Table of Contents

Filed pursuant to Rule 424(b)(3)
Registration No. 333-220062

PROSPECTUS

Up to 7,300,000 Shares of Common Stock

This prospectus covers the offer and sale of up to 7,300,000 shares (the "**Shares**") of common stock, $0.0001 par value per share (the "**Common Stock**"), of RXi Pharmaceuticals Corporation ("**RXi**," "**we**," "**our**" or the "**Company**"), a Delaware corporation, by Lincoln Park Capital Fund, LLC ("**Lincoln Park**" or the "**Selling Stockholder**").

The shares of common stock being offered by the Selling Stockholder have been or may be issued pursuant to the purchase agreement dated August 8, 2017 that we entered into with Lincoln Park (the "**Purchase Agreement**"). See "The Lincoln Park Transaction" for a description of the Purchase Agreement and "Selling Stockholder" for additional information regarding Lincoln Park. The prices at which Lincoln Park may sell the Shares will be determined by the prevailing market price for the Shares or in negotiated transactions.

We are not selling any securities under this prospectus and will not receive any of the proceeds from the sale of the Shares by the Selling Stockholder.

The Selling Stockholder may sell the shares of common stock described in this prospectus in a number of different ways and at varying prices. See "Plan of Distribution" for more information about how the Selling Stockholder may sell the shares of common stock being registered pursuant to this prospectus. The Selling Stockholder is an "underwriter" within the meaning of Section 2(a)(11) of the Securities Act of 1933, as amended (the "**Securities Act**").

We will pay the expenses incurred in registering the Shares, including legal and accounting fees. See "Plan of Distribution".

Our common stock is currently quoted on The NASDAQ Capital Market under the symbol "RXII". On August 29, 2017, the last reported sale price of our common stock on The NASDAQ Capital Market was $0.57 per share.

Investing in our securities involves a high degree of risk. In reviewing this prospectus, you should consider carefully the risks and uncertainties in the section entitled "Risk Factors" beginning on page 10 of this prospectus.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense. The securities are not being offered in any jurisdiction where the offer is not permitted.

The date of this prospectus is August 30, 2017

TABLE OF CONTENTS

We have not, and the Selling Stockholder has not, authorized anyone to provide you with information other than that contained or incorporated by reference in this prospectus and any applicable prospectus supplement or amendment. We have not, and the Selling Stockholder has not, authorized any person to provide you with different information. This prospectus is not an offer to sell, nor is it an offer to buy, these securities in any jurisdiction where the offer is not permitted. The information contained or incorporated by reference in this prospectus and any applicable prospectus supplement or amendment is accurate only as of its date. Our business, financial condition, results of operations, and prospects may have changed since that date.

PROSPECTUS SUMMARY

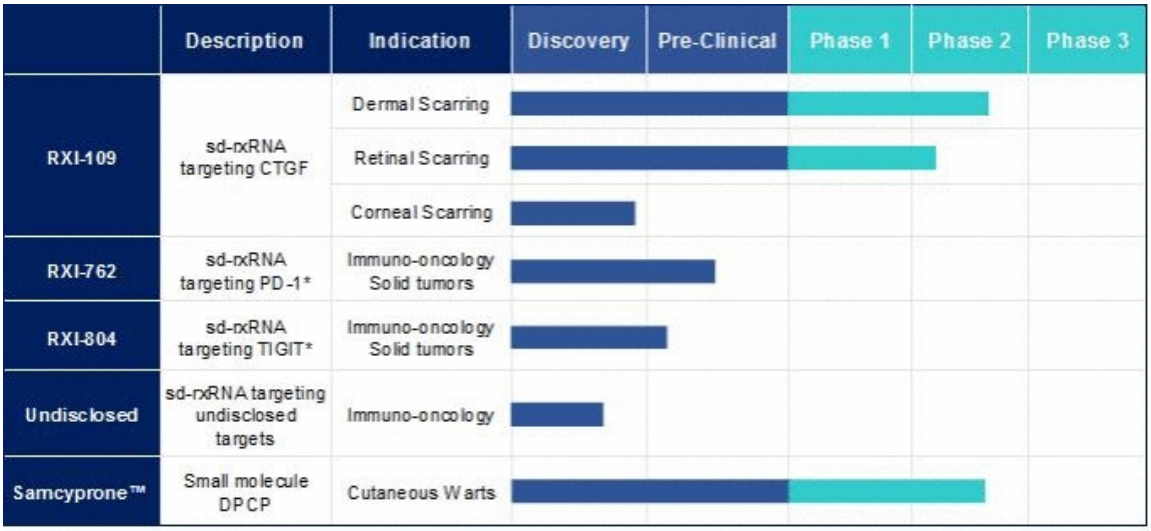
The items in the following summary are described in more detail later in this prospectus. This summary provides an overview of selected information and does not contain all of the information you should consider in making your investment decision. Therefore, you should read the entire prospectus carefully before investing in our securities. Investors should carefully consider the information set forth under "Risk Factors" beginning on page 10 of this prospectus. In this prospectus, unless the context otherwise requires, (1) the term "RXi" refers to RXi Pharmaceuticals Corporation and our subsidiary, MirImmune, LLC and (2) the terms "Company," "we," "us" and "our" refer to the ongoing business operations of RXi and MirImmune, LLC, whether conducted through RXi or MirImmune, LLC.

Overview

RXi is a clinical-stage company developing innovative therapeutics based on our proprietary self-delivering RNAi (sd-rxRNA®) platform and Samcyprone™ which address significant unmet medical needs. We have a pipeline of discovery, preclinical and clinical product candidates in the areas of dermatology, ophthalmology and cell-based cancer immunotherapy. The Company's clinical development programs include RXI-109, an sd-rxRNA for the treatment of dermal and ocular scarring, and Samcyprone™, a topical immunomodulator, for the treatment of warts. The Company's pipeline, coupled with our extensive patent portfolio, provides for product development and business development opportunities across a broad spectrum of therapeutic areas.

Our Pipeline

Our pipeline focuses on three areas: dermatology, including cosmetic product development, ophthalmology and cell-based cancer immunotherapy. Our RNAi therapies are designed to "silence," or down-regulate, the expression of a specific gene that may be over-expressed in a disease condition and our topical immunotherapy agent, Samcyprone™, treats diseases by inducing, enhancing or suppressing an immune response in the skin. The following is a summary of our current product candidates and their development status:



Dermatology Franchise

RXI-109—Dermal Scarring

The Company's lead product candidate and first RNAi clinical product candidate, RXI-109, is a self-delivering RNAi compound (sd-rxRNA) that commenced human clinical trials in 2012. RXI-109 is designed to reduce the expression of connective tissue growth factor ("**CTGF**"), a critical regulator of several biological pathways involved in fibrosis, including scar formation in the skin and eye. RXI-109 is currently being evaluated in a Phase 2 clinical trial, Study 1402, to prevent or reduce dermal scarring following scar revision surgery of an existing hypertrophic scar.

The Company initially conducted two Phase 1 clinical trials evaluating RXI-109 in a surgical setting. Both trials demonstrated the safety and tolerability of RXI-109 in ascending single and multi-doses, and also provided the first evidence of clinical activity in a surgical setting. With the successful completion of the Phase 1 trials, in November 2013 the Company initiated its Phase 2 program for RXI-109 with Study 1301, a Phase 2 clinical trial evaluating the use of RXI-109 to prevent the recurrence of hypertrophic scars following scar revision surgery. Enrollment and dosing for this study have been completed.

Preliminary data observations from Study 1301 were used in the design of the Company's second Phase 2 clinical trial in hypertrophic scars, Study 1402, which commenced in July 2014. In October 2015, we reported that preliminary data from Study 1402 demonstrated that scars at revision sites were judged to be better at three months after a treatment regimen with five mg/cm intradermal administration of RXI-109 than scars at untreated revision sites in those same subjects. Based in part on this new information, two more cohorts (Cohorts 3 and 4) were added to Study 1402 in November 2015. For these two cohorts, the number of doses was increased to either eight or nine doses of RXI-109 over a six-month period to better cover the extended wound healing/scarring profile of hypertrophic scars. Enrollment of subjects into these two new cohorts completed ahead of schedule during the third quarter of 2016.

In December 2016, the Company announced that preliminary data from the first two cohorts from Study 1402 at nine months confirmed the positive differentiation by a blinded panel of observers from untreated surgery incisions in hypertrophic scars from the previously presented data for a subset of subjects treated with five mg/cm of RXI-109 at three months. In addition, these data extend this observation to all time points, including the post-treatment follow-up period through nine months post-surgery. RXI-109 was safe and well tolerated. Additionally, as expected, the limited three-month data available from Cohort 3 appeared to align with that of the first two cohorts as these subjects all had the same dosing schedule through the third month. A complete read-out of the whole study, including all four cohorts with follow-up until nine months post-surgery, is expected in the second half of 2017.

Scarring represents a high unmet medical need as there are currently no U.S. Food and Drug Administration ("**FDA**") approved therapies in the U.S. for the treatment and prevention of scars in the skin. Scar revision surgery is one treatment option, but often the scar recurs. If approved, RXI-109 could be a "first-in-class" RNAi treatment for the prevention or reduction of post-surgical dermal scarring. Given the large number of surgical procedures, there is a significant market for a scar prevention therapeutic such as RXI-109.

Samcyprone™—Warts

In December 2014, the Company broadened its clinical pipeline with an exclusive, global license to Samcyprone™, our second clinical candidate. Samcyprone™ is a proprietary topical formulation of the small molecule diphenylcyclopropenone ("**DPCP**"), an immunomodulator that works by initiating a T-cell response. The use of Samcyprone™ allows sensitization using much lower concentrations of DPCP than are used with existing compounded DPCP solutions, avoiding hyper-sensitization to subsequent challenge doses. DPCP, the active ingredient in Samcyprone™, has long been used to treat warts and has also been used for several other indications, such as to stimulate hair re-growth in alopecia areata and to clear cutaneous metastases of melanoma. In March 2015, the FDA granted Orphan Drug Designation to the Company for Samcyprone™ for the treatment of malignant melanoma stages IIb to IV. Samcyprone™ is currently being evaluated in a Phase 2a clinical trial, Study 1502, for the clearance of common warts.

Study 1502, initiated in December 2015, includes a sensitization phase in which a spot on the subject's upper arm and one or more warts are treated with Samcyprone™. After being sensitized in this way, the subjects enter into the treatment phase where up to four warts are treated on a once weekly basis for ten weeks with a ten-fold lower concentration of Samcyprone™ than in the sensitization phase. During the trial, the warts are scored, photographed and measured to monitor the level of clearance.

In December 2016, the Company announced the results from a preliminary review of sensitization and wart clearance data from a subset of subjects that had completed the ten-week treatment phase of Study 1502. Results showed that greater than 90% of the subjects demonstrated a sensitization response, a prerequisite to be able to develop a therapeutic response. Additionally, more than 60% of the subjects responded to the treatment by exhibiting either complete or greater than 50% clearance of all treated warts with up to ten weekly treatments. Samcyprone™ treatment has been generally safe and well tolerated and has had drug-related adverse events relating to local reactions, which are typically expected for this type of treatment due to the sensitization and challenge responses in the skin. The Company added a second cohort, which is expected to be fully enrolled in the second half of 2017, to explore the opportunity to reduce the sensitization dose level, which will be more convenient to physicians and subjects. Early read-outs of the study are anticipated in the second half of 2017.

Cutaneous warts are extremely common, being experienced by most people at some time during their lives. Although most warts will spontaneously disappear without treatment, treatment is sought for recalcitrant warts and to prevent recurrence. There are many different treatment modalities for warts, including physical destruction and immunomodulation. However, treatment of warts is complicated by low success rates, prolonged duration of therapy and the potential for recurrence. There is a clear unmet need for new therapies for warts, and if approved, Samcyprone™ could be a more effective and convenient treatment than the currently available therapies.

Additional Dermatology Programs

In addition to our dermal scarring and wart programs, we continue to advance our preclinical and discovery programs with our sd-rxRNA technology. The Company has selected tyrosinase ("**TYR**") and collagenase ("**MMP1**") as targets for our self-delivering platform because they are relevant for both consumer health and therapeutic development. TYR is a key enzyme in the synthesis of melanin. Melanin is produced by melanocytes and is the pigment that gives human skin, hair and eyes their color. The inhibition of TYR can play a key role in the management of skin conditions including cutaneous hyperpigmentation disorders such as lentigines (freckles, age spots and liver spots) and possibly melanoma. MMP1 is a key enzyme involved in the breakdown of extracellular matrix. Reduction of MMP1 may be beneficial in the treatment of skin aging disorders, arthritis, acne scarring, blistering skin disorders, corneal erosions, endometriosis and possibly cancer metastasis.

Cosmetic Development

Cosmetics are compounds that affect the appearance of the skin and make no preventative or therapeutic claims. These compounds may be developed more rapidly than therapeutics, therefore the path to market may be much shorter and less expensive. In October 2015, we announced the selection of lead compounds targeting TYR and MMP1 for cosmetic development.

RXI-231 — Uneven Skin Tone and Pigmentation

RXI-231, an sd-rxRNA compound targeting TYR, is in development as a cosmetic ingredient that may improve the appearance of uneven skin tone and pigmentation. Efficacy and toxicity testing in cell culture and skin equivalents for RXI-231 was successfully completed in December 2016. The Company initiated human testing of RXI-231 in June 2017 with a U.S. clinical testing site. In addition to evaluating safety, the Company will assess the effect of RXI-231 on the appearance of skin pigmentation in a follow-on study.

RXI-185 — Wrinkles and Skin Laxity

RXI-185, an sd-rxRNA compound targeting MMP1, is in development as a cosmetic ingredient that may improve the appearance of wrinkles or skin laxity. Results from studies by the Company have shown a pronounced reduction in MMP1 mRNA levels that correspond to a similar reduction in MMP1 enzyme activity in cell culture in vitro.

Ophthalmology Franchise

RXI-109 – Retinal Scarring

As in dermal scarring, RXI-109 can also be used to target CTGF in the eye, where CTGF is known to be involved in retinal scarring. Building on the work in our dermal clinical program, the Company filed a new investigational drug application ("**IND**") in July 2015 for RXI-109 as a potential therapeutic for the scarring component of retinal diseases in the eye, such as wet age-related macular degeneration ("**AMD**"). In November 2015, we initiated a Phase 1/2 clinical trial to evaluate the safety and clinical activity of RXI-109 in reducing the progression of retinal scarring.

Study 1501 is a multi-dose, dose escalation study conducted in subjects with AMD with evidence of subretinal fibrosis. Each subject receives four doses of RXI-109 by intraocular injection at one month intervals for a total dosing period of three months. The safety and tolerability of RXI-109, as well as the potential for clinical activity, is evaluated over the course of the study using numerous assessments to monitor the health of the retina and to assess visual acuity. To date, there have been no safety issues that have precluded continuation of dosing. Study 1501 has been completely enrolled and dosing in the third cohort at the highest planned dose level is ongoing. The Company expects to complete subject participation in the study by the end of 2017 and to share top-line data in early 2018.

Currently, there is no effective way to prevent the formation or progression of retinal scars that may occur as a consequence of a number of debilitating ocular diseases. In advanced neo-vascular or wet-AMD, our first area of study, retinal scarring often results in continued vision loss even if the patient is being treated with an anti-vascular endothelial growth factor ("**VEGF**") therapy. RXI-109 has the potential to fill this unmet medical need by reducing this continuing damage to the retina and in doing so help preserve these patients' vision for a longer period of time.

Additional Ophthalmology Programs

In addition to the clinical trial for the use of RXI-109 as a potential therapeutic for retinal scarring, we are advancing other early-stage ophthalmology programs. Currently, the Company is directing its development efforts toward advancing RXI-109 for the treatment of corneal scarring. To date, our preclinical studies have shown that CTGF protein levels are reduced in a dose-dependent manner in both the retina and cornea following an intravitreal injection of RXI-109 in monkeys. Elevated CTGF is implicated in the formation of corneal scarring that can occur after eye injury or after certain infections, and it has been proposed that a reduction of CTGF may be an important step towards reducing corneal scarring. Scarring of the cornea can impact the transparency of the cornea, and thus negatively impact vision. We are currently working towards a non-invasive delivery formulation of RXI-109 to reduce CTGF in the front of the eye.

Cell-based Cancer Immunotherapy

In January 2017, the Company entered into a Stock Purchase Agreement (the "**Stock Purchase Agreement**") pursuant to which it acquired 100% of the issued and outstanding shares of capital stock of MirImmune Inc. ("**MirImmune**") for an aggregate of 2,750,371 shares of common stock of the Company and 1,118,224 shares of Series C Convertible Preferred Stock (the "**Series C Convertible Preferred Stock**"). On June 9, 2017, with the approval of the Company's stockholders in accordance with the stockholder approval requirements of Nasdaq Marketplace Rule 5635, each share of the Company's Series C Convertible Preferred Stock outstanding was automatically converted into one share of common stock, such that no shares of Series C Convertible Preferred Stock remained issued or outstanding.

Under the terms of the Stock Purchase Agreement, if certain development or commercial milestones are achieved within two years, the Company will be required to either (i) issue to the sellers a number of shares of common stock or (ii) pay the equivalent value in cash.

Prior to its acquisition by the Company, MirImmune was a privately held biopharmaceutical company engaged in the development of cancer immunotherapies. The Company previously granted an exclusive license to MirImmune in March 2015 to utilize the Company's novel and proprietary sd-rxRNA technology for use in developing ex vivo cell-based cancer immunotherapies.

Our approach to immunotherapy builds on well-established methodologies of adoptive cell transfer. Immune cells, such as T-lymphocytes, are isolated from specific patients or retrieved from allogeneic immune cell banks and then expanded and sometimes processed to express tumor-binding receptors. Our method will introduce a new and important step in ex vivo processing of immune cells. This step uses our sd-rxRNA technology to reduce or eliminate the expression of immunosuppressive receptors or proteins by the therapeutic immune cells, potentially making them less sensitive to tumor resistance mechanism and thus improving their ability to destroy the tumor cells.

The Company's approach builds on current immunotherapy approaches but provides some key advantages. One major advantage is that pre-treatment with our targeted compounds allows multiple immune checkpoints to be attenuated within the same therapeutic cell, an improvement which could dramatically increase their tumor cell killing capability. In addition, these therapeutic immune cells may lack some known side effects associated with the checkpoint inhibitor toxicity while potentially improving efficacy over current immunotherapy approaches.

Using our sd-rxRNA technology, MirImmune demonstrated in vitro that multiple sd-rxRNA compounds can be used alone or in combination to target and silence extracellular, as well as intracellular, checkpoints in immune cells. Additional in vitro data demonstrated that PD-1 silencing by sd-rxRNA in patient-derived tumor infiltrating lymphocytes (TILs) resulted in enhanced killing of melanoma tumor cells from the same patient in culture. MirImmune also showed in a mouse model of human ovarian cancer that in vivo treatment with mesothelin-targeting CAR T-cells transfected with a PD-1 targeting sd-rxRNA significantly reduced the rate of tumor growth as compared to vehicle control. Furthermore, the silencing of PD-1 in the CAR T-cells isolated from these tumors persisted for at least one month.

In December 2016, new data was provided by MirImmune demonstrating silencing of a number of undisclosed immunosuppressive targets in natural killer cells (NK cells) using our sd-rxRNA compounds. This adds to a remarkable set of immune checkpoint modulation studies in human T-cells, including CAR T-cells and TILs. In immune cells tested to date, the sd-rxRNA treatment results in potent silencing while maintaining close to 100% transfection efficiency and nearly full cell viability. Moreover, the silencing effect has been validated in a number of clinically used cell treatment protocols.

Building on the work completed by MirImmune prior to its acquisition by the Company, our cell-based cancer immunotherapy program with sd-rxRNA includes lead compounds for a number of immune checkpoint targets that provide long lasting immune checkpoint silencing, individually and in combination, in adoptively transferred cells. An improved efficacy upon the silencing of checkpoints has been demonstrated in various types of adoptively transferred cells relevant in cancer immunotherapy, such as CAR T-cells and TILs. The Company's ongoing discovery programs include, but are not limited to, the evaluation of sd-rxRNA compounds to silence targets related to cytokine release syndrome. The Company has also initiated in vivo evaluations of multiple checkpoint inhibiting sd-rxRNA compounds co-transfected in CAR T-cells in mouse models for solid tumors, with data from this study expected in the second half of 2017.

Additionally, the Company recently selected two sd-rxRNA compounds from its immunotherapy pipeline for preclinical development. For oncology treatments based on adoptive cell transfer (ACT), compounds RXI-762 and RXI-804 suppress the expression of immune checkpoint proteins PD-1 and TIGIT, respectively, which can result in an improved efficacy to the targeted tumors. This decision triggered the selection of a manufacturing facility to initiate production of cGMP grade material, initially for the first of these two compounds (RXI-762). This also supports moving RXI-762 into clinical development as early as 2018 as part of an ACT therapy.

Market Opportunity

As there are currently no FDA-approved drugs to prevent scar formation, a therapeutic of this type could have great benefit for trauma and surgical patients, particularly as a treatment during the surgical revision of existing unsatisfactory scars. According to the American Society for Plastic Surgery, there are approximately 180,000 scar revision surgeries in the United States every year. In addition to cosmetic and reconstructive surgeries, medical interventions which could incorporate an anti-scarring agent include treatment of scarring that results from trauma, surgery or burns (especially relating to raised or hypertrophic scarring or contracture scarring), and surgical revision of existing unsatisfactory scars. Moreover, there are over 42 million medical procedures in the U.S. each year that could potentially benefit from a therapeutic treatment that could successfully reduce or prevent scarring; thus, the market potential is quite large.

AMD is the leading cause of severe vision loss in adults over age 50. According to the National Eye Institute, in 2010 approximately 2.07 million people had AMD. The National Eye Institute further states that as the proportion of people in the U.S. age 65 and older grows larger, more people are developing age-related diseases, such as AMD. Due to the aging population, this number is expected to double to an estimated 5.44 million people in the year 2050. There is no cure for AMD and over 50% of patients start to develop scarring after 2 years on anti-VEGF therapy, the current standard of care. This represents a large number of patients with an unmet medical need that could benefit from a therapeutic treatment that could successfully reduce or prevent scarring in the retina, and thereby improve vision loss.

Overexpression of CTGF is implicated in dermal scarring, subretinal fibrosis and other fibrotic diseases. Because of this, we believe that RXI-109 or other CTGF-targeting RNAi compounds may be able to treat the fibrotic component of numerous additional indications. These indications are as wide ranging as acute spinal injury, endometriosis, organ fibrosis including liver and pulmonary fibrosis, cutaneous scleroderma and vascular restenosis, in addition to numerous ocular diseases that result in retinal scarring. If the current clinical trials of RXI-109 produce successful results, we may explore opportunities in these additional indications that can be accessed by local administration, starting with intradermal or intravitreal injection. Although the Company does not intend to develop systemic uses of RXI-109 at this time, the Company is open to business development and out-licensing opportunities for those applications.

DPCP, the active ingredient in Samcyprone™, is a small molecule that has been used since the late 1970s to stimulate regrowth of hair in patients with alopecia areata. Recent publications have supported its use as an immunomodulator for the treatment of alopecia areata, warts and cutaneous metastases of malignant melanoma, a combined market potential of over an estimated $1 billion. Although it has been used by physicians for several decades, it has never been reviewed or approved by a regulatory authority as a drug. If FDA approval is granted, Samcyprone™, RXi's proprietary formulation of DPCP, is expected to achieve market exclusivity.

Despite many advances, there is still a significant unmet need for cancer treatments. There are currently close to 180 therapies across various phases of development in the T-cell immunotherapy market. This growth is supported by robust and opportunistic pipelines targeting various indications. Pharmaceutical and large biotechnology companies are actively looking for complementary technology platforms that enhance their cellular pipelines. Initial clinical trials of adoptive cell transfer, our approach to immunotherapy, have shown limited success in treatment of solid tumors. One of the major issues is the immunosuppressive tumor microenvironment. Multiple inhibitory receptors, or immune checkpoints, are responsible for immunosuppression. Our sd-rxRNA treatment can be seamlessly integrated in existing and new adoptive cell transfer therapies to overcome immunosuppression issues. Our sd-rxRNA compounds silence various immunosuppressive genes and boost the ability of therapeutic cells to kill tumors, while offering a safe and versatile approach to reduction of immunosuppression in therapeutic cells.

Risks Associated with Our Business

Our ability to implement our business strategy is subject to numerous risks that you should be aware of before making an investment decision. These risks are described more fully in the section entitled "Risk Factors" immediately following this prospectus summary.

Our Corporate Information

RXi is a Delaware corporation. Our principal executive offices are located at 257 Simarano Drive, Suite 101 Marlborough, Massachusetts 01752, and our telephone number is (508) 767-3861. Our Internet address is *www.rxipharma.com*. Our website and the information contained on that site, or connected to that site, is not part of or incorporated by reference into this prospectus.

THE OFFERING

Common stock to be offered by the Selling Stockholder	7,300,000 shares consisting of: • 450,000 Commitment Shares issued to Lincoln Park upon the execution of the Purchase Agreement; and • 6,850,000 shares we may sell to Lincoln Park under the Purchase Agreement from time to time after the date of this prospectus;
Common stock outstanding prior to this offering	23,247,338 shares, as of August 7, 2017
Common stock to be outstanding after this offering	30,547,338 shares
Use of Proceeds	We will receive no proceeds from the sale of shares of common stock by Lincoln Park in this offering. We may receive up to $15,000,000 in aggregate gross proceeds under the Purchase Agreement from any sales we make to Lincoln Park pursuant to the Purchase Agreement after the date of this prospectus. Any proceeds that we receive from sales to Lincoln Park under the Purchase Agreement will be used for working capital and general corporate purposes. See "Use of Proceeds."
Risk factors	This investment involves a high degree of risk. See "Risk Factors" for a discussion of factors you should consider carefully before making an investment decision.
Symbol on The NASDAQ Capital Market	"RXII"

On August 8, 2017, we entered into a purchase agreement with Lincoln Park, which we refer to in this prospectus as the "Purchase Agreement," pursuant to which Lincoln Park has agreed to purchase from us up to an aggregate of $15,000,000 of our common stock (subject to certain limitations) from time to time over the term of the Purchase Agreement. Also on August 8, 2017, we entered into a registration rights agreement with Lincoln Park, which we refer to in this prospectus as the "Registration Rights Agreement," pursuant to which we have filed with the SEC the registration statement that includes this prospectus to register for resale under the Securities Act of 1933, as amended, or the "Securities Act," the shares of common stock that have been or may be issued to Lincoln Park under the Purchase Agreement. Pursuant to the terms of the Purchase Agreement, at the time we signed the Purchase Agreement and the Registration Rights Agreement, we issued 450,000 shares of our common stock to Lincoln Park as consideration for its commitment to purchase shares of our common stock under the Purchase Agreement, which we refer to in this prospectus as the "Commitment Shares".

We do not have the right to commence any sales of our common stock to Lincoln Park under the Purchase Agreement until certain conditions set forth in the Purchase Agreement, all of which are outside of Lincoln Park's control, have been satisfied, including that the SEC has declared effective the registration statement that includes this prospectus. Thereafter, we may, from time to time and at our sole discretion, direct Lincoln Park to purchase shares of our common stock in amounts up to 150,000 shares on any single business day, subject to a maximum of $1,000,000 per purchase, plus other "accelerated amounts" and/or "additional amounts" under certain circumstances. There are no trading volume requirements or restrictions under the Purchase Agreement, and we will control the timing and amount of any sales of our common stock to Lincoln Park. The purchase price of the shares that may be sold to Lincoln Park under the Purchase Agreement will be based

on the market price of our common stock preceding the time of sale as computed under the Purchase Agreement. The purchase price per share will be equitably adjusted for any reorganization, recapitalization, non-cash dividend, stock split, or other similar transaction occurring during the business days used to compute such price. We may at any time in our sole discretion terminate the Purchase Agreement without fee, penalty or cost upon one business days' notice. There are no restrictions on future financings, rights of first refusal, participation rights, penalties or liquidated damages in the Purchase Agreement or Registration Rights Agreement, other than a prohibition on entering into a "Variable Rate Transaction," as defined in the Purchase Agreement. Lincoln Park may not assign or transfer its rights and obligations under the Purchase Agreement.

As of August 8, 2017, there were 23,247,338 shares of our common stock outstanding, of which 21,956,776 shares were held by non-affiliates, excluding the 450,000 Commitment Shares that we have already issued to Lincoln Park under the Purchase Agreement. Although the Purchase Agreement provides that we may sell up to $15,000,000 of our common stock to Lincoln Park, only 7,300,000 shares of our common stock are being offered under this prospectus, which represents: (i) 450,000 shares that we already issued to Lincoln Park as a commitment fee for making the commitment under the Purchase Agreement, and (ii) an additional 6,850,000 shares which may be issued to Lincoln Park in the future under the Purchase Agreement, if and when we sell shares to Lincoln Park under the Purchase Agreement. Depending on the market prices of our common stock at the time we elect to issue and sell shares to Lincoln Park under the Purchase Agreement, we may need to register for resale under the Securities Act additional shares of our common stock in order to receive aggregate gross proceeds equal to the $15,000,000 total commitment available to us under the Purchase Agreement. If all of the 7,300,000 shares offered by Lincoln Park under this prospectus were issued and outstanding as of the date hereof, such shares would represent 24% of the total number of shares of our common stock outstanding and 25% of the total number of outstanding shares held by non-affiliates, in each case as of the date hereof. If we elect to issue and sell more than the 7,300,000 shares offered under this prospectus to Lincoln Park, which we have the right, but not the obligation, to do, we must first register for resale under the Securities Act any such additional shares, which could cause additional substantial dilution to our stockholders. The number of shares ultimately offered for resale by Lincoln Park is dependent upon the number of shares we sell to Lincoln Park under the Purchase Agreement.

Under applicable rules of The NASDAQ Capital Market, in no event may we issue or sell to Lincoln Park under the Purchase Agreement more than 19.99% of the shares of our common stock outstanding immediately prior to the execution of the Purchase Agreement (which is 4,647,142 shares based on 23,247,338 shares outstanding immediately prior to the execution of the Purchase Agreement), which limitation we refer to as the "Exchange Cap," unless (i) we obtain stockholder approval to issue shares of common stock in excess of the Exchange Cap or (ii) the average price of all applicable sales of our common stock to Lincoln Park under the Purchase Agreement equals or exceeds $0.6422 per share (which represents the closing consolidated bid price of our common stock on August 8, 2017, plus an incremental amount to account for our issuance of the Commitment Shares to Lincoln Park), such that the transactions contemplated by the Purchase Agreement are exempt from the Exchange Cap limitation under applicable NASDAQ rules. In any event, the Purchase Agreement specifically provides that we may not issue or sell any shares of our common stock under the Purchase Agreement if such issuance or sale would breach any applicable rules or regulations of The NASDAQ Capital Market.

The Purchase Agreement also prohibits us from directing Lincoln Park to purchase any shares of common stock if those shares, when aggregated with all other shares of our common stock then beneficially owned by Lincoln Park and its affiliates, would result in Lincoln Park and its affiliates having beneficial ownership, at any single point in time, of more than 9.99% of the then total outstanding shares of our common stock, as calculated pursuant to Section 13(d) of the Securities Exchange Act of 1934, as amended, or the "Exchange Act," and Rule 13d-3 thereunder, which limitation we refer to as the "Beneficial Ownership Cap".

Issuances of our common stock in this offering will not affect the rights or privileges of our existing stockholders, except that the economic and voting interests of each of our existing stockholders will be diluted as a result of any such issuance. Although the number of shares of common stock that our existing stockholders own will not decrease, the shares owned by our existing stockholders will represent a smaller percentage of our total outstanding shares after any such issuance to Lincoln Park.

RISK FACTORS

Investing in our securities involves a high degree of risk. Before investing in our securities, you should carefully consider the risks, uncertainties and assumptions described below and discussed under the heading "Risk Factors" included in our most recent Annual Report on Form 10-K for the year ended December 31, 2016, which is incorporated by reference into this prospectus, and which may be amended, supplemented or superseded from time to time by other reports we file with the SEC in the future. Our business, financial condition, results of operations and future growth prospects could be materially and adversely affected by any of these risks. In these circumstances, the market price of our common stock could decline, and you may lose all or part of your investment. Please see "Cautionary Note Regarding Forward-Looking Statements" and "Incorporation by Reference."

Risks Related to This Offering

The sale or issuance of our common stock to Lincoln Park may cause dilution and the sale of the shares of common stock acquired by Lincoln Park, or the perception that such sales may occur, could cause the price of our common stock to fall.

On August 8, 2017, we entered into the Purchase Agreement with Lincoln Park, pursuant to which Lincoln Park has committed to purchase up to $15,000,000 of our common stock. Upon the execution of the Purchase Agreement, we issued 450,000 Commitment Shares to Lincoln Park as a fee for its commitment to purchase shares of our common stock under the Purchase Agreement. The remaining shares of our common stock that may be issued under the Purchase Agreement may be sold by us to Lincoln Park at our discretion from time to time over a 30-month period commencing after the satisfaction of certain conditions set forth in the Purchase Agreement, including that the SEC has declared effective the registration statement that includes this prospectus. The purchase price for the shares that we may sell to Lincoln Park under the Purchase Agreement will fluctuate based on the price of our common stock. Depending on market liquidity at the time, sales of such shares may cause the trading price of our common stock to fall.

We generally have the right to control the timing and amount of any future sales of our shares to Lincoln Park. Additional sales of our common stock, if any, to Lincoln Park will depend upon market conditions and other factors to be determined by us. We may ultimately decide to sell to Lincoln Park all, some, or none of the additional shares of our common stock that may be available for us to sell pursuant to the Purchase Agreement. If and when we do sell shares to Lincoln Park, after Lincoln Park has acquired the shares, Lincoln Park may resell all, some or none of those shares at any time or from time to time in its discretion. Therefore, sales to Lincoln Park by us could result in substantial dilution to the interests of other holders of our common stock. Additionally, the sale of a substantial number of shares of our common stock to Lincoln Park, or the anticipation of such sales, could make it more difficult for us to sell equity or equity-related securities in the future at a time and at a price that we might otherwise wish to effect sales.

We may require additional financing to sustain our operations and without it we may not be able to continue operations.

At June 30, 2017, we had cash of $7,702,000 and a working capital surplus of $5,635,000. We had an operating cash flow deficit of $5,116,000 for the six months ended June 30, 2017 and for the year ended December 31, 2016, an operating cash flow deficit of $7,760,000. The Company believes that its existing cash, and the potential proceeds available under the Purchase Agreement with Lincoln Park, should be sufficient to fund the Company's operations for at least the next twelve months. We have generated significant losses to date and expect to continue to incur significant operating losses as we advance our product candidates through drug development and the regulatory process. In the future, we will be dependent on obtaining funding from third parties, such as proceeds from the issuance of debt, sale of equity, funded research and development programs and payments under partnership and collaborative agreements, in order to maintain our operations and meet our obligations to licensors. There is no guarantee that debt, additional equity or other funding will be available to us on acceptable terms, or at all.

We may direct Lincoln Park to purchase up to $15,000,000 worth of shares of our common stock under the Purchase Agreement over a 30-month period generally in amounts up to 150,000 shares of our common stock, which may be increased to up to 500,000 shares of our common stock depending on the market price of our common stock at the time of sale and subject to a maximum limit of $1,000,000 per purchase, on any such business day. Assuming a purchase price of $0.57 per share (the closing sale price of the common stock on August 29, 2017) and the purchase by Lincoln Park of the 6,850,000 purchase shares, proceeds to us would be $3,904,500.

The extent we rely on Lincoln Park as a source of funding will depend on a number of factors including, the prevailing market price of our common stock and the extent to which we are able to secure working capital from other sources. If obtaining sufficient funding from Lincoln Park were to prove unavailable or prohibitively dilutive, we will need to secure another source of funding in order to satisfy our working capital needs. Even if we sell all $15,000,000 under the Purchase Agreement to Lincoln Park, we may still need additional capital to fully implement our business, operating and development plans. Should the financing we require to sustain our working capital needs be unavailable or prohibitively expensive when we require it, the consequences could be a material adverse effect on our business, operating results, financial condition and prospects.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Forward-looking statements can be identified by words such as "intends," "believes," "anticipates," "indicates," "plans," "expects," "suggests," "may," "should," "potential," "designed to," "will" and similar references. Such statements include, but are not limited to, statements about: our ability to successfully develop RXI-109, Samcyprone™, and our other product candidates (collectively, "our product candidates"); the future success of our clinical trials with our product candidates; the timing for the commencement and completion of clinical trials; the future success of our strategic partnerships; and our ability to implement cost-saving measures. Forward-looking statements are neither historical facts nor assurances of future performance. These statements are based only on our current beliefs, expectations and assumptions regarding the future of our business, future plans and strategies, projections, anticipated events and trends, the economy and other future conditions.

Because forward-looking statements relate to the future, they are subject to inherent uncertainties, risks and changes in circumstances that are difficult to predict and many of which are outside of our control. Our actual results and financial condition may differ materially from those indicated in the forward-looking statements. Therefore, you should not rely on any of these forward-looking statements. Important factors that could cause our actual results and financial condition to differ materially from those indicated in the forward-looking statements include, among others: the risk that our clinical trials with our product candidates may not be successful in evaluating the safety and tolerability of these candidates or providing evidence of increased surgical scar reduction compared to placebo or clearance of common warts; the successful and timely completion of clinical trials; uncertainties regarding the regulatory process; the availability of funds and resources to pursue our research and development projects, including clinical trials with our product candidates; general economic conditions and those identified in this prospectus under the heading "Risk Factors" and in other filings the Company periodically makes with the Securities and Exchange Commission. Forward-looking statements contained in this prospectus speak as of the date hereof and the Company does not undertake to update any of these forward-looking statements to reflect a change in its views or events or circumstances that occur after such date.

In evaluating our business, prospective investors should carefully consider these factors in addition to the other information set forth in this prospectus, including under the caption "Risk Factors." All forward-looking statements included in this document are based on information available to us on the date hereof. We disclaim any intent to update any forward-looking statements.

USE OF PROCEEDS

This prospectus relates to shares of our common stock that may be offered and sold from time to time by Lincoln Park. We will receive no proceeds from the sale of shares of common stock by Lincoln Park in this offering. We may receive up to $15,000,000 in aggregate gross proceeds under the Purchase Agreement from any sales we make to Lincoln Park pursuant to the Purchase Agreement after the date of this prospectus. We estimate that the net proceeds to us from the sale of our common stock to Lincoln Park pursuant to the Purchase Agreement will be up to $14,900,000 over an approximately 30-month period, assuming that we sell the full amount of our common stock that we have the right, but not the obligation, to sell to Lincoln Park under the Purchase Agreement, and after other estimated fees and expenses. See “Plan of Distribution” elsewhere in this prospectus for more information.

We expect to use any proceeds that we receive under the Purchase Agreement for working capital and general corporate purposes.

LINCOLN PARK TRANSACTION

General

On August 8, 2017, we entered into the Purchase Agreement and the Registration Rights Agreement with Lincoln Park. Pursuant to the terms of the Purchase Agreement, Lincoln Park has agreed to purchase from us up to $15,000,000 of our common stock (subject to certain limitations) from time to time during the term of the Purchase Agreement. Pursuant to the terms of the Registration Rights Agreement, we have filed with the SEC the registration statement that includes this prospectus to register for resale under the Securities Act the shares that have been or may be issued to Lincoln Park under the Purchase Agreement.

Pursuant to the terms of the Purchase Agreement, at the time we signed the Purchase Agreement and the Registration Rights Agreement, we issued 450,000 Commitment Shares to Lincoln Park as consideration for its commitment to purchase shares of our common stock under the Purchase Agreement.

We do not have the right to commence any sales to Lincoln Park under the Purchase Agreement until certain conditions set forth in the Purchase Agreement, all of which are outside of Lincoln Park's control, have been satisfied, including the registration statement that includes this prospectus being declared effective by the SEC. Thereafter, we may, from time to time and at our sole discretion, direct Lincoln Park to purchase shares of our common stock in amounts up to 150,000 shares on any single business day, which amounts may be increased to up to 500,000 shares of our common stock depending on the market price of our common stock at the time of sale but in no event greater than $1,000,000 per such purchase. The purchase price per share is based on the market price of our common stock immediately preceding the time of sale as computed under the Purchase Agreement. Lincoln Park may not assign or transfer its rights and obligations under the Purchase Agreement.

Under applicable rules of The NASDAQ Capital Market, in no event may we issue or sell to Lincoln Park under the Purchase Agreement shares of our common stock in excess of the Exchange Cap (which is 4,647,142 shares, or 19.99% of the shares of our common stock outstanding immediately prior to the execution of the Purchase Agreement), unless (i) we obtain stockholder approval to issue shares of common stock in excess of the Exchange Cap or (ii) the average price of all applicable sales of our common stock to Lincoln Park under the Purchase Agreement equals or exceeds $0.6422 per share (which represents the closing consolidated bid price of our common stock on August 8, 2017, plus an incremental amount to account for our issuance of the Commitment Shares to Lincoln Park), such that the transactions contemplated by the Purchase Agreement are exempt from the Exchange Cap limitation under applicable NASDAQ rules. In any event, the Purchase Agreement specifically provides that we may not issue or sell any shares of our common stock under the Purchase Agreement if such issuance or sale would breach any applicable rules or regulations of The NASDAQ Capital Market.

The Purchase Agreement also prohibits us from directing Lincoln Park to purchase any shares of common stock if those shares, when aggregated with all other shares of our common stock then beneficially owned by Lincoln Park and its affiliates, would result in Lincoln Park and its affiliates exceeding the Beneficial Ownership Cap.

Purchase of Shares Under the Purchase Agreement

Under the Purchase Agreement, on any business day selected by us, we may direct Lincoln Park to purchase up to 150,000 shares of our common stock on any such business day, which we refer to as a "Regular Purchase," provided, however, that (i) the Regular Purchase may be increased to up to 200,000 shares, provided that the closing sale price is not below $0.65 on the purchase date, (ii) the Regular Purchase may be increased to up to 250,000 shares, provided that the closing sale price is not below $0.75 on the purchase date, (iii) the Regular Purchase may be increased to up to 300,000 shares, provided that the closing sale price is not below $0.80 on the purchase date, (iv) the Regular Purchase may be increased to up to 350,000 shares, provided that the closing sale price is not below $0.90 on the purchase date, and (v) the Regular Purchase may be increased to up to 500,000 shares, provided that the closing sale price is not below $1.00 on the purchase date. In each case, the maximum amount of any single Regular Purchase may not exceed $1,000,000 per purchase. The purchase price per share for each such Regular Purchase will be equal to the lower of:

- the lowest sale price for our common stock on the purchase date of such shares; or
- the arithmetic average of the three lowest closing sale prices for our common stock during the 10 consecutive business days ending on the business day immediately preceding the purchase date of such shares.

In addition to Regular Purchases described above, we may also direct Lincoln Park, on any business day on which we have properly submitted a Regular Purchase notice and the closing sale price of our common stock is not below $0.60 (subject to adjustment for any reorganization, recapitalization, non-cash dividend, stock split, reverse stock split or other similar transaction as provided in the Purchase Agreement), to purchase an additional amount of our common stock, which we refer to as an "Accelerated Purchase," not to exceed the lesser of:

- 30% of the aggregate shares of our common stock traded during normal trading hours on the purchase date; and
- 3 times the number of purchase shares purchased pursuant to the corresponding Regular Purchase.

The purchase price per share for each such Accelerated Purchase will be equal to the lower of:

- 97% of the volume weighted average price during (i) the entire trading day on the purchase date, if the volume of shares of our common stock traded on the purchase date has not exceeded a volume maximum calculated in accordance with the Purchase Agreement, or (ii) the portion of the trading day of the purchase date (calculated starting at the beginning of normal trading hours) until such time at which the volume of shares of our common stock traded has exceeded such volume maximum; or
- the closing sale price of our common stock on the accelerated purchase date.

In addition to the Regular Purchases and Accelerated Purchases described above, from time to time after the 10th day following the date that we are first able to begin selling shares to Lincoln Park under the Purchase Agreement, we may also direct Lincoln Park, on any business day that the closing price of our common stock is not below $0.75 (subject to adjustment for any reorganization, recapitalization, non-cash dividend, stock split, reverse stock split or other similar transaction), to purchase additional amounts of our common stock, which we refer to as an "Additional Purchase," provided, however, that (i) we may direct Lincoln Park to purchase shares in an Additional Purchase only if at least 20 business days have passed since the most recent Additional Purchase, as applicable, was completed, (ii) Lincoln Park's committed obligation under any single Additional Purchase shall not exceed $500,000, and (iii) Lincoln Park's committed obligation under all Additional Purchases shall not exceed $3,000,000 in the aggregate.

The purchase price for each such Additional Purchase shall be equal to the lower of:

- 95% of the purchase price under a Regular Purchase on the date we give notice for the related Additional Purchase; or
- $2.00 per share.

In the case of the Regular Purchases, Accelerated Purchases and Additional Purchases, the purchase price per share will be equitably adjusted for any reorganization, recapitalization, non-cash dividend, stock split, reverse stock split or other similar transaction occurring during the business days used to compute the purchase price.

Other than as described above, there are no trading volume requirements or restrictions under the Purchase Agreement, and we will control the timing and amount of any sales of our common stock to Lincoln Park.

Events of Default

Events of default under the Purchase Agreement include the following:

- the effectiveness of the registration statement of which this prospectus forms a part lapses for any reason (including, without limitation, the issuance of a stop order), or any required prospectus supplement and accompanying prospectus are unavailable for the resale by Lincoln Park of our common stock offered hereby, and such lapse or unavailability continues for a period of 10 consecutive business days or for more than an aggregate of 30 business days in any 365-day period;
- suspension by our principal market of our common stock from trading for a period of one business day;

- the de-listing of our common stock from The NASDAQ Capital Market, our principal market, provided our common stock is not immediately thereafter trading on the New York Stock Exchange, the NASDAQ Global Market, the NASDAQ Global Select Market, the NYSE Market, the OTC Bulletin Board or OTC Markets (or nationally recognized successor thereto);
- the failure of our transfer agent to issue to Lincoln Park shares of our common stock within three business days after the applicable date on which Lincoln Park is entitled to receive such shares;
- any breach of the representations or warranties or covenants contained in the Purchase Agreement or Registration Rights Agreement that has or could have a material adverse effect on us and, in the case of a breach of a covenant that is reasonably curable, that is not cured within five business days;
- if at any time the Exchange Cap is reached, to the extent applicable;
- any voluntary or involuntary participation or threatened participation in insolvency or bankruptcy proceedings by or against us; or
- if at any time we are not eligible to transfer our common stock electronically.

Lincoln Park does not have the right to terminate the Purchase Agreement upon any of the events of default set forth above. During an event of default, all of which are outside of Lincoln Park's control, we may not direct Lincoln Park to purchase any shares of our common stock under the Purchase Agreement.

Our Termination Rights

We have the unconditional right, at any time, for any reason and without any payment or liability to us, to give notice to Lincoln Park to terminate the Purchase Agreement. In the event of bankruptcy proceedings by or against us, the Purchase Agreement will automatically terminate without action of any party.

No Short-Selling or Hedging by Lincoln Park

Lincoln Park has agreed that neither it nor any of its affiliates shall engage in any direct or indirect short-selling or hedging of our common stock during any time prior to the termination of the Purchase Agreement.

Prohibitions on Variable Rate Transactions

There are no restrictions on future financings, rights of first refusal, participation rights, penalties or liquidated damages in the Purchase Agreement or Registration Rights Agreement other than a prohibition on entering into a "Variable Rate Transaction," as defined in the Purchase Agreement.

Effect of Performance of the Purchase Agreement on Our Stockholders

All 7,300,000 shares registered in this offering which have been or may be issued or sold by us to Lincoln Park under the Purchase Agreement are expected to be freely tradable. It is anticipated that shares registered in this offering will be sold over a period of up to 30 months commencing on the date that the registration statement including this prospectus becomes effective. The sale by Lincoln Park of a significant amount of shares registered in this offering at any given time could cause the market price of our common stock to decline and to be highly volatile. Sales of our common stock to Lincoln Park, if any, will depend upon market conditions and other factors to be determined by us. We may ultimately decide to sell to Lincoln Park all, some or none of the additional shares of our common stock that may be available for us to sell pursuant to the Purchase Agreement. If and when we do sell shares to Lincoln Park, after Lincoln Park has acquired the shares, Lincoln Park may resell all, some or none of those shares at any time or from time to time in its discretion. Therefore, sales to Lincoln Park by us under the Purchase Agreement may result in substantial dilution to the interests of other holders of our common stock. In addition, if we sell a substantial number of shares to Lincoln Park under the Purchase Agreement, or if investors expect that we will do so, the actual sales of shares or the mere existence of our arrangement with Lincoln Park may make it more difficult for us to sell equity or equity-related securities in the future at a time and at a price that we might otherwise wish to effect such sales. However, we have the right to control the timing and amount of any additional sales of our shares to Lincoln Park and the Purchase Agreement may be terminated by us at any time at our discretion without any cost to us.

Pursuant to the terms of the Purchase Agreement, we have the right, but not the obligation, to direct Lincoln Park to purchase up to $15,000,000 of our common stock, exclusive of the 450,000 shares issued to Lincoln Park on such date as a commitment fee. Depending on the price per share at which we sell our common stock to Lincoln Park pursuant to the Purchase Agreement, we may need to sell to Lincoln Park under the Purchase Agreement more shares of our common stock than are offered under this prospectus in order to receive aggregate gross proceeds equal to the $15,000,000 total commitment available to us under the Purchase Agreement. If we choose to do so, we must first register for resale under the Securities Act such additional shares of our common stock, which could cause additional substantial dilution to our stockholders. The number of shares ultimately offered for resale by Lincoln Park under this prospectus is dependent upon the number of shares we direct Lincoln Park to purchase under the Purchase Agreement.

The Purchase Agreement prohibits us from issuing or selling to Lincoln Park under the Purchase Agreement (i) shares of our common stock in excess of the Exchange Cap, unless we obtain stockholder approval to issue shares in excess of the Exchange Cap or the average price of all applicable sales of our common stock to Lincoln Park under the Purchase Agreement equal or exceed $0.6422 per share, such that the transactions contemplated by the Purchase Agreement are exempt from the Exchange Cap limitation under applicable NASDAQ rules, and (ii) any shares of our common stock if those shares, when aggregated with all other shares of our common stock then beneficially owned by Lincoln Park and its affiliates, would exceed the Beneficial Ownership Cap.

The following table sets forth the amount of gross proceeds we would receive from Lincoln Park from our sale of shares to Lincoln Park under the Purchase Agreement at varying purchase prices:

Assumed Average Purchase Price Per Share	Number of Registered Shares to be Issued if Full Purchase (1)	Percentage of Outstanding Shares After Giving Effect to the Issuance to Lincoln Park (2)	Proceeds from the Sale of Shares to Lincoln Park Under the $15M Purchase Agreement
$0.30	6,850,000	22%	$ 2,055,000
$0.58 (3)	6,850,000	22%	$ 3,973,000
$0.90	6,850,000	22%	$ 6,165,000
$1.20	6,850,000	22%	$ 8,220,000
$2.00	6,850,000	22%	$ 13,700,000

(1) Although the Purchase Agreement provides that we may sell up to $15,000,000 of our common stock to Lincoln Park, we are only registering 7,300,000 shares under this prospectus which represents: (i) 450,000 shares that we already issued to Lincoln Park as a commitment fee for making the commitment under the Purchase Agreement, and (ii) an additional 6,850,000 shares which may be issued to Lincoln Park in the future under the Purchase Agreement, if and when we sell shares to Lincoln Park under the Purchase Agreement, and which may or may not cover all the shares we ultimately sell to Lincoln Park under the Purchase Agreement, depending on the purchase price per share. As a result, we have included in this column only those shares that we are registering in this offering. If we seek to issue shares of our common stock, including shares from other transactions that may be aggregated with the transactions contemplated by the Purchase Agreement under the applicable rules of The NASDAQ Capital Market, in excess of 4,647,142 shares, or 19.99% of the total common stock outstanding immediately prior to the execution of the Purchase Agreement, we may be required to seek stockholder approval in order to be in compliance with the rules of The NASDAQ Capital Market.

(2) The denominator is based on 23,247,338 shares outstanding as of August 7, 2017, adjusted to include the issuance of (i) 450,000 commitment shares issued to Lincoln Park upon the execution of the Purchase Agreement, and (ii) the number of shares set forth in the adjacent column which we would have sold to Lincoln Park, assuming the purchase price in the adjacent column. The numerator is based on the number of shares issuable under the Purchase Agreement at the corresponding assumed purchase price set forth in the adjacent column.

(3) The closing sale price of our common stock on August 8, 2017.

DETERMINATION OF OFFERING PRICE

The prices at which the Shares covered by this prospectus may actually be sold will be determined by the prevailing public market price for shares of our common stock, by negotiations between the Selling Stockholder and buyers of our common stock in private transactions or as otherwise described in "Plan of Distribution."

SELLING STOCKHOLDERS

This prospectus relates to the possible resale by the Selling Stockholder, Lincoln Park, of shares of our common stock that have been or may be issued to Lincoln Park pursuant to the Purchase Agreement. We are filing the registration statement of which this prospectus forms a part pursuant to the provisions of the Registration Rights Agreement, which we entered into with Lincoln Park on August 8, 2017 concurrently with our execution of the Purchase Agreement, in which we agreed to provide certain registration rights with respect to sales by Lincoln Park of the shares of our common stock that have been or may be issued to Lincoln Park under the Purchase Agreement.

Lincoln Park, as the Selling Stockholder, may, from time to time, offer and sell pursuant to this prospectus any or all of the shares that we have issued or may issue to Lincoln Park under the Purchase Agreement. The Selling Stockholder may sell some, all or none of its shares. We do not know how long the Selling Stockholder will hold the shares before selling them, and we currently have no agreements, arrangements or understandings with the Selling Stockholder regarding the sale of any of the shares.

The following table presents information regarding the Selling Stockholder and the shares that it may offer and sell from time to time under this prospectus. The table is prepared based on information supplied to us by the Selling Stockholder, and reflects its holdings as of August 8, 2017. Neither Lincoln Park nor any of its affiliates has held a position or office, or had any other material relationship, with us or any of our predecessors or affiliates. Beneficial ownership is determined in accordance with Section 13(d) of the Exchange Act and Rule 13d-3 thereunder. The percentage of shares beneficially owned prior to the offering is based on 23,697,338 shares of our common stock actually outstanding as of August 8, 2017.

Selling Stockholder	Shares Beneficially Owned Before this Offering	Percentage of Outstanding Shares Beneficially Owned Before this Offering	Shares to be Sold in this Offering	Percentage of Outstanding Shares Beneficially Owned After this Offering
Lincoln Park Capital Fund, LLC (1)	1,221,000 (2)	4.99% (3)	7,300,000 (4)	4.99%(5)

(1) Josh Scheinfeld and Jonathan Cope, the Managing Members of Lincoln Park Capital, LLC, are deemed to be beneficial owners of all of the shares of common stock owned by Lincoln Park Capital Fund, LLC. Messrs. Cope and Scheinfeld have shared voting and investment power over the shares being offered under the prospectus filed with the SEC in connection with the transactions contemplated under the Purchase Agreement. Lincoln Park Capital, LLC is not a licensed broker dealer or an affiliate of a licensed broker dealer.

(2) Represents (i) 450,000 Commitment Shares of our common stock issued to Lincoln Park upon our execution of the Purchase Agreement as a fee for its commitment to purchase shares of our common stock under the Purchase Agreement, all of which shares are covered by the registration statement that includes this prospectus; and (ii) an aggregate of 722,000 shares of our common stock, representing the maximum aggregate number of shares that may be issued to Lincoln Park as of the date of this prospectus upon exercise of warrants to purchase our common stock, at certain fixed prices (that may be subject to adjustment as provided in such warrants), which warrants were acquired by Lincoln Park in connection with our public offerings of securities in June 2015 and December 2016 (collectively, the "**LPC Public Offering Warrants**"). We have excluded from the number of shares beneficially owned by Lincoln Park prior to the offering: (a) an aggregate of 1,562,722 shares of our common stock underlying the LPC Public Offering Warrants, which, as of the date of this prospectus, may not be issued to Lincoln Park under the express terms of such warrants prohibiting us from issuing shares upon exercise of such warrants if such shares, when aggregated with all other shares of our common stock then beneficially owned by Lincoln Park and its affiliates, would result in Lincoln Park and its affiliates having beneficial ownership of more than 4.99% of the then total outstanding shares of our common stock, as calculated in accordance with the terms of such warrants; and (b) all of the additional shares of common stock that Lincoln Park may be required to purchase pursuant to the Purchase Agreement, because the issuance of such shares is solely at our discretion and is subject to certain conditions, the satisfaction of all of which are outside of Lincoln Park's

control, including the registration statement of which this prospectus is a part becoming and remaining effective. Furthermore, under the terms of the Purchase Agreement, issuances and sales of shares of our common stock to Lincoln Park are subject to certain limitations on the amounts we may sell to Lincoln Park at any time, including the Exchange Cap and the Beneficial Ownership Cap. See the description under the heading "The Lincoln Park Transaction" for more information about the Purchase Agreement.

(3) Based on 23,697,338 outstanding shares of our common stock as of August 8, 2017, which includes the 450,000 Commitment Shares we issued to Lincoln Park on August 8, 2017.

(4) Although the Purchase Agreement provides that we may sell up to $15,000,000 of our common stock to Lincoln Park, only 7,300,000 shares of our common stock are being offered under this prospectus, which represents: (i) 450,000 Commitment Shares issued to Lincoln Park upon our execution of the Purchase Agreement as a fee for its commitment to purchase shares of our common stock under the Purchase Agreement; and (ii) an aggregate of 6,850,000 shares of our common stock that may be sold by us to Lincoln Park at our discretion from time to time over a 30-month period commencing after the satisfaction of certain conditions set forth in the Purchase Agreement, including that the SEC has declared effective the registration statement that includes this prospectus. Depending on the price per share at which we sell our common stock to Lincoln Park pursuant to the Purchase Agreement, we may need to sell to Lincoln Park under the Purchase Agreement more shares of our common stock than are offered under this prospectus in order to receive aggregate gross proceeds equal to the $15,000,000 total commitment available to us under the Purchase Agreement. If we choose to do so, we must first register for resale under the Securities Act such additional shares. The number of shares ultimately offered for resale by Lincoln Park is dependent upon the number of shares we sell to Lincoln Park under the Purchase Agreement.

(5) Percentage represents the maximum aggregate number of shares issuable to Lincoln Park upon exercise of the LPC Public Offering Warrants under the terms of such warrants, after giving effect to the resale by Lincoln Park of all shares of common stock that have been or may be issued and sold by us pursuant to the Purchase Agreement and that are covered by this prospectus and referenced in footnote (4) above.

PLAN OF DISTRIBUTION

The common stock offered by this prospectus is being offered by the Selling Stockholder, Lincoln Park. The common stock may be sold or distributed from time to time by the Selling Stockholder directly to one or more purchasers or through brokers, dealers, or underwriters who may act solely as agents at market prices prevailing at the time of sale, at prices related to the prevailing market prices, at negotiated prices, or at fixed prices, which may be changed. The sale of the common stock offered by this prospectus could be effected in one or more of the following methods:

- ordinary brokers' transactions;
- transactions involving cross or block trades;
- through brokers, dealers, or underwriters who may act solely as agents;
- "at the market" into an existing market for the common stock;
- in other ways not involving market makers or established business markets, including direct sales to purchasers or sales effected through agents;
- in privately negotiated transactions; or
- any combination of the foregoing.

In order to comply with the securities laws of certain states, if applicable, the shares may be sold only through registered or licensed brokers or dealers. In addition, in certain states, the shares may not be sold unless they have been registered or qualified for sale in the state or an exemption from the state's registration or qualification requirement is available and complied with.

Lincoln Park is an "underwriter" within the meaning of Section 2(a)(11) of the Securities Act.

Lincoln Park has informed us that it intends to use an unaffiliated broker-dealer to effectuate all sales, if any, of the common stock that it may purchase from us pursuant to the Purchase Agreement. Such sales will be made at prices and at terms then prevailing or at prices related to the then current market price. Each such unaffiliated broker-dealer will be an underwriter within the meaning of Section 2(a)(11) of the Securities Act. Lincoln Park has informed us that each such broker-dealer will receive commissions from Lincoln Park that will not exceed customary brokerage commissions.

Brokers, dealers, underwriters or agents participating in the distribution of the shares as agents may receive compensation in the form of commissions, discounts, or concessions from the Selling Stockholder and/or purchasers of the common stock for whom the broker-dealers may act as agent. The compensation paid to a particular broker-dealer may be less than or in excess of customary commissions. Neither we nor Lincoln Park can presently estimate the amount of compensation that any agent will receive.

We know of no existing arrangements between Lincoln Park or any other stockholder, broker, dealer, underwriter or agent relating to the sale or distribution of the shares offered by this prospectus. At the time a particular offer of shares is made, a prospectus supplement, if required, will be distributed that will set forth the names of any agents, underwriters or dealers and any compensation from the Selling Stockholder, and any other required information.

We will pay the expenses incident to the registration, offering, and sale of the shares to Lincoln Park. We have agreed to indemnify Lincoln Park and certain other persons against certain liabilities in connection with the offering of shares of common stock offered hereby, including liabilities arising under the Securities Act or, if such indemnity is unavailable, to contribute amounts required to be paid in respect of such liabilities. Lincoln Park has agreed to indemnify us against liabilities under the Securities Act that may arise from certain written information furnished to us by Lincoln Park specifically for use in this prospectus or, if such indemnity is unavailable, to contribute amounts required to be paid in respect of such liabilities.

Lincoln Park has represented to us that at no time prior to the Purchase Agreement has Lincoln Park or its agents, representatives or affiliates engaged in or effected, in any manner whatsoever, directly or indirectly, any short sale (as such term is defined in Rule 200 of Regulation SHO of the Exchange Act) of our common stock or any hedging transaction, which establishes a net short position with respect to our common stock. Lincoln Park agreed that during the term of the Purchase Agreement, it, its agents, representatives or affiliates will not enter into or effect, directly or indirectly, any of the foregoing transactions.

We have advised Lincoln Park that it is required to comply with Regulation M promulgated under the Exchange Act. With certain exceptions, Regulation M precludes the selling stockholder, any affiliated purchasers, and any broker-dealer or other person who participates in the distribution from bidding for or purchasing, or attempting to induce any person to bid for or purchase any security which is the subject of the distribution until the entire distribution is complete. Regulation M also prohibits any bids or purchases made in order to stabilize the price of a security in connection with the distribution of that security. All of the foregoing may affect the marketability of the securities offered by this prospectus.

This offering will terminate on the date that all shares offered by this prospectus have been sold by Lincoln Park.

Our common stock is quoted on The NASDAQ Capital Market under the symbol “RXII”.

DESCRIPTION OF SECURITIES

Authorized Capital Stock

Our authorized capital stock consists of 100,000,000 shares of common stock, par value $0.0001 per share, and 10,000,000 shares of preferred stock, par value $0.0001 per share, of which 8,100 are authorized as Series B Convertible Preferred Stock and 1,800,000 are authorized as Series C Convertible Preferred Stock.

As of August 8, 2017, there were 23,697,338 shares of our common stock issued and outstanding. There were no shares of our Series B Convertible Preferred Stock or Series C Convertible Preferred Stock issued or outstanding.

Common Stock

The holders of our common stock are entitled to one vote for each share on all matters voted on by stockholders, including elections of directors, and, except as otherwise required by law or provided in any resolution adopted by our Board with respect to any series of preferred stock, the holders of such shares will possess all voting power. Our certificate of incorporation does not provide for cumulative voting in the election of directors. The shares of common stock have no conversion rights or sinking fund provisions and are not liable for further call or assessment. Subject to any preferential rights of any outstanding series of our preferred stock created by our Board from time to time, the holders of common stock are entitled to such dividends as may be declared from time to time by our Board from funds available therefor and upon liquidation are entitled to receive their pro rata share of all assets available for distribution to such holders. Our common stock is not redeemable.

The holders of our common stock have no preemptive rights.

The rights, preferences and privileges of holders of common stock are subject to, and may be adversely affected by, the rights of the holders of shares of any series of preferred stock that we may designate and issue in the future.

Preferred Stock

Our Board of Directors, without further action by the holders of our common stock, may issue shares of our preferred stock in one or more series. Our Board is vested with the authority to fix by resolution the designations, preferences and relative, participating, optional or other special rights, and such qualifications, limitations or restrictions thereof, including, without limitation, redemption rights, dividend rights, liquidation preferences and conversion or exchange rights of any class or series of preferred stock, and to fix the number of classes or series of preferred stock, the number of shares constituting any such class or series and the voting powers for each class or series.

The authority possessed by our Board to issue preferred stock could potentially be used to discourage attempts by third parties to obtain control of us through a merger, tender offer, proxy contest or otherwise by making such attempts more difficult or more costly. Our Board may issue preferred stock with voting rights or conversion rights that, if exercised, could adversely affect the voting power of the holders of common stock. There are no current agreements or understandings with respect to the future issuance of preferred stock and our Board has no present intention to issue any additional shares of preferred stock.

Outstanding Warrants

As of August 8, 2017, we had outstanding warrants to purchase 14,077,779 shares of common stock at a weighted-average exercise price of $1.30 per share, of which 1,300,002 expire on June 2, 2020 and 12,777,777 expire on December 21, 2021.

Anti-Takeover Effects of Provisions of the Certificate of Incorporation and Bylaws

Certificate of Incorporation and Bylaw Provisions. Our certificate of incorporation and bylaws include a number of provisions that may have the effect of encouraging persons considering unsolicited tender offers or other unilateral takeover proposals to negotiate with our board of directors rather than pursue non-negotiated takeover attempts. They are intended to enhance long-term value to our stockholders by increasing the likelihood of continued stability in the composition of our board of directors and its policies and discouraging certain types of transactions that may involve an actual or threatened acquisition of us. These provisions are also designed to reduce our vulnerability to an unsolicited acquisition proposal and to discourage certain tactics that may be used in proxy fights. However, such provisions could have the effect of discouraging others from making tender offers for our shares and, as a consequence, they also may inhibit fluctuations in the market price of our stock that could result from actual or rumored takeover attempts. These provisions include the items described below.

Filling Vacancies. Any vacancy on our board of directors, however occurring, including a vacancy resulting from an increase in the size of our board of directors, may only be filled by the affirmative vote of a majority of our directors then in office even if less than a quorum.

No Written Consent of Stockholders. Our certificate of incorporation provides that all stockholder actions are required to be taken by a vote of the stockholders at an annual or special meeting, and that stockholders may not take any action by written consent in lieu of a meeting.

Meetings of Stockholders. Our certificate of incorporation provides that only our board of directors or holders of 5% or more of our outstanding shares of common stock may call special meetings of stockholders and only those matters set forth in the notice of the special meeting may be considered or acted upon at a special meeting of stockholders. Our bylaws limit the business that may be conducted at an annual meeting of stockholders to those matters properly brought before the meeting.

Advance Notice Requirements. Our bylaws include advance notice procedures with regard to stockholder proposals relating to the nomination of candidates for election as directors or new business to be brought before meetings of our stockholders. These procedures provide that notice of stockholder proposals must be timely given in writing to our corporate secretary prior to the meeting at which the action is to be taken. Generally, to be timely, notice must be received at our principal executive offices not less than 90 days nor more than 120 days prior to the first anniversary date of the annual meeting for the preceding year. The notice must contain certain information specified in the amended and restated bylaws.

Amendment to Bylaws and Certificate of Incorporation. As required by the Delaware General Corporation Law (the "**DGCL**") any amendment of our certificate of incorporation must first be approved by a majority of our board of directors and, if required by law or our certificate of incorporation, thereafter be approved by a majority of the outstanding shares entitled to vote on the amendment, and a majority of the outstanding shares of each class entitled to vote thereon as a class. Our bylaws may be amended by the affirmative vote of a majority vote of the directors then in office, subject to any limitations set forth in the bylaws.

Blank Check Preferred Stock. Our amended and restated certificate of incorporation provides for 10,000,000 authorized shares of preferred stock. The existence of authorized but unissued shares of preferred stock may enable our board of directors to render more difficult or to discourage an attempt to obtain control of us by means of a merger, tender offer, proxy contest, or otherwise. For example, if in the due exercise of its fiduciary obligations, our board of directors were to determine that a takeover proposal is not in the best interests of our company or our stockholders, our board of directors could cause shares of preferred stock to be issued without stockholder approval in one or more private offerings or other transactions that might dilute the voting or other rights of the proposed acquirer or insurgent stockholder or stockholder group. In this regard, our amended and restated certificate of incorporation grants our board of directors broad power to establish the rights and preferences of authorized and unissued shares of preferred stock. The issuance of shares of preferred stock could decrease the amount of earnings and assets available for distribution to holders of shares of common stock. The issuance may also adversely affect the rights and powers, including voting rights, of these holders and may have the effect of delaying, deterring, or preventing a change of control of us.

Delaware Business Combination Statute

Section 203 of the DGCL provides that, subject to exceptions set forth therein, an "interested stockholder" of a Delaware corporation shall not engage in any business combination, including mergers or consolidations or acquisitions of additional shares of the corporation, with the corporation for a three-year period following the date that such stockholder becomes an interested stockholder unless:

- Prior to such date, the board of directors of the corporation approved either the business combination or the transaction that resulted in the stockholder becoming an interested stockholder;
- Upon consummation of the transaction that resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, other than statutorily excluded shares; or
- On or subsequent to such date, the business combination is approved by the board of directors of the corporation and authorized at an annual or special meeting of the stockholders by the affirmative vote of at least 66-2/3% of the outstanding voting stock which is not owned by the interested stockholder.

Except as otherwise set forth in Section 203, an "interested stockholder" is defined to include:

- Any person that is the owner of 15% or more of the outstanding voting stock of the corporation, or is an affiliate or associate of the corporation and was the owner of 15% or more of the outstanding voting stock of the corporation at any time within three years immediately prior to the date of determination; and
- The affiliates and associates of any such person.

Section 203 may make it more difficult for a person who would be an interested stockholder to effect various business combinations with a corporation for a three-year period. We have not elected to be exempt from the restrictions imposed under Section 203. The provisions of Section 203 may encourage persons interested in acquiring us to negotiate in advance with our board, since the stockholder approval requirement would be avoided if a majority of the directors then in office approves either the business combination or the transaction which results in any such person becoming an interested stockholder. Such provisions also may have the effect of preventing changes in our management. It is possible that such provisions could make it more difficult to accomplish transactions, which our stockholders may otherwise deem to be in their best interests.

Exchange Listing

Our common stock is listed on the Nasdaq Capital Market under the trading symbol "RXII." The warrants issued in connection with the Company's underwritten public offering on December 21, 2016 are listed on the Nasdaq Capital Market under the trading symbol "RXIIW."

Transfer Agent and Registrar

Computershare Trust Company, N.A. is the transfer agent and registrar for our common stock.

DESCRIPTION OF BUSINESS

Overview

RXi is a clinical-stage company developing innovative therapeutics based on our proprietary self-delivering RNAi (sd-rxRNA®) platform and Samcyprone™ which address significant unmet medical needs. We have a pipeline of discovery, preclinical and clinical product candidates in the areas of dermatology, ophthalmology and cell-based cancer immunotherapy. The Company's clinical development programs include RXI-109, an sd-rxRNA for the treatment of dermal and ocular scarring, and Samcyprone™, a topical immunomodulator, for the treatment of warts. The Company's pipeline, coupled with our extensive patent portfolio, provides for product development and business development opportunities across a broad spectrum of therapeutic areas.

Our Pipeline

Our pipeline focuses on three areas: dermatology, including cosmetic product development, ophthalmology and cell-based cancer immunotherapy. Our RNAi therapies are designed to "silence," or down-regulate, the expression of a specific gene that may be over-expressed in a disease condition and our topical immunotherapy agent, Samcyprone™, treats diseases by inducing, enhancing or suppressing an immune response in the skin. The following is a summary of our current product candidates and their development status:

Dermatology Franchise

RXI-109—Dermal Scarring

The Company's lead product candidate and first RNAi clinical product candidate, RXI-109, is a self-delivering RNAi compound (sd-rxRNA) that commenced human clinical trials in 2012. RXI-109 is designed to reduce the expression of connective tissue growth factor ("**CTGF**"), a critical regulator of several biological pathways involved in fibrosis, including scar formation in the skin and eye. RXI-109 is currently being evaluated in a Phase 2 clinical trial, Study 1402, to prevent or reduce dermal scarring following scar revision surgery of an existing hypertrophic scar.

The Company initially conducted two Phase 1 clinical trials evaluating RXI-109 in a surgical setting. Both trials demonstrated the safety and tolerability of RXI-109 in ascending single and multi-doses, and also provided the first evidence of clinical activity in a surgical setting. With the successful completion of the Phase 1 trials, in November 2013 the Company initiated its Phase 2 program for RXI-109 with Study 1301, a Phase 2 clinical trial evaluating the use of RXI-109 to prevent the recurrence of hypertrophic scars following scar revision surgery. Enrollment and dosing for this study have been completed.

Preliminary data observations from Study 1301 were used in the design of the Company's second Phase 2 clinical trial in hypertrophic scars, Study 1402, which commenced in July 2014. In October 2015, we reported that preliminary data from Study 1402 demonstrated that scars at revision sites were judged to be better at three months after a treatment regimen with five mg/cm intradermal administration of RXI-109 than scars at untreated revision sites in those same subjects. Based in part on this new information, two more cohorts (Cohorts 3 and 4) were added to Study 1402 in November 2015. For these two cohorts, the number of doses was increased to either eight or nine doses of RXI-109 over a six-month period to better cover the extended wound healing/scarring profile of hypertrophic scars. Enrollment of subjects into these two new cohorts completed ahead of schedule during the third quarter of 2016.

In December 2016, the Company announced that preliminary data from the first two cohorts from Study 1402 at nine months confirmed the positive differentiation by a blinded panel of observers from untreated surgery incisions in hypertrophic scars from the previously presented data for a subset of subjects treated with five mg/cm of RXI-109 at three months. In addition, these data extend this observation to all time points, including the post-treatment follow-up period through nine months post-surgery. RXI-109 was safe and well tolerated. Additionally, as expected, the limited three-month data available from Cohort 3 appeared to align with that of the first two cohorts as these subjects all had the same dosing schedule through the third month. A complete read-out of the whole study, including all four cohorts with follow-up until nine months post-surgery, is expected in the second half of 2017.

Scarring represents a high unmet medical need as there are currently no U.S. Food and Drug Administration ("**FDA**") approved therapies in the U.S. for the treatment and prevention of scars in the skin. Scar revision surgery is one treatment option, but often the scar recurs. If approved, RXI-109 could be a "first-in-class" RNAi treatment for the prevention or reduction of post-surgical dermal scarring. Given the large number of surgical procedures, there is a significant market for a scar prevention therapeutic such as RXI-109.

Samcyprone™—Warts

In December 2014, the Company broadened its clinical pipeline with an exclusive, global license to Samcyprone™, our second clinical candidate. Samcyprone™ is a proprietary topical formulation of the small molecule diphenylcyclopropenone ("**DPCP**"), an immunomodulator that works by initiating a T-cell response. The use of Samcyprone™ allows sensitization using much lower concentrations of DPCP than are used with existing compounded DPCP solutions, avoiding hyper-sensitization to subsequent challenge doses. DPCP, the active ingredient in Samcyprone™, has long been used to treat warts and has also been used for several other indications, such as to stimulate hair re-growth in alopecia areata and to clear cutaneous metastases of melanoma. In March 2015, the FDA granted Orphan Drug Designation to the Company for Samcyprone™ for the treatment of malignant melanoma stages IIb to IV. Samcyprone™ is currently being evaluated in a Phase 2a clinical trial, Study 1502, for the clearance of common warts.

Study 1502, initiated in December 2015, includes a sensitization phase in which a spot on the subject's upper arm and one or more warts are treated with Samcyprone™. After being sensitized in this way, the subjects enter into the treatment phase where up to four warts are treated on a once weekly basis for ten weeks with a ten-fold lower concentration of Samcyprone™ than in the sensitization phase. During the trial, the warts are scored, photographed and measured to monitor the level of clearance.

In December 2016, the Company announced the results from a preliminary review of sensitization and wart clearance data from a subset of subjects that had completed the ten-week treatment phase of Study 1502. Results showed that greater than 90% of the subjects demonstrated a sensitization response, a prerequisite to be able to develop a therapeutic response. Additionally, more than 60% of the subjects responded to the treatment by exhibiting either complete or greater than 50% clearance of all treated warts with up to ten weekly treatments. Samcyprone™ treatment has been generally safe and well tolerated and has had drug-related adverse events relating to local reactions, which are typically expected for this type of treatment due to the sensitization and challenge responses in the skin. The Company added a second cohort, which is expected to be fully enrolled in the second half of 2017, to explore the opportunity to reduce the sensitization dose level, which will be more convenient to physicians and subjects. Early read-outs of the study are anticipated in the second half of 2017.

Cutaneous warts are extremely common, being experienced by most people at some time during their lives. Although most warts will spontaneously disappear without treatment, treatment is sought for recalcitrant warts and to prevent recurrence. There are many different treatment modalities for warts, including physical destruction and immunomodulation. However, treatment of warts is complicated by low success rates, prolonged duration of therapy and the potential for recurrence. There is a clear unmet need for new therapies for warts, and if approved, Samcyprone™ could be a more effective and convenient treatment than the currently available therapies.

Additional Dermatology Programs

In addition to our dermal scarring and wart programs, we continue to advance our preclinical and discovery programs with our sd-rxRNA technology. The Company has selected tyrosinase ("**TYR**") and collagenase ("**MMP1**") as targets for our self-delivering platform because they are relevant for both consumer health and therapeutic development. TYR is a key enzyme in the synthesis of melanin. Melanin is produced by melanocytes and is the pigment that gives human skin, hair and eyes their color. The inhibition of TYR can play a key role in the management of skin conditions including cutaneous hyperpigmentation disorders such as lentigines (freckles, age spots and liver spots) and possibly melanoma. MMP1 is a key enzyme involved in the breakdown of extracellular matrix. Reduction of MMP1 may be beneficial in the treatment of skin aging disorders, arthritis, acne scarring, blistering skin disorders, corneal erosions, endometriosis and possibly cancer metastasis.

Cosmetic Development

Cosmetics are compounds that affect the appearance of the skin and make no preventative or therapeutic claims. These compounds may be developed more rapidly than therapeutics, therefore the path to market may be much shorter and less expensive. In October 2015, we announced the selection of lead compounds targeting TYR and MMP1 for cosmetic development.

RXI-231 — Uneven Skin Tone and Pigmentation

RXI-231, an sd-rxRNA compound targeting TYR, is in development as a cosmetic ingredient that may improve the appearance of uneven skin tone and pigmentation. Efficacy and toxicity testing in cell culture and skin equivalents for RXI-231 was successfully completed in December 2016. The Company initiated human testing of RXI-231 in June 2017 with a U.S. clinical testing site. In addition to evaluating safety, the Company will assess the effect of RXI-231 on the appearance of skin pigmentation in a follow-on study.

RXI-185 — Wrinkles and Skin Laxity

RXI-185, an sd-rxRNA compound targeting MMP1, is in development as a cosmetic ingredient that may improve the appearance of wrinkles or skin laxity. Results from studies by the Company have shown a pronounced reduction in MMP1 mRNA levels that correspond to a similar reduction in MMP1 enzyme activity in cell culture in vitro.

Ophthalmology Franchise

RXI-109 – Retinal Scarring

As in dermal scarring, RXI-109 can also be used to target CTGF in the eye, where CTGF is known to be involved in retinal scarring. Building on the work in our dermal clinical program, the Company filed a new investigational drug application ("**IND**") in July 2015 for RXI-109 as a potential therapeutic for the scarring component of retinal diseases in the eye, such as wet age-related macular degeneration ("**AMD**"). In November 2015, we initiated a Phase 1/2 clinical trial to evaluate the safety and clinical activity of RXI-109 in reducing the progression of retinal scarring.

Study 1501 is a multi-dose, dose escalation study conducted in subjects with AMD with evidence of subretinal fibrosis. Each subject receives four doses of RXI-109 by intraocular injection at one month intervals for a total dosing period of three months. The safety and tolerability of RXI-109, as well as the potential for clinical activity, is evaluated over the course of the study using numerous assessments to monitor the health of the retina and to assess visual acuity. To date, there have been no safety issues that have precluded continuation of dosing. Study 1501 has been completely enrolled and dosing in the third cohort at the highest planned dose level is ongoing. The Company expects to complete subject participation in the study by the end of 2017 and to share top-line data in early 2018.

Currently, there is no effective way to prevent the formation or progression of retinal scars that may occur as a consequence of a number of debilitating ocular diseases. In advanced neo-vascular or wet-AMD, our first area of study, retinal scarring often results in continued vision loss even if the patient is being treated with an anti-vascular endothelial growth factor ("**VEGF**") therapy. RXI-109 has the potential to fill this unmet medical need by reducing this continuing damage to the retina and in doing so help preserve these patients' vision for a longer period of time.

Additional Ophthalmology Programs

In addition to the clinical trial for the use of RXI-109 as a potential therapeutic for retinal scarring, we are advancing other early-stage ophthalmology programs. Currently, the Company is directing its development efforts toward advancing RXI-109 for the treatment of corneal scarring. To date, our preclinical studies have shown that CTGF protein levels are reduced in a dose-dependent manner in both the retina and cornea following an intravitreal injection of RXI-109 in monkeys. Elevated CTGF is implicated in the formation of corneal scarring that can occur after eye injury or after certain infections, and it has been proposed that a reduction of CTGF may be an important step towards reducing corneal scarring. Scarring of the cornea can impact the transparency of the cornea, and thus negatively impact vision. We are currently working towards a non-invasive delivery formulation of RXI-109 to reduce CTGF in the front of the eye.

Cell-based Cancer Immunotherapy

In January 2017, the Company entered into a Stock Purchase Agreement (the "**Stock Purchase Agreement**") pursuant to which it acquired 100% of the issued and outstanding shares of capital stock of MirImmune Inc. ("**MirImmune**") for an aggregate of 2,750,371 shares of common stock of the Company and 1,118,224 shares of Series C Convertible Preferred Stock (the "**Series C Convertible Preferred Stock**"). On June 9, 2017, with the approval of the Company's stockholders in accordance with the stockholder approval requirements of Nasdaq Marketplace Rule 5635, each share of the Company's Series C Convertible Preferred Stock outstanding was automatically converted into one share of common stock, such that no shares of Series C Convertible Preferred Stock remained issued or outstanding.

Under the terms of the Stock Purchase Agreement, if certain development or commercial milestones are achieved within two years, the Company will be required to either (i) issue to the sellers a number of shares of common stock or (ii) pay the equivalent value in cash.

Prior to its acquisition by the Company, MirImmune was a privately held biopharmaceutical company engaged in the development of cancer immunotherapies. The Company previously granted an exclusive license to MirImmune in March 2015 to utilize the Company's novel and proprietary sd-rxRNA technology for use in developing ex vivo cell-based cancer immunotherapies.

Our approach to immunotherapy builds on well-established methodologies of adoptive cell transfer. Immune cells, such as T-lymphocytes, are isolated from specific patients or retrieved from allogeneic immune cell banks and then expanded and sometimes processed to express tumor-binding receptors. Our method will introduce a new and important step in ex vivo processing of immune cells. This step uses our sd-rxRNA technology to reduce or eliminate the expression of immunosuppressive receptors or proteins by the therapeutic immune cells, potentially making them less sensitive to tumor resistance mechanism and thus improving their ability to destroy the tumor cells.

The Company's approach builds on current immunotherapy approaches but provides some key advantages. One major advantage is that pre-treatment with our targeted compounds allows multiple immune checkpoints to be attenuated within the same therapeutic cell, an improvement which could dramatically increase their tumor cell killing capability. In addition, these therapeutic immune cells may lack some known side effects associated with the checkpoint inhibitor toxicity while potentially improving efficacy over current immunotherapy approaches.

Using our sd-rxRNA technology, MirImmune demonstrated in vitro that multiple sd-rxRNA compounds can be used alone or in combination to target and silence extracellular, as well as intracellular, checkpoints in immune cells. Additional in vitro data demonstrated that PD-1 silencing by sd-rxRNA in patient-derived tumor infiltrating lymphocytes (TILs) resulted in enhanced killing of melanoma tumor cells from the same patient in culture. MirImmune also showed in a mouse model of human ovarian cancer that in vivo treatment with mesothelin-targeting CAR T-cells transfected with a PD-1 targeting sd-rxRNA significantly reduced the rate of tumor growth as compared to vehicle control. Furthermore, the silencing of PD-1 in the CAR T-cells isolated from these tumors persisted for at least one month.

In December 2016, new data was provided by MirImmune demonstrating silencing of a number of undisclosed immunosuppressive targets in natural killer cells (NK cells) using our sd-rxRNA compounds. This adds to a remarkable set of immune checkpoint modulation studies in human T-cells, including CAR T-cells and TILs. In immune cells tested to date, the sd-rxRNA treatment results in potent silencing while maintaining close to 100% transfection efficiency and nearly full cell viability. Moreover, the silencing effect has been validated in a number of clinically used cell treatment protocols.

Building on the work completed by MirImmune prior to its acquisition by the Company, our cell-based cancer immunotherapy program with sd-rxRNA includes lead compounds for a number of immune checkpoint targets that provide long lasting immune checkpoint silencing, individually and in combination, in adoptively transferred cells. An improved efficacy upon the silencing of checkpoints has been demonstrated in various types of adoptively transferred cells relevant in cancer immunotherapy, such as CAR T-cells and TILs. The Company's ongoing discovery programs include, but are not limited to, the evaluation of sd-rxRNA compounds to silence targets related to cytokine release syndrome. The Company has also initiated in vivo evaluations of multiple checkpoint inhibiting sd-rxRNA compounds co-transfected in CAR T-cells in mouse models for solid tumors, with data from this study expected in the second half of 2017.

Additionally, the Company recently selected two sd-rxRNA compounds from its immunotherapy pipeline for preclinical development. For oncology treatments based on adoptive cell transfer (ACT), compounds RXI-762 and RXI-804 suppress the expression of immune checkpoint proteins PD-1 and TIGIT, respectively, which can result in an improved efficacy to the targeted tumors. This decision triggered the selection of a manufacturing facility to initiate production of cGMP grade material, initially for the first of these two compounds (RXI-762). This also supports moving RXI-762 into clinical development as early as 2018 as part of an ACT therapy.

Market Opportunity

As there are currently no FDA-approved drugs to prevent scar formation, a therapeutic of this type could have great benefit for trauma and surgical patients, particularly as a treatment during the surgical revision of existing unsatisfactory scars. According to the American Society for Plastic Surgery, there are approximately 180,000 scar revision surgeries in the United States every year. In addition to cosmetic and reconstructive surgeries, medical interventions which could incorporate an anti-scarring agent include treatment of scarring that results from trauma, surgery or burns (especially relating to raised or hypertrophic scarring or contracture scarring), and surgical revision of existing unsatisfactory scars. Moreover, there are over 42 million medical procedures in the U.S. each year that could potentially benefit from a therapeutic treatment that could successfully reduce or prevent scarring; thus, the market potential is quite large.

AMD is the leading cause of severe vision loss in adults over age 50. According to the National Eye Institute, in 2010 approximately 2.07 million people had AMD. The National Eye Institute further states that as the proportion of people in the U.S. age 65 and older grows larger, more people are developing age-related diseases, such as AMD. Due to the aging population, this number is expected to double to an estimated 5.44 million people in the year 2050. There is no cure for AMD and over 50% of patients start to develop scarring after 2 years on anti-VEGF therapy, the current standard of care. This represents a large number of patients with an unmet medical need that could benefit from a therapeutic treatment that could successfully reduce or prevent scarring in the retina, and thereby improve vision loss.

Overexpression of CTGF is implicated in dermal scarring, subretinal fibrosis and other fibrotic diseases. Because of this, we believe that RXI-109 or other CTGF-targeting RNAi compounds may be able to treat the fibrotic component of numerous additional indications. These indications are as wide ranging as acute spinal injury, endometriosis, organ fibrosis including liver and pulmonary fibrosis, cutaneous scleroderma and vascular restenosis, in addition to numerous ocular diseases that result in retinal scarring. If the current clinical trials of RXI-109 produce successful results, we may explore opportunities in these additional indications that can be accessed by local administration, starting with intradermal or intravitreal injection. Although the Company does not intend to develop systemic uses of RXI-109 at this time, the Company is open to business development and out-licensing opportunities for those applications.

DPCP, the active ingredient in Samcyprone™, is a small molecule that has been used since the late 1970s to stimulate regrowth of hair in patients with alopecia areata. Recent publications have supported its use as an immunomodulator for the treatment of alopecia areata, warts and cutaneous metastases of malignant melanoma, a combined market potential of over an estimated $1 billion. Although it has been used by physicians for several decades, it has never been reviewed or approved by a regulatory authority as a drug. If FDA approval is granted, Samcyprone™, RXi's proprietary formulation of DPCP, is expected to achieve market exclusivity.

Despite many advances, there is still a significant unmet need for cancer treatments. There are currently close to 180 therapies across various phases of development in the T-cell immunotherapy market. This growth is supported by robust and opportunistic pipelines targeting various indications. Pharmaceutical and large biotechnology companies are actively looking for complementary technology platforms that enhance their cellular pipelines. Initial clinical trials of adoptive cell transfer, our approach to immunotherapy, have shown limited success in treatment of solid tumors. One of the major issues is the immunosuppressive tumor microenvironment. Multiple inhibitory receptors, or immune checkpoints, are responsible for immunosuppression. Our sd-rxRNA treatment can be seamlessly integrated in existing and new adoptive cell transfer therapies to overcome immunosuppression issues. Our sd-rxRNA compounds silence various immunosuppressive genes and boost the ability of therapeutic cells to kill tumors, while offering a safe and versatile approach to reduction of immunosuppression in therapeutic cells.

Introduction to RNAi

RNAi is a naturally occurring phenomenon where short, double-stranded RNA molecules interfere with the expression of targeted genes. The discovery of RNAi is regarded as a significant advancement in the scientific community, as evidenced by the 2006 Nobel Prize in Medicine awarded to the co-discoverers of RNAi, including Dr. Craig Mello, one of the founders of RXi.

RNAi offers a novel approach to the drug development process because RNAi compounds can potentially be designed to target any one of the thousands of human genes, many of which are “undruggable” by other modalities. 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 sequence of the entire human genome is now known, and the mRNA coding sequence for many proteins is already available. Supported by numerous gene-silencing reports and our own research, we believe that this sequence information can be used to design RNAi compounds to interfere with the expression of almost any specific gene.

Our RNAi Therapeutic Platform

The first design of RNAi compounds to be pursued for the development of human therapeutics were short, double-stranded RNAs that included at least one overhanging single-stranded region and limited modifications, known as small-interfering RNA, or siRNA, which we will also refer to as classic siRNA.

We believe that classic siRNAs have 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 and developed internally to optimize RNAi compounds for use as human therapeutic agents. For sd-rxRNA, it is the combination of the duplex length, the nucleotide sequence and the configuration of chemical modifications that are important for effective RNAi therapeutics.

Drug delivery has been the primary challenge in developing RNAi therapeutics since its initial discovery. One conventional solution to the delivery problem involves encapsulation into a lipid-based particle, such as a liposome, to improve circulation time and cellular uptake. Scientists at RXi have used an alternative approach to delivery in which drug-like properties were built into the RNAi compound itself. These novel compounds are termed ‘self-delivering’ RNAi compounds or sd-rxRNA.

sd-rxRNAs are hybrid oligonucleotide compounds that the Company believes combine the beneficial properties of both conventional RNAi and antisense technologies. Traditional, single-stranded antisense compounds have favorable tissue distribution and cellular uptake properties. However, they do not have the intracellular potency that is a hallmark of double-stranded RNAi compounds. Conversely, the duplex structure and hydrophilic character of traditional RNAi compounds results in poor tissue distribution and cellular uptake. In an attempt to combine the best properties of both technologies, sd-rxRNA have a single-stranded phosphorothioate region, a short duplex region, and contain a variety of nuclease-stabilizing and lipophilic chemical modifications. The combination of these features allows sd-rxRNA to achieve efficient spontaneous cellular uptake and potent, long-lasting intracellular activity.

We believe that our next generation sd-rxRNA compounds offer significant advantages over siRNAs used by other companies developing RNAi therapeutics, highlighted by the following characteristics:

- Efficient cellular uptake in the absence of a delivery vehicle;
- Potent RNAi activity;
- More resistant to nuclease degradation than unformulated oligonucleotides;

- Able to suppress long non-coding RNAs, both in cytoplasm and the nucleus;
- Readily manufactured;
- Potentially more specific for the target gene; and
- More reliable at blocking immune side effects than classic siRNA.

Our Route of Administration

The route by which an RNAi therapeutic is brought into contact with the body depends on the intended organ or tissue to be treated. Delivery routes can be simplified into two major categories: (1) local (when a drug is delivered directly to the tissue of interest); and (2) systemic (when a drug accesses the tissue of interest through the circulatory system). Local delivery may avoid some hurdles associated with systemic approaches such as rapid clearance from circulation and inefficient tissue extravasation (crossing the endothelial barrier from the blood stream). However, the local delivery approach can only be applied to a limited number of organs or tissues (*e.g.*, skin, eye, lung and potentially the central nervous system).

The key to therapeutic success with RNAi lies in delivering intact RNAi compounds to the target tissue and the interior of the target cells. To accomplish this, we have developed a comprehensive platform that includes chemically synthesized RNAi compounds that are optimized for stability and efficacy and combine efficient cellular uptake with a local delivery approach.

Our sd-rxRNA molecules have unique properties that improve tissue and cell uptake. We have studied sd-rxRNA molecules in animal models for dermal and ocular delivery. Direct administration of sd-rxRNA via injection with no additional delivery vehicle to the skin or to the eye demonstrates that target gene silencing can be measured after local administration. The dose levels required for these direct-injection methods are small and suitable for clinical development. The Company has a number of clinical trials currently ongoing with RXI-109, an sd-rxRNA compound, for local delivery in the skin and the eye. Other target tissues that are potentially accessible for local delivery using sd-rxRNA compounds include the lung, the central nervous system, mucosal tissues and sites of inflammation and tumor (direct administration).

We have also studied our sd-rxRNA compounds for use in the well-established methodologies of adoptive cell transfer. Immune cells are isolated from specific patients or retrieved from allogeneic immune cell banks and then expanded and possibly processed to express tumor-binding receptors. Our process involves ex vivo treatment of the immune cells with our sd-rxRNA compounds to inhibit the expression of immune checkpoint genes. The enhanced cells are then returned and used to treat the same patient.

Introduction to Samcyprone™

Immunotherapy is the treatment of disease by inducing, enhancing or suppressing an immune response. Active agents in immunotherapy are collectively called immunomodulators. They are a diverse array of recombinant, synthetic and natural preparations that help to regulate or normalize the immune system.

Our Samcyprone™ Therapeutic Pipeline

Samcyprone™, licensed by the Company in 2014, is a proprietary topical formulation of the small molecule DPCP. DPCP has been used for decades as a treatment to stimulate hair re-growth in patients with alopecia areata and more recently as a treatment for recalcitrant wart removal and as an aid in the reduction of cutaneous metastases of melanoma. As it is currently used, a doctor must prescribe DPCP to be formulated by a compounding facility, generally in acetone. There are no standardized methods of formulation or procedures for use. Because it works by causing an immune response, the level of response can vary greatly from person to person. Moreover, some pharmacies will not even compound it, even if it is prescribed.

Samcyprone™ works by initiating a T-cell response. T-cells or T lymphocytes are a type of white blood cell that play a key role in cell-mediated immunity. The use of Samcyprone™ will improve ease of use, allow for lower sensitizing and challenge doses than in current use and should result in an improved safety margin and a more consistent immune response.

There will be several advantages to using an FDA regulated formulation like the one we are developing. First, the amount of DPCP used in our own ointment formulation is lower than that generally used in acetone formulation. This should result in reduced side effects that happen due to accidental over-sensitization when a higher than necessary concentration is used. Second, we are developing an optimized dosing regimen so that a standardized response can be expected. And third, the ointment formulation will be easier to prescribe and to use than an acetone formulation, allowing for ease of application at the appropriate site on the skin.

Intellectual Property

We protect our proprietary information by means of United States and foreign patents, trademarks and copyrights. In addition, we rely upon trade secret protection and contractual arrangements to protect certain of our proprietary information and products. We have pending patent applications that relate to potential drug targets, compounds we are developing to modulate those targets, methods of making or using those compounds and proprietary elements of our drug discovery platform.

Much of our technology and many of our processes depend upon the knowledge, experience and skills of key scientific and technical personnel. To protect our rights to our proprietary know-how and technology, we require all employees, as well as our consultants and advisors when feasible, to enter into confidentiality agreements that require disclosure and assignment to us of ideas, developments, discoveries and inventions made by these employees, consultants and advisors in the course of their service to us, and we vigorously defend that position with partners, as well as with employees who leave the Company.

We have also obtained rights to various patents and patent applications under licenses with third parties, which require us to pay royalties, milestone payments, or both. The degree of patent protection for biotechnology products and processes, including ours, remains uncertain, both in the United States and in other important markets, because the scope of protection depends on decisions of patent offices, courts and lawmakers in these countries. There is no certainty that our existing patents or others, if obtained, will afford us substantial protection or commercial benefit. Similarly, there is no assurance that our pending patent applications or patent applications licensed from third parties will ultimately be granted as patents or that those patents that have been issued or are issued in the future will stand if they are challenged in court. We assess our license agreements on an ongoing basis, and may from time to time terminate licenses to technology that we do not intend to employ in our technology platforms, or in our product discovery or development activities.

Patents and Patent Applications

We are actively prosecuting thirty-two patent families, including those acquired from MirImmune, covering our compounds and technologies, including RXI-109 and Samcyprone™. A combined summary of these patents and patent applications is set forth below in the following table:

	Pending Applications	Issued Patents
United States	21	31
Canada	9	1
Europe	11	31
Japan	7	7
Other Markets	12	9

Patents and Patent Applications Relating to RNAi

Our RNAi portfolio includes seventy-eight issued patents, fourteen of which cover our self-delivering RNAi platform. These fourteen patents broadly cover both the composition and methods of use of our self-delivering platform technology and uses of our sd-rxRNAs targeting CTGF for the treatment of fibrotic disorders (including RXI-109 for the treatment of dermal and ocular fibrosis), as well as sd-rxRNAs targeting immune checkpoint targets for ex vivo cell-based cancer immunotherapies. These patents are scheduled to expire between 2029 and 2035. Furthermore, there are fifty-seven patent applications, encompassing what we believe to be important new RNAi compounds and their use as therapeutics and/or cosmetics, chemical modifications of RNAi compounds that improve the compounds' suitability for therapeutic uses (including delivery) and compounds directed to specific targets (*i.e.*, that address specific disease states).

The patents and any patents that may issue from these pending patent applications will, if issued, be set to expire between 2022 and 2035, not including any patent term extensions that may be afforded under the Federal Food, Drug, and Cosmetic Act (and the equivalent provisions in foreign jurisdictions) for any delays incurred during the regulatory approval process relating to human drug products (or processes for making or using human drug products).

Patent and Patent Applications Relating to Samcyprone™

The Samcyprone™ portfolio includes one issued patent and three patent applications. The patent and patent applications cover both the compositions and methods of use of Samcyprone™ for the treatment of warts, human papilloma virus (HPV) skin infections, skin cancer (including melanoma) and immunocompromised patients.

The patent and any patents that may issue from the pending applications will be set to expire between 2019 and 2031, not including any patent term extensions that may be afforded under the Federal Food, Drug, and Cosmetic Act (and the equivalent provisions in foreign jurisdictions) for any delays incurred during the regulatory approval process relating to human drug products (or processed for making or using human drug products).

Intellectual Property License Agreements

We have secured exclusive and non-exclusive rights to develop therapeutics by licensing key RNAi technologies, Samcyprone™ and patent rights from third parties. These rights relate to chemistry and configuration of compounds, delivery technologies of compounds to cells and therapeutic targets. As we continue to develop our own proprietary compounds, we continue to evaluate both our in-licensed portfolio as well as the field for new technologies that could be in-licensed to further enhance our intellectual property portfolio and unique position in the RNAi and immunotherapy space.

Advirna LLC. In September 2011, we entered into an agreement with Advirna, LLC ("**Advirna**") pursuant to which Advirna assigned to us its existing patent and technology rights related to sd-rxRNA technology in exchange for our agreement to issue 5% of the Company's fully-diluted shares, pay an annual maintenance fee of $100,000 and pay a one-time milestone payment of $350,000 upon the issuance of the first patent with valid claims covering the assigned technology. The common shares of the Company were issued to Advirna in 2012 and the one-time milestone payment was paid in 2014. Additionally, we will be required to pay a 1% royalty to Advirna on any license revenue received by us with respect to future licensing of the assigned Advirna patent and technology rights. We also granted back to Advirna a license under the assigned patent and technology rights for fields of use outside human therapeutics and diagnostics.

Our rights under the Advirna agreement will expire upon the later of: (i) the expiration of the last-to-expire of the "patent rights" (as defined therein) or (ii) the abandonment of the last-to-be abandoned of such patents, unless earlier terminated in accordance with the provisions of the agreement.

We may terminate the Advirna agreement at any time upon 90 days' written notice to Advirna, and Advirna may terminate the agreement upon 90 days' prior written notice in the event that we cease using commercially reasonable efforts to research, develop, license or otherwise commercialize the patent rights or "royalty-bearing products" (as defined therein), provided that we may refute such claim within such 90-day period by showing budgeted expenditures for the research, development, licensing or other commercialization consistent with other technologies of similar stage of development and commercial potential as the patent rights or royalty-bearing products. Further, either party at any time may provide to the other party written notice of a material breach of the agreement. If the other party fails to cure the identified breach within 90 days after the date of the notice, the aggrieved party may terminate the agreement by written notice to the party in breach.

Hapten Pharmaceuticals, LLC. In December 2014, the Company entered into an Assignment and License Agreement with Hapten Pharmaceuticals, LLC ("**Hapten**") under which Hapten agreed, effective at a closing that was subject to the satisfaction of certain closing conditions which occurred in February 2015, to sell and assign to us certain patent rights and related assets and rights, including an investigational new drug application and clinical data, for Hapten's Samcyprone™ products for therapeutic and prophylactic use. Under the Assignment and License Agreement and upon the closing, Hapten received a one-time upfront cash payment of $100,000 and we issued to Hapten 20,000 shares of common stock of the Company. Pursuant to the Assignment and License Agreement, Hapten will be entitled to receive: (i) future milestone payments tied to the achievement of certain clinical and commercial objectives (all of which payments may be made at our option in cash or through the issuance of common stock) and (ii) escalating royalties based on product sales by us and any sublicensees.

We have certain customary diligence obligations under the Assignment and License Agreement requiring us to use commercially reasonable efforts to develop and commercialize one or more products covered by the Assignment and License Agreement, which obligations, if not performed, could result in rights assigned or licensed to us reverting back to Hapten.

In addition to the license agreements listed above, the Company has entered into and may enter into other license agreements that may benefit us as we develop our RNAi and Samcyprone™ pipelines.

Other Strategic Agreements

OPKO Health, Inc. In March 2013, the Company entered into an Asset Purchase Agreement with OPKO Health, Inc. ("**OPKO**") (the "**Asset Purchase Agreement**"), in which we acquired substantially all of its RNAi-related assets, which included patents and patent applications, licenses, clinical and preclinical data and other related assets. In exchange for the assets that we purchased from OPKO, we issued 166,667 shares of our common stock and agreed to pay, if applicable: (i) up to $50 million in development and commercialization milestones for the successful development and commercialization of each "Qualified Drug" (as defined therein) and (ii) royalty payments equal to: (a) a mid-single-digit percentage of "Net Sales" (as defined therein) with respect to each Qualified Drug sold for an ophthalmologic use during the applicable "Royalty Period" (as defined therein) and (b) a low-single-digit percentage of Net Sales with respect to each Qualified Drug sold for a non-ophthalmologic use during the applicable Royalty Period.

We have certain customary diligence obligations under the Asset Purchase Agreement requiring us to use commercially reasonable efforts to develop and commercialize one or more products covered by the Asset Purchase Agreement, which obligations, if not performed, could result in assets transferred and rights assigned or licensed to us reverting back to OPKO.

MirImmune Inc. In March 2015, RXi granted an exclusive license to MirImmune to utilize the Company's novel and proprietary sd-rxRNA technology for MirImmune's use in developing ex vivo cell-based cancer immunotherapies to target immune inhibitory pathways (checkpoints) which are responsible for limiting the efficacy of cancer immunotherapies. Under the terms of the agreement, MirImmune was responsible for all research, development, manufacturing, regulatory and commercialization activities for the licensed products.

On October 7, 2016, RXi entered into an exclusive option agreement pursuant to which the Company had the exclusive option, but not the obligation, to purchase 100% of the outstanding capital stock of MirImmune. In January 2017, the Company exercised the option and entered into the Stock Purchase Agreement pursuant to which it acquired 100% of the outstanding shares of capital stock of MirImmune for an aggregate of 2,750,371 shares of common stock of the Company and 1,118,224 shares of Series C Convertible Preferred Stock. On June 9, 2017, with the approval of the Company's stockholders in accordance with the stockholder approval requirements of Nasdaq Marketplace Rule 5635, each share of the Company's Series C Convertible Preferred Stock outstanding was automatically converted into one share of common stock, such that no shares of Series C Convertible Preferred Stock remained issued or outstanding.

Under the terms of the Stock Purchase Agreement, if certain development or commercial milestones are achieved within two years, the Company will be required to either (i) issue to MirImmune's shareholders a number of shares of common stock or (ii) pay the equivalent value in cash.

Thera Neuropharma, Inc. In May 2016, RXi granted an exclusive license to Thera Neuropharma, Inc. ("**Thera**") to the Company's novel and proprietary sd-rxRNA platform to develop therapeutics for neurodegenerative diseases. Under the terms of the agreement, Thera will be responsible for all research, development, manufacturing, regulatory and commercialization activities for the licensed products. Thera's focus will be on sd-rxRNA compounds targeting superoxide dismutase 1 (SOD1) for use in developing innovative treatments for amyotrophic lateral sclerosis (ALS), commonly known as Lou Gehrig's disease. Upon execution of the license agreement, RXi was issued shares of common stock of Thera and was granted a five year warrant to purchase additional shares of common stock of Thera pursuant to the terms of the license agreement. The Company is eligible to receive future cash, additional equity and royalties based on the achievement of certain milestones.

Research and Development

To date, our research programs have primarily focused on developing technology necessary to make RNAi compounds available by local administration for diseases for which we intend to develop an RNAi therapeutic, identifying and testing RNAi compounds against therapeutically relevant targets in the fields of dermatology and ophthalmology and identifying lead product candidates and moving those product candidates into the clinic. With our recent acquisition of MirImmune, our research programs will also focus on developing, identifying and testing RNAi therapeutics in the field of cell-based cancer immunotherapy. Since we commenced operations, research and development has composed a significant proportion of our total operating expenses and is expected to compose 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 preclinical research and clinical trials;
- The scope and rate of progress of our preclinical 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.

Research and Development Expense

Research and development expense consists of compensation-related costs for our employees dedicated to research and development activities, fees related to our Scientific Advisory Board members, expenses related to our ongoing research and development efforts primarily related to our clinical trials, drug manufacturing, outside contract services, licensing and patent fees and laboratory supplies and services for our research programs. We expect research and development expenses to increase as we expand our discovery, preclinical and clinical activities.

Total research and development expense for the six months ended June 30, 2017 and 2016 was $2,676,000 and $2,644,000, respectively.

Total research and development expense for the years ended December 31, 2016 and 2015 was $5,415,000 and $6,925,000, respectively.

Competition

We believe that numerous companies are investigating or plan to investigate a variety of proposed anti-scarring therapies or cell-based immunotherapies in clinical trials or are working in the RNAi area generally. Many other companies are pursuing non-RNAi-based therapies for one or more fibrotic disease indications, including ocular scarring or other indications that we may seek to pursue. The companies include large and small pharmaceuticals, chemical and biotechnology companies, as well as universities, government agencies and other private and public research organizations.

We believe that other companies currently developing anti-scarring therapies, both dermal and ocular, include CoDa Therapeutics, Inc., Sirnaomics, Inc., FirstString Research, Inc., Promedior, Inc., FibroGen, Inc., miRagen Therapeutics, Inc., Ophthotech Corporation, Vascular BioSciences, Allergan plc, and Suneva Medical, Inc.

We believe that other companies currently developing cell-based cancer immunotherapies include Juno Therapeutics, Inc., Kite Pharma, Inc., Cellectis S.A., Adaptimmune Therapeutics plc, Lion Biotechnologies, Inc., Bellicum Pharmaceuticals, Inc., and NantKwest, Inc. Many larger pharmaceutical companies such as Novartis International AG, Celgene Corporation, Pfizer Inc., GlaxoSmithKline plc, Amgen, Inc., Johnson & Johnson and EMD Serono, Inc. have entered the field through major deals with biotechnology companies and academia.

We believe that other companies working in the RNAi area, generally, include Alnylam Pharmaceuticals, Inc., Benitec Biopharma Limited, Silence Therapeutics plc, Quark Pharmaceuticals, Inc., Arbutus Biopharma Corporation, Arrowhead Pharmaceuticals, Inc., Dicerna Pharmaceuticals, Inc., Sylentis, S.A. and Roche Innovation Center Copenhagen A/S, as well as a number of large pharmaceutical companies.

We do not believe that there are any companies developing treatments for cutaneous warts that would be considered direct competitors with the Company; however, there are several existing treatments for cutaneous warts with which Samcyprone™ could potentially compete. Current topical medicinal treatments for warts include salicylic acid, off label use of Imiquimod and Picato® and the most common ablative treatments include removal through medical procedures, such as cryotherapy, surgery or chemical peels.

Government Regulation

The United States and many other countries extensively regulate the preclinical and clinical testing, manufacturing, labeling, storage, record-keeping, advertising, promotion, export, marketing and distribution of drugs and biologic products. The 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 preclinical 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 preclinical studies and the submission of the results of these studies to the FDA. These data, together with proposed clinical protocols, manufacturing information, analytical data and other information submitted to the FDA in an IND application, must become effective before human clinical trials may commence. Preclinical 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 1 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 2 trials, in addition to safety, evaluate the efficacy of the product candidate in a patient population somewhat larger than Phase 1 trials. Phase 3 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 Board ("**IRB**") 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 preclinical 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 (an "**NDA**"), or, in the case of a biologic, a biologics license application (a "**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 practices ("**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 Nuclear Energy and Radiation Control Act, the Toxic Substance Control Act and the Resource Conservation and Recovery Act and other applicable environmental statutes. Following approval, the FDA periodically inspects drug and biologic manufacturing facilities to ensure continued compliance with the cGMP. 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 bio-hazardous 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.

Employees

As of August 8, 2017, we had sixteen full-time employees, nine of whom were engaged in research and development, and seven of whom were 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.

Properties

Our executive offices are located at 257 Simarano Drive, Suite 101, Marlborough, MA 01752. On December 17, 2013, we entered into a lease (the "**Lease**") with 257 Simarano Drive, LLC, Brighton Properties, LLC, Robert Stubblebine 1, LLC and Robert Stubblebine 2, LLC to lease office and laboratory space in the building known as the "Main Building" located at 257 Simarano Drive, Marlborough, Massachusetts, covering approximately 7,581 square feet. The premises are used by the Company for office and laboratory space. The term of the Lease commenced on April 1, 2014 and continues for five years, expiring on March 31, 2019. The base rent for the premises during the first year of the Lease was $107,709.50 per annum, payable monthly. Each year thereafter, the base rent increases by approximately 3% over the base rent from the prior year.

We believe that our facilities are suitable for our current and future needs.

Legal Proceedings

Although we are not currently involved in any legal proceedings, from time to time, we may become a party to various legal actions and complaints arising in the ordinary course of business.

Investor Information

The Company's website address is *http://www.rxipharma.com*. We make available on our website, free of charge, copies of our annual reports on Form 10-K, our quarterly reports on Form 10-Q and our current reports on Form 8-K, and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended, as soon as reasonably practicable after these reports are filed electronically with, or otherwise furnished to, the Securities and Exchange Commission (the "**SEC**").

You may read and copy any materials the Company files with the SEC at the SEC's Public Reference Room at 100 F Street, NE, Washington, DC 20549. You may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. The SEC maintains an Internet site that contains reports, proxy and information statements, and other information regarding RXi and other issuers that file electronically with the SEC. The SEC's website address is *http://www.sec.gov*.

MARKET FOR REGISTRANT'S COMMON EQUITY AND RELATED STOCKHOLDER MATTERS

Market Information

Our common stock is listed on the NASDAQ Capital Market under the symbol "RXII." On April 14, 2016, we effected a 1-for-10 reverse stock split. The share prices in the table below are shown on a post-split basis. The following table shows the high and low per-share sale prices of our common stock for the periods indicated:

	High	Low
2015		
First Quarter	$17.30	$6.90
Second Quarter	8.70	3.42
Third Quarter	5.50	3.50
Fourth Quarter	6.49	3.56
2016		
First Quarter	$ 4.00	$2.60
Second Quarter	3.27	1.26
Third Quarter	2.67	1.70
Fourth Quarter	2.93	0.70
2017		
First Quarter	$ 1.12	$0.60
Second Quarter	0.85	0.51
Third Quarter (through August 29, 2017)	0.77	0.53

Holders

At August 8, 2017, there were approximately 104 holders of record of our common stock.

Dividend Policy

We have never declared or paid any cash dividends and do not anticipate paying any cash 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.

Securities Authorized for Issuance Under Equity Compensation Plans

The following tables provides information, as of December 31, 2016, about the securities authorized for issuance under our equity compensation plans, which consisted of our 2012 Long Term Incentive Plan and our 2013 Employee Stock Purchase Plan:

Plan Category	Number of Securities to be Issued Upon Exercise of Outstanding Options, Warrants and Rights	Weighted-Average Exercise Price of Outstanding Options, Warrants and Rights	Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans (Excluding Securities Reflected in First Column)
Equity compensation plans approved by security holders	374,446	$ 27.29	1,375,354
Equity compensation plans not approved by security holders	—	—	—
Total	374,446	$ 27.29	1,375,354

MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following discussion of our financial condition and results of operations should be read in conjunction with our financial statements and the notes to those financial statements included elsewhere in this prospectus. This discussion contains forward-looking statements that involve significant risks and uncertainties. As a result of many factors, such as those set forth under "Risk Factors" and elsewhere in this prospectus, our actual results may differ materially from those anticipated in these forward-looking statements. Please refer to the discussion under the heading "Cautionary Note Regarding Forward-Looking Statements" above.

Overview

RXi Pharmaceuticals Corporation ("**RXi**," "**we**," "**our**" or the "**Company**") is a clinical-stage company developing innovative therapeutics based on our proprietary self-delivering RNAi (sd-rxRNA®) platform and Samcyprone™ which address significant unmet medical needs. We have a pipeline of discovery, preclinical and clinical product candidates in the areas of dermatology, ophthalmology and cell-based cancer immunotherapy. The Company's clinical development programs include RXI-109, an sd-rxRNA for the treatment of dermal and ocular scarring, and Samcyprone™, a topical immunomodulator, for the treatment of warts. The Company's pipeline, coupled with our extensive patent portfolio, provides for product development and business development opportunities across a broad spectrum of therapeutic areas.

RNAi therapies are designed to "silence," or down-regulate, the expression of a specific gene that may be over-expressed in a disease condition. The Company's first RNAi clinical product candidate, RXI-109, is a self-delivering RNAi compound (sd-rxRNA) that commenced human clinical trials in 2012. RXI-109 is designed to reduce the expression of connective tissue growth factor ("**CTGF**"), a critical regulator of several biological pathways involved in fibrosis, including scar formation in the skin and eye. RXI-109 is currently being evaluated in a Phase 2 clinical trial, Study 1402, to prevent or reduce dermal scarring following scar revision surgery of an existing hypertrophic scar and a Phase 1/2 clinical trial, Study 1501, to evaluate the safety and clinical activity of RXI-109 to prevent the progression of retinal scarring in subjects with wet age-related macular degeneration ("**AMD**").

Study 1402, the Company's Phase 2 clinical trial in hypertrophic scars, commenced in July 2014. In October 2015, we reported that preliminary data from Study 1402 demonstrated that scars at revision sites were judged to be better at three months after a treatment regimen with five mg/cm intradermal administration of RXI-109 than scars at untreated revision sites in those same subjects. Based in part on this new information, two more cohorts (Cohorts 3 and 4) were added to Study 1402 in November 2015. For these two cohorts, the number of doses was increased to either eight or nine doses of RXI-109 over a six-month period to better cover the extended wound healing/scarring profile of hypertrophic scars. Enrollment of subjects into these two new cohorts completed ahead of schedule during the third quarter of 2016.

In December 2016, the Company announced that preliminary data from the first two cohorts from Study 1402 at nine months confirmed the positive differentiation by a blinded panel of observers from untreated surgery incisions in hypertrophic scars from the previously presented data for a subset of subjects treated with five mg/cm of RXI-109 at three months. In addition, these data extend this observation to all time points, including the post-treatment follow-up period through nine months post-surgery. RXI-109 was safe and well tolerated. Additionally, as expected, the limited three-month data available from Cohort 3 appeared to align with that of the first two cohorts as these subjects all had the same dosing schedule through the third month. A complete read-out of the whole study, including all four cohorts with follow-up until nine months post-surgery, is expected in the second half of 2017.

Study 1501, the Company's Phase 1/2 clinical trial in retinal scars, commenced in November 2015, and is a multi-dose, dose escalation study conducted in subjects with AMD with evidence of subretinal fibrosis. Each subject receives four doses of RXI-109 by intraocular injection at one month intervals for a total dosing period of three months. The safety and tolerability of RXI-109, as well as the potential for clinical activity, is evaluated over the course of the study using numerous assessments to monitor the health of the retina and to assess visual acuity. To date, there have been no safety issues that have precluded continuation of dosing. Study 1501 has been completely enrolled and dosing in the third cohort at the highest planned dose level is ongoing. The Company expects to complete subject participation in the study by the end of 2017 and to share top-line data in early 2018.

Samcyprone™, the Company's second clinical candidate, is a proprietary topical formulation of the small molecule diphenylcyclopropenone ("**DPCP**"), an immunomodulator that works by initiating a T-cell response. The use of Samcyprone™ allows sensitization using much lower concentrations of DPCP than are used with existing compounded DPCP solutions, avoiding hyper-sensitization to subsequent challenge doses. Samcyprone™ is currently being evaluated in a Phase 2a clinical trial, Study 1502, for the clearance of common warts.

Study 1502, initiated in December 2015, includes a sensitization phase in which a spot on the subject's upper arm and one or more warts are treated with Samcyprone™. After being sensitized in this way, the subjects enter into the treatment phase where up to four warts are treated on a once weekly basis for ten weeks with a ten-fold lower concentration of Samcyprone™ than in the sensitization phase. During the trial, the warts are scored, photographed and measured to monitor the level of clearance.

In December 2016, the Company announced the results from a preliminary review of sensitization and wart clearance data from a subset of subjects that had completed the ten-week treatment phase of Study 1502. Results showed that greater than 90% of the subjects demonstrated a sensitization response, a prerequisite to be able to develop a therapeutic response. Additionally, more than 60% of the subjects responded to the treatment by exhibiting either complete or greater than 50% clearance of all treated warts with up to ten weekly treatments. Samcyprone™ treatment has been generally safe and well tolerated and has had drug-related adverse events relating to local reactions, which are typically expected for this type of treatment due to the sensitization and challenge responses in the skin. The Company added a second cohort, which is expected to be fully enrolled in the second half of 2017, to explore the opportunity to reduce the sensitization dose level, which will be more convenient to physicians and subjects. Early read-outs of the study are anticipated in the second half of 2017.

In addition to our clinical programs, we continue to advance our preclinical and discovery programs with our sd-rxRNA technology. In October 2015, we announced the selection of lead compounds targeting tyrosinase ("**TYR**") and collagenase ("**MMP1**") as targets for our self-delivering platform because they are relevant for both consumer health and therapeutic development. Cosmetics are compounds that affect the appearance of the skin and make no preventative or therapeutic claims. These compounds may be developed more rapidly than therapeutics, therefore the path to market may be much shorter and less expensive. RXI-231, an sd-rxRNA compound targeting TYR, is in development as a cosmetic ingredient that may improve the appearance of uneven skin tone and pigmentation. RXI-185, an sd-rxRNA compound targeting MMP1, is in development as a cosmetic ingredient that may improve the appearance of wrinkles or skin laxity. Efficacy and toxicity testing in cell culture and skin equivalents for RXI-231 was successfully completed in December 2016. The Company initiated human testing of RXI-231 in June 2017 with a U.S. clinical testing site. In addition to evaluating safety, the Company will assess the effect of RXI-231 on the appearance of skin pigmentation in a follow-on study.

On April 14, 2016, the Board of Directors of the Company approved a 1-for-10 reverse stock split of the Company's outstanding common stock, which was effected on April 18, 2016. The number of authorized shares of the Company remain unchanged. Stockholders who would have otherwise been entitled to fractional shares as a result of the reverse stock split received a cash payment in lieu of receiving fractional shares. Shares of common stock underlying outstanding stock options and other equity instruments were proportionately reduced and the respective exercise prices, if applicable, were proportionately increased in accordance with the terms of the agreements governing such securities. All share and per share amounts in the financial statements have been retroactively adjusted for all periods presented to give effect to the reverse stock split, including reclassifying an amount equal to the reduction in par value to additional paid-in capital.

On December 21, 2016, the Company closed an underwritten public offering (the "**2016 Offering**") of (i) 3,797,777 Class A Units, at a public offering price of $0.90 per unit, consisting of one share of the Company's common stock and a five-year warrant to purchase one share of common stock at an exercise price of $0.90 per share (the "**2016 Warrants**") and (ii) 8,082 Class B Units, at a public offering price of $1,000 per unit, consisting of one share of Series B Convertible Preferred Stock (the "**Series B Convertible Preferred Stock**"), which was convertible into 1,111.11 shares of common stock, and 1,111.11 2016 Warrants. The Class A Units include an additional 1,666,666 Class A Units pursuant to the exercise by the underwriters of their over-allotment option. The total net proceeds of the 2016 Offering, including the exercise of the over-allotment option, were $10,051,000 after deducting underwriting discounts and commissions and offering expenses paid by the Company.

On January 6, 2017, the Company entered into a Stock Purchase Agreement (the "**Stock Purchase Agreement**") by and among the Company, RXi Merger Sub, LLC, a Delaware limited liability company and wholly owned subsidiary of the Company ("**RXi Merger Sub**"), MirImmune Inc. ("**MirImmune**"), the stockholders of MirImmune set forth on the signature pages thereto (each a "**Seller**" and collectively, the "**Sellers**"), and Alexey Wolfson, Ph.D., in his capacity as the Sellers' Representative. Pursuant to the Stock Purchase Agreement, the Company acquired from the Sellers all of the issued and outstanding shares of capital stock of MirImmune for an aggregate of 2,750,371 shares of common stock of the Company and an aggregate of 1,118,224 shares of Series C Convertible Preferred Stock (the "**Series C Convertible Preferred Stock**"). On June 9, 2017, with the approval of the Company's stockholders in accordance with the stockholder approval requirements of Nasdaq Marketplace Rule 5635, each share of the Company's Series C Convertible Preferred Stock outstanding was automatically converted into one share of common stock, such that no shares of Series C Convertible Preferred Stock remained issued or outstanding.

In connection with and promptly following the closing of the Stock Purchase Agreement, MirImmune was merged with and into RXi Merger Sub (the "**Merger**"), with RXi Merger Sub continuing as the surviving entity and changing its name to "MirImmune, LLC". As a result of the Merger, MirImmune, LLC remains and will operate as a wholly-owned subsidiary of the Company.

Building on the work completed by MirImmune prior to its acquisition by the Company, our cell-based cancer immunotherapy program with sd-rxRNA includes lead compounds for a number of immune checkpoint targets that provide long lasting immune checkpoint silencing, individually and in combination, in adoptively transferred cells. An improved efficacy upon the silencing of checkpoints has been demonstrated in various types of adoptively transferred cells relevant in cancer immunotherapy, such as CAR T-cells and tumor infiltrating lymphocytes (TILs). The Company's ongoing discovery programs include, but are not limited to, the evaluation of sd-rxRNA compounds to silence targets related to cytokine release syndrome. The Company has also initiated in vivo evaluations of multiple checkpoint inhibiting sd-rxRNA compounds co-transfected in CAR T-cells in mouse models for solid tumors, with data from this study expected in the second half of 2017.

Additionally, the Company recently selected two sd-rxRNA compounds from its immunotherapy pipeline for preclinical development. For oncology treatments based on adoptive cell transfer (ACT), compounds RXI-762 and RXI-804 suppress the expression of immune checkpoint proteins PD-1 and TIGIT, respectively, which can result in an improved efficacy to the targeted tumors. This decision triggered the selection of a manufacturing facility to initiate production of cGMP grade material, initially for the first of these two compounds (RXI-762). This also supports moving RXI-762 into clinical development as early as 2018 as part of an ACT therapy.

On August 8, 2017, the Company entered into a purchase agreement (the "**Purchase Agreement**") with Lincoln Park Capital Fund, LLC ("**Lincoln Park**"), pursuant to which the Company has the right to sell to Lincoln Park up to $15,000,000 in shares of the Company's common stock, subject to certain limitations and conditions set forth therein, over the 30-month term of the Purchase Agreement.

Since inception, we have incurred significant losses. Substantially all of our losses to date have resulted from research and development expenses in connection with our clinical and research programs and from general and administrative costs. At June 30, 2017 and December 31, 2016, we had an accumulated deficit of $74.1 million and $66.1 million, respectively. We expect to continue to incur significant losses for the foreseeable future, particularly as we advance our development programs for RXI-109 and Samcyprone™ and expand our program in cell-based cancer immunotherapy.

Critical Accounting Policies and Estimates

The discussion and analysis of our financial condition and results of operations is based upon our financial statements, which have been prepared in accordance with United States generally accepted accounting principles ("**GAAP**"). The preparation of these financial statements requires us to make estimates 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, we evaluate our estimates, including those related to the impairment of long-lived assets, certain accrued expenses and stock-based compensation. We base our estimates on historical experience and various other assumptions that are believed to be reasonable under the circumstances. Actual results may differ from these estimates under different assumptions or conditions and could have a material impact on our reported results. While our significant accounting policies are more fully described in the Notes to our financial statements included elsewhere in our Quarterly Report on Form 10-Q for the quarter ended June 30, 2017, which was filed with the SEC on August 10, 2017 and our Annual Report on Form 10-K for the year ended December 31, 2016, which was filed with the SEC on March 30, 2017, we believe the following accounting policies to be the most critical in understanding the judgments and estimates we use in preparing our financial statements.

Research and Development Expenses

Research and development costs are charged to expense as incurred and relate to salaries, employee benefits, facility-related expenses, supplies, stock-based compensation related to employees and non-employees involved in the Company's research and development, external services, other operating costs and overhead related to our research and development departments, costs to acquire technology licenses and expenses associated with preclinical activities and our clinical trials.

Preclinical and clinical trial expenses relate to third-party services, subject-related fees at the sites where our clinical trials are being conducted, laboratory costs, analysis costs, toxicology studies and investigator fees. Costs associated with these expenses are generally payable on the passage of time or when certain milestones are achieved. Expense is recorded during the period incurred or in the period in which a milestone is achieved. In order to ensure that we have adequately provided for preclinical and clinical expenses during the proper period, we maintain an accrual to cover these expenses. These accruals are assessed on a quarterly basis and are based on such assumptions as expected total cost, the number of subjects and clinical trial sites and length of the study. Actual results may differ from these estimates and could have a material impact on our reported results. Our historical accrual estimates have not been materially different from our actual costs.

Stock-based Compensation

The Company follows the provisions of the Financial Accounting Standards Board (the "**FASB**") Accounting Standards Codification ("**ASC**") Topic 718, "*Compensation – Stock Compensation*" ("**ASC 718**"), which requires the measurement and recognition of compensation expense for all stock-based payment awards made to employees, officers and non-employee directors, including stock options. Stock compensation expense based on the grant date fair value estimated in accordance with the provisions of ASC 718 is recognized as an expense over the requisite service period. Determining the amount of stock-based compensation to be recorded requires us to develop highly subjective estimates to be used in calculating the grant-date fair value of stock options. We use the Black-Scholes option pricing model to value our option grants and determine the related compensation expense. The use of the model requires us to make estimates of the following assumptions:

Expected volatility — Due to our limited trading history, we are responsible for estimating volatility and currently use the expected volatilities of similar entities. We have considered a number of factors in making our determination as to entities that are considered similar, such as the industry, stage of development, size of the company, and financial leverage.

Expected term — We use the simplified method to estimate the expected term assumption. The simplified method is based on the vesting period and the contractual term for each grant, or for each vesting-tranche for awards with graded vesting.

Risk-free interest rate — The yield on zero-coupon U.S. Treasury securities for a period that is commensurate with the expected term assumption is used as the risk-free interest rate.

Dividend yield — We utilize a dividend yield of zero based on the fact that we have never paid cash dividends and currently have no intention to pay cash dividends.

For stock options granted as consideration for services rendered by non-employees, the Company recognizes compensation expense in accordance with the requirements of FASB ASC Topic 505-50, "*Equity Based Payments to Non-Employees."* Non-employee option grants that do not vest immediately upon grant are recorded as an expense over the requisite service 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.

Derivative Financial Instruments

During the normal course of business we may issue warrants to vendors as consideration to perform services. We may also issue warrants as part of a debt or equity financing. Warrants and other derivative financial instruments are accounted for either as equity or as an asset or liability, depending on the characteristics of each derivative financial instrument. Warrants classified as equity are measured at fair value and recorded as additional paid in capital in stockholders' equity at the date of issuance. No further adjustments to their valuation are made. Derivative financial instruments classified as an asset or liability are measured at fair value on the issuance date and are revalued on each subsequent balance sheet date. The changes in the fair value are recognized as current period income or loss.

Results of Operations

Comparison of the Three and Six Months Ended June 30, 2017 and 2016

The following data summarizes the results of our operations for the periods indicated, in thousands:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2017	2016	2017	2016
Net revenues	$ —	$ 9	$	$ 19
Operating expenses	(2,514)	(2,224)	(7,974)	(4,479)
Operating loss	(2,514)	(2,215)	(7,974)	(4,460)
Net loss	(2,514)	(2,212)	(7,974)	(4,443)

Net Revenues

To date, we have primarily generated revenues through government grants. The following table summarizes our total net revenues, for the periods indicated, in thousands:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2017	2016	2017	2016
Net revenues	$ —	$ 9	$ —	$ 19

Net revenues were approximately $9,000 for the three months ended June 30, 2016 and related to the value of the common stock and warrant issued by Thera Neuropharma, Inc. ("**Thera**") to the Company per the terms of the exclusive licensing agreement with Thera.

Net revenues were approximately $19,000 for the six months ended June 30, 2016 and related to the Company's exclusive license agreements with Thera and MirImmune Inc. ("**MirImmune**"), prior to its acquisition by the Company.

Operating Expenses

The following table summarizes our total operating expenses, for the periods indicated, in thousands:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2017	2016	2017	2016
Research and development	$ 1,329	$ 1,339	$2,676	$ 2,644
Acquired in-process research and development	85	—	3,075	—
General and administrative	1,100	885	2,223	1,835
Total operating expenses	$ 2,514	$ 2,224	$7,974	$ 4,479

Research and Development Expenses

Research and development expenses consist of compensation-related costs for our employees dedicated to research and development activities, fees related to our Scientific Advisory Board members, expenses related to our ongoing research and development efforts primarily related to our clinical trials, drug manufacturing, outside contract services, licensing and patent fees and laboratory supplies and services for our research programs.

Research and development expenses were $1,329,000 for the three months ended June 30, 2017, compared with $1,339,000 for the three months ended June 30, 2016. The decrease of $10,000, or less than 1%, was due to a decrease of $48,000 in stock-based compensation expense, offset by an increase of $38,000 in research and development expenses primarily driven by subject visits as the Company ramps up enrollment in the second cohort of our Phase 2 clinical trial with Samcyprone™.

Research and development expenses were $2,676,000 for the six months ended June 30, 2017, compared with $2,644,000 for the six months ended June 30, 2016. The increase of $32,000, or 1%, was due to an increase of $119,000 in research and development expenses primarily related to the completion of subject visits and new enrollments in the Company's Phase 2 clinical trial with Samcyprone™ and the commencement of work in the Company's cell-based cancer immunotherapy program with the acquisition of MirImmune, offset by a decrease of $87,000 in stock-based compensation expense.

Acquired In-process Research and Development Expense

In January 2017, the Company acquired all of the issued and outstanding capital stock of MirImmune, a privately-held biotechnology company that was engaged in the development of cancer immunotherapies, in exchange for securities of the Company. The value of the consideration given, including transaction costs, liabilities assumed and cancellation of notes receivable, was recorded as in-process research and development expense.

Acquired in-process research and development expense related to the acquisition of MirImmune was $85,000 and $3,075,000 for the three and six months ended June 30, 2017, respectively.

General and Administrative Expenses

General and administrative expenses consist primarily of compensation-related costs for our employees dedicated to general and administrative activities, legal fees, audit and tax fees, consulting fees, professional service fees and general corporate expenses.

General and administrative expenses were $1,100,000 for the three months ended June 30, 2017, compared with $885,000 for the three months ended June 30, 2016. The increase of $215,000, or 24%, was due to an increase of $275,000 in general and administrative expenses due to an increase in employee headcount in connection with the acquisition of MirImmune and increases in legal and accounting fees, offset by a decrease of $60,000 in stock-based compensation expense.

General and administrative expenses were $2,223,000 for the six months ended June 30, 2017, compared with $1,835,000 for the six months ended June 30, 2016. The increase of $388,000, or 21%, was due to an increase of $589,000 in general and administrative expenses related to an increase in employee headcount in connection with the acquisition of MirImmune and an increase in legal fees, offset by a decrease of $201,000 in stock-based compensation expense.

Comparison of the Years Ended December 31, 2016 and 2015

The following data summarizes the results of our operations for the periods indicated, in thousands:

	For the Years Ended December 31,	
	2016	2015
Net revenues	$ 19	$ 34
Operating expenses	(9,034)	(10,271)
Operating loss	(9,015)	(10,237)
Net loss	(8,994)	(10,223)
Net loss applicable to common stockholders	(11,069)	(10,432)

Net Revenues

To date, we have primarily generated revenues through government grants. The following table summarizes our total net revenues, for the periods indicated, in thousands:

	For the Years Ended December 31,	
	2016	2015
Net revenues	$ 19	$ 34

Net revenues were approximately $19,000 for the year ended December 31, 2016, as compared with $34,000 for year ended December 31, 2015. The decrease of $15,000, or 44%, was due to the completion of a government grant from the National Cancer Institute, a division of the National Institutes of Health, in 2015. Net revenues for the year ended December 31, 2016 were due to the Company's exclusive license agreements with MirImmune and Thera.

Operating Expenses

The following table summarizes our total operating expenses, for the periods indicated, in thousands:

	For the Years Ended December 31,	
	2016	2015
Research and development	$ 5,415	$ 6,925
General and administrative	3,619	3,346
Total operating expenses	$ 9,034	$ 10,271

Research and Development Expenses

Research and development expenses were approximately $5,415,000 for the year ended December 31, 2016, compared with $6,925,000 for the year ended December 31, 2015. The decrease of $1,510,000, or 22%, was due to a decrease of $1,121,000 in research and development expense primarily related to cash and equity fees payable to Hapten Pharmaceuticals, LLC upon the close of the Samcyprone™ license agreement and manufacturing expenses for the RXI-109 drug product, which both occurred in 2015. An additional decrease of $389,000 in stock-based compensation expense was due to the full vesting of stock options in 2016 from stock options that were granted in 2012.

General and Administrative Expenses

General and administrative expenses were approximately $3,619,000 for the year ended December 31, 2016, compared with $3,346,000 for the year ended December 31, 2015. The increase of $273,000, or 8%, was primarily due to an increase of $663,000 in general and administrative expense primarily related to the Company's focus on business development activities during 2016, as compared to 2015, and an increase in legal expenses arising from the Company's acquisition of MirImmune. These increases were offset by a decrease of $390,000 in stock-based compensation expense due to the full vesting of stock options in 2016 from stock options that were granted in 2012.

Convertible Preferred Stock

The following table summarizes the Company's convertible preferred stock transactions for the periods indicated, in thousands:

	For the Years Ended December 31,	
	2016	2015
Accretion of Series B convertible preferred stock	$ 2,075	$ —
Series A and Series A-1 convertible preferred stock dividends	—	209
Accretion of convertible preferred stock and dividends	$ 2,075	$ 209

Accretion of convertible preferred stock and dividends was approximately $2,075,000 for the year ended December 31, 2016, compared with $209,000 for the year ended December 31, 2015. In connection with the completion of the Company's public offering in December 2016, the Company issued shares of Series B Convertible Preferred Stock (the "**Series B Convertible Preferred Stock**"). The increase of $1,866,000 was due to the one-time charge of $2,075,000 related to the beneficial conversion feature of the Series B Convertible Preferred Stock offset by a decrease of $209,000 related to the fair value of dividends on the Company's Series A and Series A-1 Convertible Preferred Stock (the "**Series A and Series A-1 Convertible Preferred Stock**").

All shares of the Series A and Series A-1 Convertible Preferred Stock were fully converted during the quarter ended June 30, 2015, resulting in no further accumulation and payment of dividends on these series of preferred stock. In November 2015, the Company filed a Certificate Eliminating the Series A Convertible Preferred Stock and a Certificate Eliminating the Series A-1 Convertible Preferred Stock from the Certificate of Incorporation of the Company with the Secretary of State of the State of Delaware. As a result, the shares of unissued Series A and Series A-1 Convertible Preferred Stock were returned to the status of authorized but unissued shares of preferred stock of the Company, without designation as to series or preferences or rights.

Liquidity and Capital Resources

On December 18, 2014, the Company entered into a purchase agreement (the "**2014 Purchase Agreement**") with Lincoln Park Capital Fund, LLC ("**Lincoln Park**"), pursuant to which the Company had the right to sell to Lincoln Park up to $10.8 million in shares of the Company's common stock, subject to certain limitations and conditions set forth in the 2014 Purchase Agreement. The 2014 Purchase Agreement expired on April 17, 2017. Under the 2014 Purchase Agreement, the Company sold a total of 70,000 shares of common stock to Lincoln Park for net proceeds of approximately $216,000.

On June 2, 2015, we sold 2,600,000 units in a public offering at a price of $4.00 per unit (the "**2015 Offering**"). Each unit consisted of one share of common stock, a 13-month overallotment purchase right to purchase one-half of one share of common stock at a price of $4.55 per full share of common stock (the "**Overallotment Purchase Rights**") and a five-year warrant to purchase one-half of one share of common stock at a price of $5.20 per full share of common stock (the "**2015 Warrants**"). As a result of the 2015 Offering, the Company received net proceeds of approximately $9,200,000 after placement agent fees and offering expenses.

Overallotment Purchase Rights totaling 1,300,002 were issued in connection with the 2015 Offering. During the year ended December 31, 2015, 43,500 Overallotment Purchase Rights were exercised for gross proceeds of $198,000. The Company's remaining outstanding Overallotment Purchase Rights of 1,256,502 expired on July 2, 2016 and were not exercised.

On December 21, 2016, the Company closed an underwritten public offering (the "**2016 Offering**") of (i) 3,797,777 Class A Units, at a public offering price of $0.90 per unit, consisting of one share of the Company's common stock and a five-year warrant to purchase one share of common stock at an exercise price of $0.90 per share (the "**Warrants**") and (ii) 8,082 Class B Units, at a public offering price of $1,000 per unit, consisting of one share of Series B Convertible Preferred Stock (the "**Series B Convertible Preferred Stock**"), which was convertible into 1,111.11 shares of common stock, and 1,111.11 Warrants. The Class A Units include an additional 1,666,666 Class A Units pursuant to the exercise by the underwriters of their over-allotment option. The total net proceeds of the 2016 Offering, including the exercise of the over-allotment option, were $10,051,000 after deducting underwriting discounts and commissions and offering expenses paid by the Company.

On August 8, 2017, the Company entered into a purchase agreement (the "**2017 Purchase Agreement**") with Lincoln Park, pursuant to which the Company has the right to sell to Lincoln Park up to $15,000,000 in shares of the Company's common stock, subject to certain limitations and conditions set forth therein, over the 30-month term of the 2017 Purchase Agreement.

We had cash of $7.7 million as of June 30, 2017, compared with cash of $12.9 million as of December 31, 2016. The Company believes that its existing cash, and the potential proceeds available under our equity facility with Lincoln Park, should be sufficient to fund the Company's operations for at least the next twelve months. We have generated significant losses to date, have not generated any product revenue to date and may not generate product revenue in the foreseeable future, or ever. We expect to incur significant operating losses as we advance our product candidates through drug development and the regulatory process. In the future, we will be dependent on obtaining funding from third parties, such as proceeds from the issuance of debt, sale of equity, funded research and development programs and payments under partnership and collaborative research and business development agreements, in order to maintain our operations and meet our obligations to licensors. There is no guarantee that debt, additional 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.

Comparison of the Six Months Ended June 30, 2017 and 2016

The following table summarizes our cash flows for the periods indicated, in thousands:

	Six Months Ended June 30,	
	2017	2016
Net cash used in operating activities	$(5,116)	$(4,785)
Net cash (used in) provided by investing activities	(88)	3,500
Net cash provided by (used in) financing activities	—	—
Net decrease in cash, cash equivalents and restricted cash	$(5,204)	$(1,285)

Net Cash Flow from Operating Activities

Net cash used in operating activities was $5,116,000 for the six months ended June 30, 2017, compared with $4,785,000 for the six months ended June 30, 2016. The increase in cash used in operating activities was primarily due to an increase in net loss of $3,531,000, offset by changes in non-cash expenses of $2,795,000 primarily related to the fair value of consideration recorded as acquired in-process research and development expense for the acquisition of MirImmune in January 2017.

Net Cash Flow from Investing Activities

Net cash used in investing activities was $88,000 for the six months ended June 30, 2017, compared with net cash provided by investing activities of $3,500,000 for the six months ended June 30, 2016. The decrease in net cash flow from investing activities was primarily related to the purchase of laboratory equipment in the current year as compared with maturities of short-term investments in the prior year.

Net Cash Flow from Financing Activities

There were no cash flows related to financing activities for the six months ended June 30, 2017 or 2016.

Comparison of the Years Ended December 31, 2016 and 2015

The following table summarizes our cash flows for the periods indicated, in thousands:

	For the Years Ended December 31,	
	2016	2015
Net cash used in operating activities	$ (7,760)	$(7,317)
Net cash provided by (used in) investing activities	5,346	(5,557)
Net cash provided by financing activities	10,203	9,495
Net increase (decrease) in cash, cash equivalents and restricted cash	$ 7,789	$(3,379)

Net Cash Flow from Operating Activities

Net cash used in operating activities was $7,760,000 for the year ended December 31, 2016, compared with $7,317,000 for the year ended December 31, 2015. The increase in cash used in operating activities was due to changes in working capital items of $632,000 primarily attributable to payments related to the manufacturing of the RXI-109 drug product in the first quarter of 2016 and changes in non-cash expenses of $1,040,000 partially offset by a decrease in net loss of $1,229,000.

Net Cash Flow from Investing Activities

Net cash provided by investing activities was $5,346,000 for the year ended December 31, 2016, compared with net cash used in investing activities of $5,557,000 for the year ended December 31, 2015. The increase in net cash provided by investing activities was primarily related to net purchases and maturities of short-term investments as compared with the same period in 2015, offset by notes receivable owed to the Company by MirImmune and capital equipment purchases.

Net Cash Flow from Financing Activities

Net cash provided by financing activities was $10,203,000 for the year ended December 31, 2016, compared with $9,495,000 for the year ended December 31, 2015. Net cash provided by financing activities in 2016 was due to net proceeds received in connection with the 2016 Offering and net proceeds from the issuance of common stock to Lincoln Park under the 2014 Purchase Agreement. Net cash provided by financing activities in 2015 was primarily due to net proceeds received from the 2015 Offering and the issuance of common stock to Lincoln Park under the 2014 Purchase Agreement.

Off-Balance Sheet Arrangements

In connection with certain license agreements, we are required to indemnify the licensor for certain damages arising in connection with the intellectual property rights licensed under the agreement. In addition, we are a party to a number of agreements entered into in the ordinary course of business that contain typical provisions that obligate us to indemnify the other parties to such agreements upon the occurrence of certain events. These indemnification obligations are considered off-balance sheet arrangements in accordance with ASC Topic 460, "*Guarantor's Accounting and Disclosure Requirements for*

Guarantees, Including Indirect Guarantees of Indebtedness of Others." To date, we have not encountered material costs as a result of such obligations and have not accrued any liabilities related to such obligations in our financial statements. See Note 8 to our financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2016, which was filed with the SEC on March 30, 2017, for further discussion of these indemnification agreements.

Recently Issued Accounting Standards

See Notes 3 to our financial statements included in our Quarterly Report on Form 10-Q for the quarter ended June 30, 2017, which was filed with the SEC on August 10, 2017, and our Annual Report on Form 10-K for the year ended December 31, 2016, which was filed with the SEC on March 30, 2017, for a description of recent accounting pronouncements applicable to our business.

DIRECTORS, EXECUTIVE OFFICERS, PROMOTORS AND CONTROL PERSONS

Directors and Executive Officers of RXi

The following table sets forth our directors and executive officers, their ages and the positions currently held by each person:

Name	Age	Position
Geert Cauwenbergh, Dr. Med. Sc.	63	President, Chief Executive Officer, acting Chief Financial Officer and Director
Gerrit Dispersyn, Dr. Med. Sc.	42	Chief Development Officer
Alexey Eliseev, Ph.D.	52	Chief Business Officer
Robert J. Bitterman	66	Chairman of the Board of Directors
Keith L. Brownlie	65	Director
H. Paul Dorman	80	Director
Jonathan Freeman, Ph.D.	49	Director
Curtis A. Lockshin, Ph.D.	57	Director

Geert Cauwenbergh, Dr. Med. Sc. was appointed to the Board and was elected as President and Chief Executive Officer of the Company in April 2012. Prior to joining us, from June 2011 to April 2012, Dr. Cauwenbergh was active, through his consulting company Phases123 LLC, in advising various small biotech and healthcare companies. From July 2008 to June 2011, Dr. Cauwenbergh was the Chief Executive Officer of Rhei Pharmaceuticals HK Ltd, a Chinese company that licenses western drugs for development and commercialization in China, and Managing Director of the Center for Medical Innovation, a government subsidized center for translational medicine for the Belgian Region of Flanders. From 2002 to 2008, Dr. Cauwenbergh served as Chief Executive Officer of Barrier Therapeutics, Inc., a publicly traded biopharmaceutical company that he founded in 2001 and where he also served as Chairman of the board of directors from 2002 to 2006. Barrier, which focused on dermatology drug development and commercialization, was acquired by Stiefel Laboratories, Inc. in 2008. Prior to founding Barrier, Dr. Cauwenbergh held a number of ascending senior management positions at Johnson & Johnson, where he was employed for 23 years. As Vice President of Research and Development for Johnson & Johnson's Skin Research Center, he was responsible for the worldwide research and development of all skin care products for the Johnson & Johnson consumer companies. He currently serves on the board of directors of Moberg Pharma AB, Phosphagenics Ltd. and Cutanea Life Sciences, Inc., a wholly owned subsidiary of Maruho Company, LTD. In 2005, Dr. Cauwenbergh was inducted into the New Jersey High-Tech Hall of Fame, and, from 2009 to 2010, he served as Chairman of the Board of Trustees of BioNJ. He has authored more than 100 publications and has been a guest editor for numerous books addressing mycology and infectious diseases. Dr. Cauwenbergh received his Doctorate in Medical Sciences from the Catholic University of Leuven, Faculty of Medicine (Belgium), where he also completed his masters and undergraduate work.

Gerrit Dispersyn, Dr. Med. Sc. currently serves as our Chief Development Officer. Dr. Dispersyn was previously the Vice President, Global Head of Affairs at Integra Lifesciences Corporation, a medical technology company dedicated to limiting uncertainty for surgeons so they can concentrate on providing the best patient care, from 2014 to April 2017. Prior to assuming this role, Dr. Dispersyn held the position of Vice President, Program Management & Clinical Affairs from 2008 to 2014. From 2002 to 2008, he held various roles at Barrier Therapeutics Inc., a pharmaceutical company focused on the development and commercialization of products in the field of dermatology, including Vice President, Product Development & Portfolio Management. Dr. Dispersyn is also the founder of INGRESS LLC, a consultancy company providing R&D and clinical operations support to start-up companies. He received his Doctorate in Medical Sciences from Maastricht University, Faculty of Medicine (Netherlands), a post-graduate degree in Biomedical Imaging and a Master of Science degree in Biochemistry, both from the University of Antwerp, Belgium.

Alexey Eliseev, Ph.D. currently serves as our Chief Business Officer. Dr. Eliseev previously served as the Chief Executive Officer of MirImmune Inc., a private biopharmaceutical company he co-founded that focused on the development of new and improved immunotherapies for cancer, from March 2015 until January 2017, when we acquired MirImmune. From 2009 to 2016, Dr. Eliseev worked with Maxwell Biotech Venture Fund as its Managing Director and ran the investment activity of the fund in the United States. Maxwell Biotech is a Russian venture fund fully dedicated to investments in the life science sector. The fund was created with the participation of the Russian Venture Company, a government sponsored fund of funds that has a mission of promoting the development of innovation-based economy in the country. In 1999 he co-founded the company Therascope, later Alantos Pharmaceuticals, with a number of prominent founders including French Nobel Laureate Jean-Marie Lehn. He then became CTO of Alantos and President of Alantos's

U.S. division until 2004. Dr. Eliseev was also among the founders of AC Immune (Switzerland) and Boston BioCom LLC. Dr. Eliseev currently is a member of the board of directors of BioNevia Pharmaceuticals. Dr. Eliseev's career includes over twenty years of experience in academia, biotechnology industry and venture capital. He received his Ph.D. in Bioorganic Chemistry from Moscow State University and MBA from the MIT Sloan School of Management.

Robert J. Bitterman has served as a member and the Chairman of our Board since 2012. Prior to joining the Company, Mr. Bitterman founded Cutanea Life Sciences, Inc. in September 2005 as its President, Chief Executive Officer and director. Cutanea Life Sciences, Inc. focuses on the development and commercialization of proprietary technologies to treat diseased and aging skin and was successfully acquired by Maruho Company, LTD. in February 2012, where Mr. Bitterman has continued his role as President and Chief Executive Officer. Mr. Bitterman also served as President and General Manager of Dermik Laboratories, the global dermatology strategic business unit of Aventis S.A. from 1994 to 2004. Prior to assuming senior operational leadership positions, Mr. Bitterman held various positions of increasing responsibility in financial and commercial capacities within Aventis S.A. From September 2004 until April 2005, Mr. Bitterman also held the position of President and Chief Executive Officer of Isolagen, Inc., a publicly traded bioscience technology company which developed and commercialized autologous human fibroblasts targeting soft tissue enhancement. Mr. Bitterman holds an A.B. degree in Economics from The College of the Holy Cross and a Master of Business Administration degree from Boston University. He also holds a Doctor of Human Letters (Honoris Causa) from the New York College of Podiatric Medicine and is a member of the Philadelphia Business Leaders Network.

Keith L. Brownlie has served as a member of our Board since June 2012. Prior to joining us, Mr. Brownlie was employed by the accounting firm Ernst & Young LLP from 1974 to 2010. At Ernst & Young, he served as audit partner for numerous public companies and was the Life Sciences Industry Leader for the New York Metro Area. Mr. Brownlie co-founded the New Jersey Entrepreneur of the Year Program and was co-chair of the BIONJ/PABIO Annual Symposium. Since his retirement from Ernst &Young in 2010, Mr. Brownlie currently serves as a member of the board of directors and chairman of the audit committees of Soligenix, Inc., which develops products to treat life-threatening side effects of cancer treatments and serious gastrointestinal diseases and vaccines for certain bioterrorism agents, and Cellax Therapeutics, Inc., which develops targeted therapeutics to address devastating diseases for which available treatments are inadequate. From 2011 to 2013, Mr. Brownlie also served as a member of the board of directors and served as the chairman of the audit committee of EpiCept Corporation, which focused on the development and commercialization of pharmaceutical products for the treatment of pain and cancer and merged with Immune Pharmaceuticals in August 2013. From 2013 to 2014, Mr. Brownlie was a member of the board of directors and served as the chairman of the audit committee of Cancer Genetics, Inc., an emerging leader in DNA-based cancer diagnostics that personalizes the clinical management of difficult-to-diagnose cancers. Mr. Brownlie received a B.S. in Accounting from Lehigh University and is a Certified Public Accountant.

H. Paul Dorman has served as a member of our Board since April 2013. Mr. Dorman currently serves as the Chairman and CEO of DFB Pharmaceuticals, a holdings company specializing in investing in and operating pharmaceutical businesses. From 1990 to 2012, Mr. Dorman also served as the Chairman and CEO of DPT Laboratories, a contract manufacturer and developer of pharmaceutical products. During that time, Mr. Dorman expanded DPT into a portfolio of healthcare companies that provides services and proprietary branded pharmaceutical products to the global market. Prior to acquiring DPT, Mr. Dorman was employed by Johnson & Johnson for 12 years, where he served in various positions, including Vice President and as a member of the board of directors. Prior to Johnson & Johnson, Mr. Dorman was employed by Baxter-Travenol, a large pharmaceuticals company. Mr. Dorman holds a B.S. degree in Mechanical Engineering from Tulane University and a Juris Doctor of Law from Loyola University.

Jonathan Freeman, Ph.D. has served has a member of our Board since June 2017. Dr. Freeman currently serves as Chief Business Officer of Vedanta Biosciences, a private company pioneering an innovative class of therapies modulating interaction pathways between the human microbe and the host immune system. Prior to his role with Vedanta Biosciences, Dr. Freeman held the position of Senior Vice President, Head of Strategy Development & Portfolio Management at Merck KGaA from 2013 to 2016, previously serving as Head of Licensing, Global Business Development from 2008 to 2012. Prior to this, Dr. Freeman also was the Director of M&A at Baxter Healthcare from 2005 to 2008, and from 1999 to 2005 was Head of Licensing at Serono. He is a past member of the board of directors and former Vice President of the Swiss Pharma Group, and the representative to the International Pharma Society. Dr. Freeman holds a First Class Honours in Biochemistry and an M.A. from Cambridge University, a Ph.D. in cancer research from the Imperial Cancer Research Fund (now CRUK) and an MBA with a finance major from Webster, St. Louis. He held various post-doctoral positions in the Swiss Institute for Cancer Research and the Geneva Medical School generating grants from the Swiss National Fund, the EMBL and the London Royal Society.

Curtis A. Lockshin, Ph.D. has served as a member of our Board since April 2013. Dr. Lockshin currently serves as the Chief Scientific Officer of Xenetic Biosciences, Inc., a biopharmaceutical company focused on developing biologic drugs and novel oncology therapeutics. Prior to his appointment as Chief Scientific Officer, Dr. Lockshin served as the Vice President of Research and Operations from March 2014 to January 2017. From July 2015 to July 2016, he served as Chief Executive Officer and director of SciVac Therapeutics Inc., and its subsidiary SciVac, Ltd. where Dr. Lockshin had been serving as Chief Executive Officer and director since September 2014. With the merger of SciVac Therapeutics Inc. and VBI Vaccines in July 2016, Dr. Lockshin served as the Chief Technical Officer of the merged company until December 2016. In addition, he has served as the President and Chief Executive Officer of Guardum Pharmaceuticals, LLC since May 2013. From October 2011 to February 2013, Dr. Lockshin served as Vice President of Corporate R&D Initiatives for OPKO Health, Inc., at which time he then assumed the position of consultant to OPKO until December 2013. Since 2003, Dr. Lockshin has worked as an independent consultant, focusing on small private companies in the healthcare, biotechnology and security sectors. From August 2002 to March 2003, Dr. Lockshin held the position of Director of Discovery Biology at Beyond Genomics, Inc. (now BG Medicine, Inc.), and held various positions from June 1998 to July 2002 at Sepracor, Inc. (now Sunovion Pharmaceuticals, Inc.). Since April 2004, Dr. Lockshin has also served as a member of the board of directors of the Ruth K. Broad Biomedical Research Foundation, a Duke University Support Corporation that supports basic research related to Alzheimer's disease and neurodegeneration via intramural, extramural and international grants. He is a past member of the board of directors of ChromaDex, Inc. and Sorrento Therapeutics, Inc. Dr. Lockshin holds a S.B. degree in Life Sciences and a Ph.D. in Biological Chemistry from the Massachusetts Institute of Technology.

Director Independence

We believe that the Company benefits from having a strong and independent Board. For a director to be considered independent, the Board must determine that the director does not have any direct or indirect material relationship with the Company that would affect his or her exercise of independent judgment. On an annual basis, the Board reviews the independence of all directors under the applicable NASDAQ listing standards. The Company also considers each director's affiliations with the Company and members of management, as well as significant holdings of Company securities. This review considers all known relevant facts and circumstances in making an independence determination. Based on this review, the Board has made an affirmative determination that all directors, other than Dr. Cauwenbergh, are independent. It was determined that Dr. Cauwenbergh lacks independence because of his status as the Company's President and Chief Executive Officer.

In addition, NASDAQ listing standards require that, subject to specified exceptions, each member of our Audit, Compensation and Nominating and Governance Committees be independent and that our Audit Committee members also satisfy independence criteria set forth in Rule 10A-3 under the Securities Exchange Act of 1934, as amended (the "**Exchange Act**"). Our Board has determined that Messrs. Brownlie and Dorman and Dr. Freeman, members of the Audit Committee, Messrs. Bitterman and Brownlie and Dr. Lockshin, members of the Compensation Committee, and Drs. Lockshin and Freeman and Messr. Dorman, members of the Nominating and Governance Committee, are independent under the applicable NASDAQ listing standards and the Exchange Act.

EXECUTIVE COMPENSATION

The following describes the compensation earned in fiscal 2016 and 2015 by each of the executive officers identified below in the Summary Compensation Table, who are referred to collectively as our "named executive officers." Our named executive officers with respect to the fiscal year that ended on December 31, 2016 are Geert Cauwenbergh, Dr. Med. Sc., President, Chief Executive Officer, acting Chief Financial Officer and Director, and Pamela Pavco, Ph.D., former Chief Development Officer.

Summary Compensation Table

Name and principal position	Year	Salary ($)	Option awards ($)(1)	Non-equity incentive plan compensation ($)(2)	All other compensation ($)(3)	Total ($)
Geert Cauwenbergh, Dr. Med. Sc.	2016	413,723	26,602	197,600	624	638,549
President, Chief Executive Officer and acting Chief Financial Officer	2015	398,361	37,240	190,000	300	625,901
Pamela Pavco, Ph.D.	2016	377,522	13,200	108,186	585	499,493
Former Chief Development Officer	2015	363,808	18,480	104,025	300	486,613

(1) The amounts shown reflect the grant date fair value computed in accordance with Financial Accounting Standards Board ("**FASB**") Accounting Standards Codification ("**ASC**") 718 for the indicated year, adjusted to disregard the effects of any estimate of forfeitures related to service-based vesting. The assumptions we used in valuing options are described more fully in the "Management's Discussion and Analysis" section and the Notes to Financial Statements included in our Annual Report on Form 10-K for the fiscal year ended December 31, 2016.

(2) The amounts shown reflect the annual cash bonus earned for performance for each respective year under the Company's Incentive Bonus Program. The annual cash bonuses were paid in February of the calendar year following the year to which the bonus relates.

(3) Represents amounts for the dollar value of life insurance premiums paid.

Outstanding Equity Awards at Fiscal Year-End

The following table shows information regarding outstanding equity awards as of December 31, 2016 for our named executive officers. None of the named executive officers held any outstanding stock awards as of that date.

	Option Awards			
Name	Number of Securities Underlying Unexercised Options Exercisable (#)	Number of Securities Underlying Unexercised Options Unexercisable (#)	Option Exercise Price ($)	Option Expiration Date
Geert Cauwenbergh, Dr. Med. Sc.(1)	113,852	—	25.50	06/08/2022
	11,667	1,667	60.00	06/07/2023
	8,313	4,988	28.50	06/02/2024
	4,988	8,313	3.80	06/01/2025
	—	13,301	2.86	02/10/2026
Pamela Pavco, Ph.D.(2)	55,810	—	39.00	05/04/2022
	5,834	833	60.00	06/07/2023
	4,125	2,475	28.50	06/02/2024
	2,475	4,126	3.80	06/01/2025
	1,375	5,225	2.86	02/10/2026

(1) The option awards granted to Dr. Cauwenbergh vest as to 25% of the award on the first anniversary of the grant date and as to the remaining 75% of the option in equal monthly installments over a three year period thereafter.

(2) The option awards granted to Dr. Pavco vest in equal monthly installments over a four year period.

Nonqualified Deferred Compensation

We do not have any nonqualified deferred compensation plans.

Employment and Change of Control Agreements

Geert Cauwenbergh, Dr. Med. Sc.

Dr. Cauwenbergh was appointed Chief Executive Officer pursuant to an employment agreement, dated April 27, 2012, pursuant to which he is entitled to receive an initial base salary of $360,000 per annum, as well as a performance bonus of up to 50% of his base salary, subject to the achievement of performance goals to be established annually. On June 8, 2012, Dr. Cauwenbergh received an option entitling him to purchase 113,852 shares of Company common stock at an exercise price equal to the fair value of the underlying common stock on the date of grant. The option vested with respect to one quarter of the underlying shares on April 27, 2013, and then vested on a ratable basis monthly thereafter over the next three years such that the option became fully vested and exercisable on April 27, 2016.

Dr. Cauwenbergh's employment agreement provides that, upon termination of Dr. Cauwenbergh's employment without "cause" (as defined therein) by us or by Dr. Cauwenbergh for "good reason" (as defined therein), he will be entitled to payment of: (1) any accrued but unpaid salary, business expenses and unused vacation as of the date of his termination as well as any unpaid bonus compensation awarded for the prior year; (2) six months of salary from the date of termination; and (3) continued participation, at our expense, during the applicable six-month severance period in our sponsored group medical and dental plans. In the event his employment is terminated within twelve months following a "change of control" of RXi, he will be entitled to: (x) twelve months of salary from the date of termination; (y) accelerated vesting of any unvested RXi stock options held by him; and (z) continued participation, at our expense, during the twelve-month severance period in our sponsored group medical and dental plans.

Pamela Pavco, Ph.D.

Dr. Pavco served as our Chief Development Officer until her retirement on May 19, 2017. In connection with her retirement, Gerrit Dispersyn, Dr. Med. Sc. was appointed as the Company's Chief Development Officer as her successor. Under her employment agreement dated September 24, 2011, Dr. Pavco was entitled to receive an initial annual salary of $300,000. She also received an option to purchase up to 55,810 shares of common stock at an exercise price equal to the fair value of the underlying common stock on the date of grant. The option vested in equal monthly installments over four years, beginning on October 24, 2011, such that the option became fully vested and exercisable on September 24, 2015.

Dr. Pavco's employment agreement provided that, upon termination of Dr. Pavco's employment without "cause" (as defined therein) by us or by Dr. Pavco for "good reason" (as defined therein), she would be entitled to payment of: (1) any accrued but unpaid salary and unused vacation as of the date of her termination; (2) six months of salary from the date of termination; and (3) continued participation, at our expense, during the applicable six-month severance period in our sponsored group medical and dental plans. In the event her employment was terminated within twelve months following a "change of control" of RXi, she would be entitled to: (x) twelve months of salary from the date of termination; (y) accelerated vesting of any unvested RXi stock options held by her as to 50% of the unvested option shares or the portion of the unvested option shares that would have vested over the following twenty-four months, whichever is greater; and (z) continued participation, at our expense, during the twelve-month severance period in our sponsored group medical and dental plans.

Director Compensation

The following table shows the compensation paid in fiscal year 2016 to the Company's non-employee directors.

Name	Fees Earned or Paid in Cash ($)	Option Awards ($)(1)(2)	Total ($)
Robert J. Bitterman	35,000	3,001	38,001
Keith L. Brownlie	35,000	3,001	38,001
H. Paul Dorman	25,000	3,001	28,001
Curtis A. Lockshin, Ph.D.	30,000	3,001	33,001

(1) The amounts shown reflect the grant date fair value computed in accordance with FASB ASC 718 for the indicated year, adjusted to disregard the effects of any estimate of forfeitures related to service-based vesting. The assumptions we used in valuing options are described more fully in the "Management's Discussion and Analysis" section and the Notes to Financial Statements included in our Annual Report on Form 10-K for the fiscal year ended December 31, 2016.

(2) Since their service on the Board, the aggregate number of shares underlying stock options outstanding at fiscal yearend to our non-employee directors is as follows: Robert J. Bitterman — 10,002 option awards, Keith L. Brownlie 10,002 option awards, H. Paul Dorman — 8,335 option awards and Curtis A. Lockshin, Ph.D. — 8,335 option awards.

We compensate our non-employee directors for their service as a member of our Board. As our only director who is also an employee, Dr. Cauwenbergh receives no separate compensation for Board service. Dr. Cauwenbergh's compensation is set forth above in the Summary Compensation Table.

Each non-employee director is entitled to receive an annual cash retainer of $25,000. The chairs of our Board and the Audit Committee are entitled to receive an additional annual cash retainer of $10,000 and the chair of the Nominating and Governance Committee is entitled to receive an additional annual cash retainer of $5,000.

Each non-employee director is entitled to receive an option award for 3,500 shares of the Company's common stock, vesting in equal quarterly installments over one year, upon initial election to our Board. In addition, each non-employee director is also entitled to receive an additional annual option award for 2,000 shares of the Company's common stock, vesting in equal quarterly installments over one year.

Non-employee directors are also reimbursed for their travel and reasonable out-of-pocket expenses incurred in connection with attending Board and committee meetings and in attending continuing education seminars, to the extent that attendance is required by the Board or the committee(s) on which that director serves.

The Compensation Committee and the Board reassess the appropriate level of equity compensation for non-employee directors on an annual basis. Future equity compensation payments will be determined on a year-by-year basis for the foreseeable future due to the volatility of the Company's stock price.

SECURITY OWNERSHIP OF BENEFICIAL OWNERS AND MANAGEMENT

Based on information available to us and filings with the Securities and Exchange Commission (the "**SEC**"), the following table sets forth certain information regarding the beneficial ownership (as defined by Rule 13d-3 under the Securities Exchange Act of 1934) of our outstanding common stock for (i) each of our directors, (ii) each of our "named executive officers," as defined in the Executive Compensation section above, (iii) all of our directors and executive officers as a group and (iv) persons known to us to beneficially own more than 5% of our outstanding common stock. The following information is presented as of August 10, 2017 or such other date as may be reflected below.

Beneficial ownership and percentage ownership are determined in accordance with the rules of the SEC and include voting or investment power with respect to shares of stock. This information does not necessarily indicate beneficial ownership for any other purpose. Under these rules, shares of common stock issuable under stock options or warrants that are exercisable within 60 days of August 10, 2017 are deemed outstanding for the purpose of computing the percentage ownership of the person holding the options or warrants, but are not deemed outstanding for the purpose of computing the percentage ownership of any other person.

Unless otherwise indicated and subject to applicable community property laws, to our knowledge, each stockholder named in the following table possesses sole voting and investment power over their shares of common stock, except for those jointly owned with that person's spouse. Unless otherwise indicated below, the address of each person listed on the table is c/o RXi Pharmaceuticals Corporation, 257 Simarano Drive, Suite 101, Marlborough, MA 01752.

	Shares Beneficially Owned	
Name and Address of Beneficial Owner	**Number (1)**	**Percent of Class(2)**
Greater than 5% Holders		
Timothy J. Barberich(3) 88 Beacon Street Boston, MA 02108	1,408,446	5.94%
Alexey Wolfson(4) 10 Rocklawn Road Westborough, MA 01581	1,273,984	5.37%
Directors, Director Nominees, Officers and Named Executive Officers:		
Geert Cauwenbergh, Dr. Med. Sc.(5)	315,710	1.32%
Robert J. Bitterman(6)	17,277	*
Keith L. Brownlie(7)	11,002	*
H. Paul Dorman(8)	14,960	*
Jonathan E. Freeman, Ph.D. (9)	875	*
Curtis A. Lockshin, Ph.D.(10)	11,235	*
Gerrit Dispersyn, Dr. Med. Sc. (11)	13,395	*
Alexey Eliseev, Ph.D. (12)	1,183,009	4.99%
All current directors and executive officers as a group (eight persons)	1,567,463	6.54%

* Indicates less than 1%.

(1) Represents shares of common stock and shares of restricted stock held as of August 10, 2017 plus shares of common stock that may be acquired upon exercise of options, warrants and other rights exercisable within 60 days of August 10, 2017.

(2) Based on 23,697,338 shares of the registrant's common stock that were issued and outstanding as of August 10, 2017. The percentage ownership and voting power for each person (or all directors and executive officers as a group) is calculated by assuming the exercise or conversion of all options, warrants and convertible securities exercisable or convertible within 60 days of August 10, 2017 held by such person and the non-exercise and non-conversion of all outstanding warrants, options and convertible securities held by all other persons.

(3) Based on information set forth in a 13G filed with the SEC on February 14, 2017. The amount of common stock shown in the table as beneficially owned is more than the shares reported as of the date of the Schedule 13G filed by Timothy J. Barberich due to the conversion of Series C Convertible Preferred Stock into common stock.

(4) Based on information set forth in a 13G filed with the SEC on February 14, 2017. The amount of common stock shown in the table as beneficially owned is more than the shares reported as of the date of the Schedule 13G filed by Alexey Wolfson due to the conversion of Series C Convertible Preferred Stock into common stock.

(5) Consists of (a) 127,083 shares of common stock and (b) 151,294 shares of common stock issuable upon the exercise of options and 37,333 shares of common stock issuable upon the exercise of warrants exercisable within 60 days of August 10, 2017.

(6) Consists of (a) 4,400 shares of common stock and (b) 11,002 shares of common stock issuable upon the exercise of options and 1,875 shares of common stock issuable upon the exercise of warrants exercisable within 60 days of August 10, 2017.
(7) Consists of 11,002 shares of common stock issuable upon the exercise of options exercisable within 60 days of August 10, 2017.
(8) Consists of (a) 3,750 shares of common stock and (b) 9,335 shares of common stock issuable upon the exercise of options and 1,875 shares of common stock issuable upon the exercise of warrants exercisable within 60 days of August 10, 2017.
(9) Consists of 875 shares of common stock issuable upon the exercise of options exercisable within 60 days of August 10, 2017.
(10) Consists of (a) 1,300 shares of common stock and (b) 9,335 shares of common stock issuable upon the exercise of options and 600 shares of common stock issuable upon the exercise of warrants exercisable within 60 days of August 10, 2017.
(11) Consists of (a) 3,500 shares of common stock and (b) 9,895 shares of common stock issuable upon the exercise of options within 60 days of August 10, 2017.
(12) Consists of (a) 1,150,312 shares of common stock and (b) 32,697 shares of common stock issuable upon the exercise of options within 60 days of August 10, 2017.

CERTAIN RELATIONSHIPS AND RELATED-PARTY TRANSACTIONS

Since the past two years, there has not been, nor is there currently proposed, any transaction or series of related transactions to which we were or will be a party in which the amount involved exceeded or will exceed $120,000 and in which the other parties included or will include any of our directors, executive officers, holders of 5% or more of our voting securities, or any member of the immediate family of any of the foregoing persons, other than compensation arrangements with directors and executive officers, which are described where required in "Directors, Executive Officers, Promotors and Control Persons," "Executive Compensation," and the transactions described below.

Procedures for Review, Approval or Ratification of Transactions with Related Persons

Our Board of Directors has a policy to review and approve all transactions with directors, officers and holders of more than 5% of our voting securities and their affiliates. The policy provides that, prior to Board consideration of a transaction with such a related party, the material facts as to the related party's relationship or interest in the transaction must be disclosed to the Board, and the transaction will not be considered approved by the Board unless a majority of the directors who are not interested in the transaction (if applicable) approve the transaction. Furthermore, 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 must be disclosed to the stockholders, who must approve the transaction in good faith.

Indemnification Agreements

We have entered into indemnification agreements with each of our executive officers and directors. These agreements provide that, subject to limited exceptions and among other things, we will indemnify each of our executive officers and directors to the fullest extent permitted by law and advance expenses to each indemnitee in connection with any proceeding in which a right to indemnification is available.

Stock Purchase Agreement

On January 6, 2017, the Company entered into a Stock Purchase Agreement (the "**Stock Purchase Agreement**") by and among the Company, RXi Merger Sub, LLC, a Delaware limited liability company and wholly owned subsidiary of the Company ("**RXi Merger Sub**"), MirImmune Inc., a Delaware corporation ("**MirImmune**"), the stockholders of MirImmune set forth on the signature pages thereto (each a "**Seller**" and collectively, the "**Sellers**"), and Alexey Wolfson, Ph.D., in his capacity as the Sellers' Representative. Pursuant to the Stock Purchase Agreement, the Company acquired from the Sellers 100% of the issued and outstanding shares of capital stock of MirImmune for an aggregate of 2,750,371 shares of the Company's common stock and an aggregate of 1,118,224 shares of Series C Convertible Preferred Stock, par value $0.0001 per share (the "**Series C Convertible Preferred Stock**"). Such consideration represents in the aggregate a number of shares of capital stock equal to approximately 19.99% of the outstanding common stock immediately prior to the execution of the Stock Purchase Agreement, plus approximately 19.99% of the common stock underlying the outstanding Series B Convertible Preferred Stock immediately prior to the execution of the Stock Purchase Agreement, which was previously issued in the Company's registered securities offering pursuant to a registration statement on Form S-1 (File No. 333-214199) (the "**Financing**"). On June 9, 2017, with the approval of the Company's stockholders in accordance with the stockholder approval requirements of Nasdaq Marketplace Rule 5635, each share of the Company's Series C Convertible Preferred Stock outstanding was automatically converted into one share of common stock, such that no shares of Series C Convertible Preferred Stock remained issued or outstanding.

Under the terms of the Stock Purchase Agreement, if certain development or commercial milestones (the "**Milestones**") are achieved within two years of the Closing (as defined therein), the Company will be required to either: (i) issue to the Sellers a number of shares of common stock (the "**Milestone Shares**") equal to the sum of 2,519,091 shares of common stock (which represents 13% of the outstanding common stock and 13% of the common stock underlying the shares of Series B Convertible Preferred Stock, in each case as of immediately following the closing of the Financing), plus an additional number of shares of common stock equal to 13% of the common stock issued upon exercise of any warrants issued under the Financing, which would result in the issuance of a maximum of 1,661,111 additional shares of common stock, but only to the extent that such warrants have been exercised prior to the Milestones being achieved; or (ii) pay the equivalent value of the Milestone Shares in cash to the Sellers, subject to certain adjustments set forth in the Stock Purchase Agreement. In certain circumstances, if the Company has not received stockholder approval for the issuance of the Milestone Shares, the Company may be required to instead issue shares of Series C Convertible Preferred Stock in lieu of part or all of the common stock otherwise issuable as Milestone Shares.

Pursuant to the Stock Purchase Agreement, we issued 817,813 shares of common stock and 332,499 shares of Series C Convertible Preferred Stock to Alexey Eliseev, Ph.D., a Seller in the agreement and co-founder of MirImmune. The approximate dollar value of such shares is equal to $0.8 million. Additionally, Dr. Eliseev is eligible to receive 748,926 Milestone Shares, or the equivalent value in cash, if the Milestones are achieved within two years. The amount of Milestone Shares to be issued may increase as provided above. Assuming no such increase takes place, the approximate dollar value of such Milestone Shares is equal to approximately $0.4 million, (based on an assumed Milestone Share price per common share of $0.57 which was the closing price of our common stock on August 29, 2017). In connection with the Stock Purchase Agreement Dr. Eliseev also executed and delivered a three-year non-compete agreement with the Company under which Dr. Eliseev agreed to not interfere with the Company's business or solicit the Company's employees or business contacts. Dr. Eliseev is the Chief Business Officer of the Company.

LEGAL MATTERS

Certain legal matters relating to the issuance of the securities offered by this prospectus will be passed upon for us by Gibson, Dunn & Crutcher LLP, San Francisco, California.

EXPERTS

The financial statements of RXi Pharmaceuticals Corporation as of December 31, 2016 and 2015 and for the years then ended have been audited by BDO USA, LLP, an independent registered public accounting firm, as stated in their report which is incorporated by reference herein. Such financial statements have been incorporated by reference herein in reliance on the report of such firm given on the authority of said firm as experts in auditing and accounting.

WHERE YOU CAN FIND MORE INFORMATION

We are required to file annual, quarterly and special reports, proxy statements and other information with the SEC. You may read and copy any document filed by us at the SEC's Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for further information on the public reference room. Our filings with the SEC are also available to the public at the SEC's Internet web site at *http://www.sec.gov*.

We have filed a registration statement, of which this prospectus is a part, covering the securities offered hereby. As allowed by SEC rules, this prospectus does not include all of the information contained in the Registration Statement and the included exhibits, financial statements and schedules. You are referred to the Registration Statement, the included exhibits, financial statements and schedules for further information. This prospectus is qualified in its entirety by such other information.

We are subject to the information and periodic reporting requirements of the Exchange Act and, in accordance therewith, file periodic reports, proxy statements and other information with the SEC. Such periodic reports, proxy statements and other information are available for inspection and copying at the public reference room and website of the SEC referred to above. We maintain a website at *www.rxipharma.com*. The reference to our website address does not constitute incorporation by reference of the information contained on our website, and you should not consider the contents of our website in making an investment decision with respect to our common stock.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to "incorporate by reference" the information we have filed with them, which means that we can disclose important information to you by referring you to those documents. The information we incorporate by reference is an important part of this prospectus, and information that we file later with the SEC will automatically update and supersede this information. The documents we are incorporating by reference are:

- Our Annual Report on Form 10-K for the year ended December 31, 2016, filed with the SEC on March 30, 2017;
- Our Quarterly Report on Form 10-Q for the period ended March 31, 2017, filed with the SEC on May 11, 2017 and our Quarterly Report on Form 10-Q for the period ended June 30, 2017, filed with the SEC on August 10, 2017;
- Our Definitive Proxy Statement on Schedule 14A, filed with the SEC on April 27, 2017;
- Our Current Reports on Form 8-K, filed with the SEC on January 10, 2017, February 3, 2017, March 28, 2017, March 29, 2017, March 30, 2017, April 18, 2017, May 1, 2017, May 11, 2017, June 9, 2017, August 3, 2017, August 9, 2017 and August 10, 2017; and
- The description of our common stock contained in our registration on Form 8-A12B (File No. 001-36304) filed with the SEC on December 19, 2016, including any amendment or report filed for the purpose of updating such description.

All documents we file with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, except as to any portion of any report or documents that is not deemed filed under such provisions, (1) on or after the date of filing of the Registration Statement containing this prospectus and prior to the effectiveness of the Registration Statement and (2) on or after the date of this prospectus until the earlier of the date on which all of the securities registered hereunder have been sold or the Registration Statement of which this prospectus is a part has been withdrawn, shall be deemed incorporated by reference in this prospectus and to be a part of this prospectus from the date of filing of those documents and will be automatically updated and, to the extent described above, supersede information contained or incorporated by reference in this prospectus and previously filed documents that are incorporated by reference in this prospectus.

Nothing in this prospectus shall be deemed to incorporate information furnished but not filed with the SEC pursuant to Item 2.02, 7.01 or 9.01 of Form 8-K.

Upon written or oral request, we will provide without charge to each person to whom a copy of the prospectus is delivered a copy of the documents incorporated by reference herein (other than exhibits to such documents, unless such exhibits are specifically incorporated by reference herein). You may request a copy of these filings, at no cost, by writing or telephoning us at the following address: RXi Pharmaceuticals Corporation, 257 Simarano Drive, Suite 101, Marlborough, Massachusetts 01752 Attention: Investor Relations, telephone: (508) 767-3861. We maintain a website at http://www.rxipharma.com. You may access our definitive proxy statements on Schedule 14A, annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and periodic amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act with the SEC free of charge at our website as soon as reasonably practicable after such material is electronically filed with, or furnished to, the SEC. The information contained in, or that can be accessed through, our website is not incorporated by reference in, and is not part of, this prospectus. We have not authorized any one to provide you with any information that differs from that contained in this prospectus. Accordingly, you should not rely on any information that is not contained in this prospectus. You should not assume that the information in this prospectus is accurate as of any date other than the date of the front cover of this prospectus.

Table of Contents

RXi Pharmaceuticals Corporation

Up to 7,300,000 Shares of Common Stock

PROSPECTUS

August 30, 2017