentive Plan, occurs. Provisions in Dr. Samarsky's agreement related to payments upon termination, change of control or upon a covered transaction are described above in "Executive Compensation — Potential Payments Upon Termination or Change of Control."

James Warren

We entered into an employment agreement with Mr. Warren under which he was engaged to serve as our Chief Financial Officer for a term of one year, however, as of August 31, 2007, Mr. Warren has resigned. Mr. Warren was entitled under his employment agreement to receive an annual base salary of $200,000. On May 23, 2007, after our initial funding and pursuant to the terms of his employment agreement, we granted Mr. Warren an option to purchase 158,509 shares of our common stock at an exercise price of the then fair market value of $5.00 per share. See discussion above in "Management's Discussion and Analysis of Financial Condition and Results of Operation — Critical Accounting Policies and Estimates — Valuation of Common Stock." This option had a term of ten years. Immediately upon the grant, 8/48ths of the option vested and became immediately exercisable. As of the date of Mr. Warren's resignation, the options issued to him under our 2007 Incentive Plan that would have vested prior to April 30, 2008, or 66,045 common stock options, have vested. Provisions in Mr. Warren's agreement that related to payments upon termination and a covered transaction are described above in "Executive Compensation — Potential Payments Upon Termination or Change of Control." We may seek to negotiate and enter into written employment agreements with one or more of our other officers. The terms of such employment agreements have not been determined, and there is no assurance as to whether or on what terms we will be able to enter into such employment agreements.

Director Compensation

In the discretion of the board of directors, each director may be paid such fees for his services as a director and be reimbursed for his reasonable expenses incurred in the performance of his duties as director as the board of directors determines from time to time.

The following table sets forth a summary of the compensation paid to certain of our directors in 2007, other than Dr. Woolf. Amounts included under Options awards below represent the fair value of the award calculated under SFAS 123(R).

Name	Fees Earned or Paid in Cash ($)	Option Awards ($)	All Other Compensation ($)	Total ($)
Mark. J. Ahn, Ph.D.	$48,000	$143,678	$—	$191,678
Stephen S. Galliker	$60,500	$143,678	$—	$204,178
Sanford J. Hillsberg	$60,250	$143,678	$—	$203,928
Steven A. Kriegsman	$39,000	$143,678	$—	$182,678

Cash Compensation

Our board of directors has approved a director compensation plan that provides that each director who is not an employee will receive the following cash compensation for service on our board of directors and committees of our board of directors:

- an annual retainer fee of $10,000, payable quarterly,
- an annual retainer fee of $12,000 for the chairperson of each committee of our board of directors other than the audit committee, payable quarterly,
- an annual retainer fee of $20,000 for the chairperson of the audit committee of our board of directors, payable quarterly,
- an annual retainer fee of $32,000 for the Chairman of the board of directors, payable quarterly,
- a fee of $2,000 per board meeting attended by the director ($1,000 if attendance is telephonic), and
- a fee of $1,500 per committee meeting attended by the director ($750 if attendance is telephonic).

Equity Compensation

Each director who is not an employee was granted, on May 23, 2007, a ten-year nonqualified stock option under the 2007 Incentive Plan to purchase 50,000 shares of our common stock at an exercise price equal to $5.00, as discussed above in "Management's Discussion and Analysis of Financial Condition and Results of Operation — Critical Accounting Policies and Estimates — Valuation of Common Stock." These options will vest in four equal quarterly installments, beginning on March 26, 2007 and ending December 31, 2007, and will be exercisable for two years following a director's termination of service as a member of the board of directors, unless the director is terminated for cause.

In addition, each non-employee director will receive an annual grant of an option, commencing on January 1, 2008, exercisable for 25,000 shares at an exercise price equal to the fair market value of our common stock on the grant date, vesting quarterly over one year with a ten-year term. These options will be exercisable for two years following termination of service as a member of the board of directors, unless the director is terminated for cause.

Reimbursements

Directors will be reimbursed for their expenses incurred in attending board of directors, committee and stockholder meetings, including those for travel, meals and lodging.

Indemnification Agreements

We have entered into director indemnification agreements with each of our directors. Consistent with the indemnification rights that will be provided to all of our directors under our amended and restated certificate of incorporation, we will indemnify and hold harmless each director to the fullest extent permitted or authorized by the Delaware General Corporation Law in effect on the date of the agreement or as such laws may be amended or replaced to increase the extent to which a corporation can indemnify its directors.

Tax and Accounting Implications

Deductibility of Executive Compensation

As part of its role, the Compensation Committee reviews and considers the deductibility of executive compensation under Section 162(m) of the Internal Revenue Code, which provides that corporations may not deduct compensation of more than $1,000,000 that is paid to certain individuals. We believe that compensation paid to our executive officers generally is fully deductible for federal income tax purposes.

Accounting for Share-Based Compensation

We account for share-based compensation in accordance with the requirements of SFAS 123(R). This accounting treatment has not significantly affected our compensation decisions.

Compensation Committee Interlocks and Insider Participation in Compensation Decisions

There are no "interlocks," as defined by the Securities and Exchange Commission, or SEC, with respect to any member of the compensation committee. Mr. Kriegsman (chair), Dr. Ahn and Mr. Galliker are the current members of the Compensation Committee, and Mr. Kriegsman was the sole board member in 2006. None of Mr. Kriegsman, Dr. Ahn or Mr. Galliker have ever served as an officer of the Company or acted in such capacity.

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

The following tables set forth information with respect to the beneficial ownership of our common stock as of March 1, 2008 by:

- any person known by us to be the beneficial owner of 5% or more of our common stock, including any "group" as that term is defined in the Exchange Act,
- each director, our named executive officers identified in the "Management-Executive Compensation" section above, and
- all of our directors and executive officers as a group.

Beneficial ownership is determined in accordance with SEC rules, and generally includes voting or investment power with respect to securities. Shares of common stock subject to options, warrants and convertible securities that are currently exercisable or convertible within 60 days are deemed to be outstanding and to be beneficially owned by the person holding the options, warrants or convertible securities for the purpose of computing the percentage ownership of the person, but are not treated as outstanding for the purpose of computing the percentage ownership of any other person.

The information below is based on the number of shares of our common stock beneficially owned by each person or entity at March 1, 2008 and the number of shares subject to any options and warrants granted to these individuals that are exercisable within 60 days of March 1, 2008, which are indicated by footnote.

Name of Beneficial Owner	Amount and Nature of Beneficial Ownership	Percentage of Outstanding Shares
CytRx Corporation(1)	6,268,881	49.4%
Tod Woolf, Ph.D.(2)	96,859	*
Stephen J. DiPalma(3)	12,500	*
James Warren(4)	66,045	*
Pamela Pavco, Ph.D.(5)	36,327	*
Dmitry Samarsky, Ph.D.(6)	19,792	*
Mark J. Ahn, Ph.D.(7)	66,250	*
Stephen S. Galliker(7)	66,250	*
Sanford J. Hillsberg(7)(8)	66,250	*
Steven A. Kriegsman(9)	265,834	2.1%
All executive officers and directors as a group — 8 persons(10)	696,107	5.5%

* Represents less than 1% of the outstanding shares of our common stock.

(1) The address for CytRx is 11726 San Vicente Boulevard, Suite 650, Los Angeles, California 90049.

(2) Consists of 96,859 shares of common stock underlying stock options exercisable within 60 days of March 1, 2008.

(3) Consists of 12,500 shares of common stock underlying stock options exercisable within 60 days of March 1, 2008.

(4) Mr. Warren exercised his option to purchase 66,045 shares of common stock on November 30, 2007 for a total purchase price of $330,225.

(5) Consists of 36,327 shares of common stock underlying stock options exercisable within 60 days of March 1, 2008.

(6) Includes 19,792 shares of common stock underlying stock options exercisable within 60 days of March 1, 2008.

(7) Includes 56,250 shares of common stock underlying stock options exercisable within 60 days of March 1, 2008.

(8) The shares shown do not include shares owned by Troy & Gould Professional Corporation.

(9) Includes 56,250 shares of common stock underlying stock options and exercisable within 60 days of March 1, 2008. Mr. Kriegsman is the CEO and a director of CytRx, but acting alone, he has neither voting nor investment power with respect to the shares beneficially owned by CytRx. As a result, Mr. Kriegsman disclaims beneficial ownership of such shares.

(10) Includes 390,478 shares of common stock underlying stock options exercisable within 60 days of March 1, 2008.

Equity Compensation Plan Information

Plan Category	Number of Securities to be Issued Upon Exercise of Outstanding Options, Warrants and Rights	Weighted-Average Exercise of Outstanding Options, Warrants and Rights	Number of Securities Remaining Available for Future Issuance Under Compensation Plans (Excluding Securities Related in (a))
Equity compensation plans approved by security holders	**1,335,184**	**$5.00**	**1,348,771**
Equity compensation plans not approved by security holders	—	—	—
Total	**1,335,184**	**$5.00**	**1,348,771**

We established the Equity Based Compensation Plan on June 19, 2007. The Equity Based Compensation Plan provides for grants of stock options and stock-based awards to our employees, directors, and consultants. Stock options issued in connection with the Equity Based Compensation Plan are granted with an exercise price per share equal to the fair market value of a share of our common stock at the date of grant. All stock options have ten-year maximum terms and vest, either quarterly or annually and all within four years of grant date. The total number of shares of common stock issuable under the Equity Based Compensation Plan is 2,750,000. At December 31, 2007, there were 1,349,000 shares available for grant under the Equity Based Compensation Plan.

ITEM 13. *CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS*

Arrangements with CytRx Corporation

We were incorporated in April 2006 by CytRx and four founding members of our scientific advisory board for the purpose of pursuing the development or acquisition of RNAi-related technologies and assets. We have entered into the following agreements with CytRx.

Contribution Agreement of January 8, 2007

On January 8, 2007, we entered into a contribution agreement with CytRx under which CytRx assigned and contributed to us substantially all of its RNAi-related technologies and assets. The assigned assets consisted primarily of CytRx's licenses from UMMS and from the Carnegie Institution of Washington relating to fundamental RNAi technologies, as well as equipment situated at CytRx's Worcester, Massachusetts, laboratory. In connection with the contribution, we assumed primary responsibility for all payments to UMMS and other obligations under the licenses and other assets contributed to us and issued to CytRx 7,040,318 shares of our common stock at approximately $2.45 per share, which represented approximately 85% of our outstanding shares of common stock immediately following the issuance. The number of shares of our common stock issued to CytRx and the price at which such shares were sold was determined as a result of negotiations among our management (comprised at that time of Dr. Woolf and Mr. Warren), CytRx and our other founding shareholders regarding the relative share ownership of CytRx and any other founding shareholder following the contribution, and did not necessarily bear any relation to the fair value of the RXi assets or of our common stock. For a discussion of the valuation for financial accounting purposes of our assets and the fair market value of our shares as of January 8, 2007, see "Management's Discussion and Analysis of Financial Condition and Results of Operation — Critical Accounting Policies and Estimates — Valuation of Common Stock." The actual fair market value of the contributed technologies and assets may be different. The cost to CytRx of the contributed assets acquired by CytRx during the period starting January 8, 2005, through January 1, 2007, was approximately $277,600. These contributed assets consist of payments for licenses of intellectual properties, property and furniture but excludes payments for sponsored research agreements, legal costs to acquire intellectual properties and other research and development expenses related to RNAi during the period.

Reimbursement Agreements

On January 8, 2007, we also entered into a letter agreement with CytRx under which we agreed to reimburse CytRx, following our initial funding, for all organizational and operational expenses incurred by CytRx in connection with our formation and initial operations, and to bear or reimburse CytRx for an allocable share of any investment banking fees, placement agent fees and other offering expenses incurred by CytRx in connection with our fundraising activities. In connection with the April 30, 2007 contribution agreement with CytRx described below in this section under "Contribution Agreement of April 30, 2007," we reimbursed CytRx in accordance with this letter agreement. There are no further payments or obligations owed in accordance with this letter agreement.

On December 27, 2007, we entered into a letter agreement with CytRx under which we and CytRx agreed to a "fee-sharing" arrangement for expenses arising from the preparation of the registration statement that included the Distribution and Award prospectuses, and our application for the listing of our common stock on the NASDAQ Capital Market. Pursuant to this agreement, we agreed to reimburse CytRx an amount equal to the sum of (i) $30,000 plus (ii) 50% of the total relevant fees and expenses paid by CytRx to certain financial services professionals, including BDO Seidman, LLP. The total amount of the expenses to be reimbursed to CytRx as of December 31, 2007 is approximately [$207,000]. Also under this agreement CytRx agreed to reimburse us 50% of the total relevant fees and expenses paid by us to our financial printer, our transfer agent and our legal counsel. Reimbursements for all payments made as of a mutually-determined date were to be made within five (5) days following the distribution date and any subsequent reimbursement payments will be made upon thirty (30) days' notice.

UMMS Agreements

As an inducement to UMMS to enter the new licenses and the invention disclosure agreement with us described above under the heading "Business — License Agreements," on January 10, 2007, CytRx entered into a letter agreement with UMMS regarding our management. Under the letter agreement, CytRx agreed that, during the term of our new UMMS licenses, CytRx will vote their shares of our common stock for the election of our directors and take other actions to ensure that a majority of our board of directors are independent of CytRx. CytRx's letter agreement with UMMS became effective upon CytRx's investment in us of $17,000,000, as described below in this section under "Contribution Agreement of April 30, 2007." Under this letter agreement, if CytRx owns at any time a majority of our outstanding voting power, CytRx agreed that it will reduce its ownership interest in our capital stock to less than a majority as soon as reasonably practicable.

Stockholder and Preemptive Rights Agreement

On February 15, 2007, we entered into a letter agreement with CytRx and certain of our current stockholders. Under the stockholders agreement, we agreed to grant to CytRx preemptive rights to acquire any new securities, as defined therein, that we propose to sell or issue so that CytRx may maintain its percentage ownership of us. The preemptive rights will become effective if CytRx owns at any time less than 50% of our outstanding shares of common stock, and will expire on January 8, 2012, or such earlier time at which CytRx owns less than 10% of our outstanding common stock. Under this letter agreement, CytRx also undertakes to vote its shares of our stock in the election of our directors and dispose of their shares of our stock in accordance with the terms of its letter agreement with UMMS described above. CytRx has further agreed in this letter agreement to approve of actions that may be adopted and recommended by our board of directors to facilitate any future financing.

Registration Rights Agreement

On April 30, 2007, we entered into a registration rights agreement with CytRx. Under this agreement, we agreed, upon request by CytRx, to use best efforts to cause all of our shares issued to CytRx pursuant to the two contribution agreements to be registered under the Securities Act, with certain exceptions, with all expenses incurred in connection with any such registration will be borne by us.

Contribution Agreement of April 30, 2007

On April 30, 2007, we entered into a contribution agreement with CytRx under which CytRx invested in us $17.0 million in exchange for 3,273,292 shares of our common stock. We used $2.0 million of this amount to reimburse CytRx for the estimated amount of expenses that had been incurred by CytRx as of April 30, 2007 pursuant to the January 8, 2007 reimbursement agreement described above. We agreed in this contribution agreement that the actual amount of such expenses incurred by CytRx would be subsequently determined and that, to the extent the actual expenses were greater or less than $2.0 million, we would issue to CytRx additional shares of our common stock, or CytRx would return to us for cancellation some number of its shares of our common stock, as the case may be, utilizing the same valuation of our shares used in determining the number of shares issued to CytRx pursuant to this contribution agreement. In September 2007, the actual expenses incurred by CytRx were finally determined to be approximately $3.0 million, and on September 25, 2007, we issued to CytRx 188,387 shares of our common stock as reimbursement of the excess expenses.

The number of shares of our common stock issued to CytRx pursuant to the April 30, 2007 contribution agreement was determined based upon a "pre-money" valuation of RXi of approximately $45.0 million, or approximately $5.00 per share; however, the actual fair value of our common stock may be different than $5.00 per share. This valuation was determined as a result of negotiations between CytRx and our management based, in part, upon the further valuation advice from the third-party valuation advisor originally retained by management of CytRx in connection with the January 8, 2007 contribution of assets and assuming the issuance of 462,112 shares to UMMS pursuant to our license agreements with them. For a detailed discussion of the valuation of the assets of RXi and the fair market value of our shares as of April 30, 2007, see "Management's Discussion and Analysis of Financial Condition and Results of Operation — Critical Accounting Policies and Estimates — Valuation of Common Stock."

Relationships with Employees

Prior to his employment as President and Chief Executive Officer by RXi, Dr. Woolf was a consultant to CytRx with respect to strategic matters regarding its RNAi assets from August 2006 through his ownership of IPIFINI, Inc. This consulting contract resulted in payments to IPIFINI, Inc. of approximately $229,000 in consulting fees reimbursement. As Dr. Woolf is the sole owner of IPIFINI, Inc., the approximate dollar value of his interest in this consulting contract is also approximately $229,000. While serving as the Chief Executive Officer of Sequitur, which was acquired by Invitrogen in 2003, Dr. Woolf helped develop a product which is now the subject of a license agreement between us and Invitrogen Corporation. Pursuant to Dr. Woolf's agreement with Invitrogen, he and his wife are entitled to payments equal to approximately 7.9%, and other members of his immediate family are entitled to approximately 0.6%, of all therapeutic revenue Invitrogen receives through licensing any intellectual property acquired from Sequitur, which payments related to RXi licenses to date have totaled approximately $20,000 paid to Dr. Woolf, and include all such future revenues paid to Invitrogen by us.

Prior to being employed as our Chief Financial Officer, Mr. Warren was a consultant to CytRx, working on RXi related matters from August 2006 through April 2007. This consultancy resulted in payments to Mr. Warren of approximately $98,000 in consulting fees and reimbursement.

We have entered into employment agreements with all of our named executive officers. For a detailed description of these employment agreements, see "Executive Compensation — Employment Agreements."

Relationships with Board of Directors

Mr. Hillsberg is an attorney with Troy & Gould Professional Corporation ("Troy & Gould"), which has represented CytRx since 2003. Mr. Hillsberg has been the Chairman of our board of directors since 2007. For the year ended December 31, 2007 and the year ended December 31, 2006, Troy & Gould billed to CytRx fees of approximately $129,000 and $7,000, respectively, related to RXi matters. We reimbursed CytRx for a portion of these fees pursuant to our reimbursement agreement with CytRx described under "Arrangements

With CytRx Corporation," above. Troy & Gould billed no fees directly to RXi for these periods and does not represent RXi in regards to any current matters.

Mr. Kriegsman is the President, Chief Executive Officer and a director of CytRx. Mr. Kriegsman has been a director of RXi since April 2006. Mr. Kriegsman received approximately 209,584 shares of our common stock in connection with the Distribution and the Award , due to his holdings of CytRx stock and options.

Pursuant to a common stock offering approved by our board of directors on May 23, 2007, Dr. Ahn, Mr. Galliker and Mr. Hillsberg each entered into a Subscription Agreement with us and each subscribed for and purchased 10,000 shares of our common stock for the purchase price of $5.00 per share, as discussed above in "Management's Discussion and Analysis of Financial Condition and Results of Operation — Critical Accounting Policies and Estimates — Valuation of Common Stock." Pursuant to the Subscription Agreements, we have agreed to provide Dr. Ahn, Mr. Galliker and Mr. Hillsberg with notice any time we propose to register any of our common stock under the Securities Act in connection with the public offering of such securities for our own account or on behalf of shareholders other than the respective subscribers, solely for cash or on a form that would also permit registration of the shares covered by the Subscription Agreements. Upon request by any subscriber, we have agreed to use best efforts to cause such subscriber's shares to be registered under the Securities Act, with certain exceptions, with all expenses incurred in connection with any such registration to be borne by us.

Relationships with Founders

In connection with the organization of our company, on April 3, 2006, each of CytRx and our other founding shareholders and SAB Members received a certain number of shares of our common stock in exchange for a nominal contribution. Specifically, Gregory Hannon, Ph.D., Michael Czech, Ph.D. and Craig C. Mello, Ph.D. contributed to us $445 in cash in exchange for 317,019 shares, CytRx contributed to us $500 in cash in exchange for 356,201 shares, and Tariq Rana, Ph.D. contributed to us $665 in cash in exchange for 473,748 shares since as the Company's initial designee for President, he was permitted to subscribe for more shares than the others. However, we repurchased 156,729 of these shares for $220 on November 6, 2006 upon the Board of Directors' decision to hire Dr. Woolf as President and CEO of the Company instead of Dr. Rana.

On February 26, 2007, we entered into Scientific Advisory Board Agreements (the "SAB Agreements") with Tariq Rana, Ph.D., Gregory Hannon, Ph.D., Michael Czech, Ph.D. and Craig C. Mello, Ph.D., who are our founders. At the time of the execution of the SAB Agreements, each of the founders were beneficial owners of more than five percent of our outstanding stock. Pursuant to the SAB Agreements, on May 23, 2007, we granted to each of the founders a stock option under the 2007 Incentive Plan to purchase 52,832 shares of our common stock. In addition, under the SAB Agreements, we will grant each of the founders a stock option under the 2007 Incentive Plan to purchase 52,832 shares of our common stock on February 26, 2008, February 26, 2009 and February 26, 2010 with a per share exercise price equal to the closing price of such stock on the public market on the date of grant unless a founder terminates a SAB Agreement without good reason (as defined) or we terminate a SAB Agreement with cause (as defined) in which case no further option grants will be made to the founder. If our common stock is not publicly traded on the dates specified above, our Board of Directors will grant the stock options to the founders at the first scheduled board meeting after such date and the per share exercise price of the options will be determined in good faith by our Board of Directors. All options granted pursuant to the SAB Agreements are fully vested on the date of grant and have a term of ten years. The fair value of stock options under the SAB Agreement for each founder is approximately $175,000, which was estimated using the Black-Scholes option-pricing model, based on the following assumptions. Due to the fact that we have no history of stock trading, our expected stock-price volatility assumption is based on a combination of implied volatilities of similar entities whose share or option prices are publicly traded. We used a weighted-average expected stock-price volatility of 108.7%. The expected life assumption is based on a simplified method provided for under SAB 107, which averages the contractual term of the Company's options (10 years) with the ordinary vesting term (immediately). The dividend yield of zero is based on the fact that we have no present intention to pay cash dividends. The risk free rate of 4.51% used for each grant is equal to the zero coupon rate in effect at the time of the

grant for instruments with similar expected life. See discussion above in "Management's Discussion and Analysis of Financial Condition and Results of Operation — Critical Accounting Policies and Estimates."

Additionally, pursuant to a letter agreement between us and each founder dated as of April 30, 2007 ("SAB Letters"), in further consideration of the services to be rendered by the founders under the SAB Agreements, we granted additional stock options on May 23, 2007 under the 2007 Incentive Plan to each of the founders to purchase 26,416 shares of our common stock. Unless a founder terminates a SAB Agreement without good reason (as defined) or we terminate a SAB Agreement with cause (as defined), the options granted pursuant to the SAB Letters will fully vest from and after April 29, 2012 and will have a term of ten years. The fair market value of stock options under the SAB Agreement for each founder is approximately $96,000, which was estimated using the Black-Scholes option-pricing model, based on the following assumptions. Due to the fact that we have no history of stock trading, our expected stock-price volatility assumption is based on a combination of implied volatilities of similar entities whose share or option prices are publicly traded. We used a weight-average expected stock-price volatility of 108.7%. The expected life assumption is based on a simplified method provided for under SAB 107, which averages the contractual term of the Company's options (10 years) with the ordinary vesting term (immediately). The dividend yield of zero is based on the fact that we have no present intention to pay cash dividends. The risk free rate of 4.55% used for each grant is equal to the zero coupon rate in effect at the time of the grant for instruments with similar expected life. See discussion above in "Management's Discussion and Analysis of Financial Condition and Results of Operations — Critical Accounting Policies and Estimates."

Review and Approval of Related Party Transactions

The board of directors reviews and approves transactions with directors, officers, and holders of more than 5% of our voting securities and their affiliates, or each, a related party. Prior to board consideration of a transaction with a related party, the material facts as to the related party's relationship or interest in the transaction are disclosed to the board, and the transaction is not considered approved by the board unless a majority of the directors who are not interested in the transaction approve the transaction. Further, when stockholders are entitled to vote on a transaction with a related party, the material facts of the related party's relationship or interest in the transaction are disclosed to the stockholders, who must approve the transaction in good faith. CytRx's Activities as a Promoter Information relating to CytRx's activities as a promoter are described above in "Arrangements with CytRx Corporation," "Contribution Agreement of January 8, 2007" and "Contribution Agreement of April 30, 2007."

Director Independence

Our board of directors has reviewed the materiality of any relationship that each of our directors has with us, either directly or indirectly. Based on this review, the board has determined that the following directors are "independent directors" as defined by NASDAQ: Messrs. Hillsberg and Galliker and Dr. Ahn.

ITEM 14. *PRINCIPAL ACCOUNTANT FEES AND SERVICES*

The following table sets forth the fees paid to BDO Seidman LLP for services provided during fiscal years 2007 and 2006:

	2007	2006
Audit fees(1)	$587,000	$—
Audit related fees	$ —	$—
Tax related fees	$ —	$—
Total	$587,000	$—

(1) Represents fees for professional services rendered in connection with the audit of our annual financial statements.

Our Audit Committee has adopted a policy to pre-approve all audit, audit-related, tax and other services proposed to be provided by our independent registered public accounting firm prior to engaging the auditor for that purpose. Consideration and approval of such services generally will occur at the Audit Committee's regularly scheduled quarterly meetings. In situations where it is impractical to wait until the regularly scheduled quarterly meeting, the Audit Committee has delegated authority to approve the audit, audit-related, tax and other services to the Audit Committee Chairman up to a certain pre-determined level as approved by the Audit Committee. Prior to the adoption of this policy, as in the case with the services provided for fiscal 2007 and 2006, all of the services provided by our independent registered public accounting firm were pre-approved by the entire Board of Directors.

PART IV

ITEM 15. *EXHIBITS AND FINANCIAL STATEMENT SCHEDULES*

(a) (1) *Financial Statements*

See Item 8 in Part II of this annual report on Form 10-K, Financial Statements and Supplementary Data, for an index to the consolidated financial statements filed in this annual report.

(2) *Financial Statement Schedules*

Certain schedules are omitted because they are not applicable, or not required, or because the required information is included in the consolidated financial statements or notes thereto. See Item 8 in Part II of this annual report on Form 10-K, Financial Statements and Supplementary Data, for any supplementary financial information filed in this annual report.

(3) *Exhibits*

The Exhibits listed in the Exhibit Index immediately preceding the Exhibits are filed as a part of this annual report on Form 10-K.

SIGNATURES

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

RXi PHARMACEUTICALS CORPORATION

By: */s/ Tod Woolf*
Tod Woolf, Ph.D.
President, Chief Executive Officer and Director
(Principal Executive Officer)

Dated: April 15, 2008

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.

Signatures	Title	Date
/s/ Tod Woolf Tod Woolf, Ph.D.	President, Chief Executive Officer and Director (Principal Executive Officer)	April 15, 2008
/s/ Stephen J. DiPalma Stephen J. DiPalma	Chief Financial Officer (Principal Financial Officer and Accounting Officer	April 15, 2008
/s/ Sanford J. Hillsberg Sanford J. Hillsberg	Director	April 15, 2008
/s/ Mark J. Ahn Mark J. Ahn	Director	April 15, 2008
/s/ Stephen S. Galliker Stephen S. Galliker	Director	April 15, 2008
/s/ Steven A. Kriegsman Steven A. Kriegsman	Director	April 15, 2008

EXHIBIT INDEX

Exhibit Number	Description
2.1	Contribution Agreement between CytRx Corporation and RXi Pharmaceuticals Corporation, dated January 8, 2007(1)
2.2	Contribution Agreement between CytRx Corporation and RXi Pharmaceuticals Corporation, dated April 30, 2007(1)
2.3	Reimbursement Agreement between CytRx Corporation and RXi Pharmaceuticals Corporation, dated January 8, 2007(1)
3.1	Form of Amended and Restated Certificate of Incorporation of RXi Pharmaceuticals Corporation(1)
3.2	Form of Amended and Restated By-laws of RXi Pharmaceuticals Corporation(1)
4.1	Specimen common stock certificate(3)
4.2	Stockholders Agreement between CytRx Corporation, RXi Pharmaceuticals Corporation, the other Stockholders and the Scientific Advisory Board Members, dated February 23, 2007(1)
4.3	Exhibit A to Contribution Agreement — Registration Rights Terms between CytRx Corporation and RXi Pharmaceuticals Corporation, dated April 30, 2007(1)
4.4	Annex I to form of Subscription Agreement — Registration Rights Terms between RXi Pharmaceuticals Corporation and Stephen Galliker, Mark Ahn and Sanford Hillsberg(1)
10.1	Voting Agreement between CytRx Corporation and the University of Massachusetts Medical School, dated January 10, 2007(1)
10.2	License Agreement between Cold Spring Harbor Laboratory and RXi Pharmaceuticals Corporation, dated March 15, 2007+(2)
10.3	Invention Disclosure Agreement between the University of Massachusetts Medical School and RXi Pharmaceuticals Corporation, dated January 10, 2007(2)
10.4	Exclusive License Agreement (No.: UMMC 06-21-01) between the University of Massachusetts and RXi Pharmaceuticals Corporation, dated January 10, 2007+(2)
10.5	Exclusive License Agreement (No.: UMMC 03-68-02) between the University of Massachusetts and RXi Pharmaceuticals Corporation, dated January 10, 2007+(2)
10.6	Exclusive License Agreement (No.: UMMC 03-75-01) between the University of Massachusetts and RXi Pharmaceuticals Corporation, dated January 10, 2007+(2)
10.7	Non-Exclusive License Agreement (No.: UMMC 06-08-03) between the University of Massachusetts and RXi Pharmaceuticals Corporation, dated January 10, 2007+(2)
10.8	Non-Exclusive License Agreement, between CytRx Corporation and the University of Massachusetts Medical School related to UMMS disclosure number 01-36, dated April 15, 2003, as amended February 1, 2004+(2)
10.9	Exclusive License Agreement between CytRx Corporation and the University of Massachusetts Medical School related to UMMS disclosure number 02-01, dated April 15, 2003, as amended September 10, 2004+(2)
10.10	Amended and Restated Exclusive License Agreement between CytRx Corporation and the University of Massachusetts Medical School related to UMMS disclosure number 03-05, 00-37, 01-31, 03-134, 93-09 and 02-38, dated September 15, 2003, as amended September 17, 2003 and February 1, 2004+(2)
10.11	Exclusive License Agreement between CytRx Corporation and the University of Massachusetts Medical School related to UMMS disclosure number 03-17, dated April 15, 2003, as amended January 7, 2004 and February 1, 2004+(2)
10.12	Exclusive License Agreement between CytRx Corporation and the University of Massachusetts Medical School related to UMMS disclosure number 03-60, dated April 15, 2003 as amended February 1, 2004+(2)
10.13	Co-Exclusive License Agreement between CytRx Corporation and the University of Massachusetts Medical School related to UMMS disclosure number 03-33, and all amendments thereto, dated May 18, 2006+(2)
10.14	License Agreement between CytRx Corporation, Imperial College Innovations Limited and Imperial College of Science and Technology, dated May 19, 2004+(2)

RXi Pharmaceuticals
Next Generation in RNAi

60 Prescott Street
Worcester, MA 01605

Direct: 508-767-3861
Fax: 508-767-3862
Email: ir@rxipharma.com

www.rxipharma.com

END

NASDAQ