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# **RXi Pharmaceuticals Corp**

# Skin & Eye Assets to Advance I-O Development: Initiating at \$20

Based on our DCF model and a 15% discount rate, RXi Pharmaceuticals is valued at approximately \$20.00 per share. Our model applies a 15% probability of ultimate approval and commercialization for RXI-109 and Samcyprone. The model includes contributions from the US, EU and rest of world.

Current Price (2/23/2018) \$3.34 **Valuation** \$20.00

# (RXII - NASDAQ)

#### INITIATION

RXi Pharmaceuticals has developed a unique composition of interference RNA that is able to self-deliver into the cellular cytoplasm. The compound, sd-rxRNA, combines features of RNAi and antisense, and is able to silence unwanted gene expression with a limited side effect profile.

The company has two Phase II dermal assets and one Phase I/II ocular asset which are expected to be partnered and provide development capital for earlier stage immuno-oncology (IO) programs.

RXi recently directed its main research focus towards its preclinical IO program that is being developed to augment existing cell therapies. A favorable investment and regulatory environment are supportive of IO and should allow for rapid entry into the clinic.

We attach a valuation for the Phase I/II and Phase II assets and expect to see regulatory approvals and subsequent commercialization over the 2022 to 2024 period as described in our analysis.

# **SUMMARY DATA**

52-Week High 52-Week Low One-Year Return (%) Beta Average Daily Volume (sh)	11.20 2.91 -51.9 1.23 195,231		Level e of Stock stry				Average II-Growth ned/Gene
Shares Outstanding (mil) Market Capitalization (\$mil) Short Interest Ratio (days) Institutional Ownership (%) Insider Ownership (%) Annual Cash Dividend Dividend Yield (%)	2.4 7.9 4.32 2.4 17.9 \$0.00 0.00	Reven	S ESTIMA ue s of USD) Q1 (Mar) \$0.0 A \$0.0 A	Q2 (Jun) \$0.0 A \$0.0 A	<b>Q3</b> (Sep) \$0.0 A \$0.0 A	<b>Q4</b> (Dec) \$0.0 A \$0.0 E	<b>Year</b> (Dec) \$0.0 A \$0.0 E \$0.0 E
5-Yr. Historical Growth Rates Sales (%) Earnings Per Share (%) Dividend (%)  P/E using TTM EPS P/E using 2017 Estimate P/E using 2018 Estimate	N/A N/A N/A N/A N/A	2019  Earnin  2016 2017 2018 2019	<b>Q1</b> -\$3.41 A -\$2.65 A	<b>Q2</b> -\$3.40 A -\$1.12 A	<b>Q3</b> -\$3.36 A -\$1.05 A	<b>Q4</b> -\$3.19 A -\$0.96 E	\$0.0 E  Year -\$13.33 A -\$5.79 E -\$3.44 E -\$3.59 E
Zacks Rank	N/A						

# **INITIATING COVERAGE**

We are initiating coverage of RXi Pharmaceuticals Corp (NASDAQ: RXII) with a \$20.00 price target based on our estimates for a 2023 launch of RXI-109 and a 2022 launch of Samcyprone, both through the efforts of a partner. The clinical-stage company is focused on delivering interference RNA to silence unwanted gene transcription. The company has two Phase II assets in scarring and wart indications; however, the more exciting work is being done in oncology and cell therapy where *ex vivo* treatment of a variety of cells can enhance their ability to fight cancer by downregulating checkpoints. We see the more advanced programs as partner material which will provide additional capital to develop the oncology programs.

RXi's most advanced efforts are represented by two Phase II assets in dermal scarring and warts and a Phase I/II asset in an ocular indication. The first two indications are associated with RXI-109 and the last with Samcyprone. In December 2017, RXi provided favorable topline data for its Phase IIa trial for hypertrophic scars. We anticipate that RXI-109 will advance to a Phase III then a Phase III trial in the two lead indications in 2018 and 2019 and achieve eventual approval and commercialization in 2023. We expect a similar timeline for RXI-109 in retinal scarring and Samcyprone in cutaneous warts. In the oncology sphere, RXi acquired Mirlmmune in January 2017 to enhance their position in next generation immunotherapies for the treatment of cancer. Mirlmmune had originally licensed RXi's sd-rxRNA technology to enhance immune checkpoint modulation in cell therapy and this research is expected to provide follow-on development candidates in the footsteps of RXI-109.

RXi's technology is differentiated from other interference RNA approaches in its ability to self-deliver without the need for a viral vector, electroporation or liposome to transfect the siRNA into the cytoplasm of a cell. The self-delivering technology has a high rate of transfection efficiency and high cell viability, making it an efficient tool for enhancing cell-based therapies that are developed *ex vivo*.

On September 30, 2017, RXi held \$5.4 million in cash on its balance sheet. Capital has been raised over the last several years with public stock offerings eliminating the need to carry any debt. We expect RXi to consume approximately \$2.5 million per quarter as it continues its development work. Including the \$15 million equity line available to the company, it currently holds sufficient cash to continue into the fourth quarter of 2019. We also anticipate \$20 million of upfront payment from a partnership related to the dermal and ocular assets in 2018.

Several factors support our thesis for RXi Pharmaceuticals, including an effective and differentiated delivery method for its interference RNA which has shown high levels of transfection efficiency and positive safety data for a small set of patients. With multiple monetizable indications in dermatology, ophthalmology and warts, RXi is in a strong position to advance its lead sd-rxRNA candidates to approval and support its developmental oncology pipeline.

## **INVESTMENT THESIS**

RXi Pharmaceuticals is developing its self-delivering interference RNA (sd-rxRNA) technology platform, which is able to silence the expression of proteins inside cells and thereby impact a substantially broad range of diseases. RNAi was first discovered by Andrew Fire and Craig Mello who were researching gene expression in *c.elegans*. The biological process was brought to the forefront with the award of the Nobel Prize in Medicine in 2006. In the wake of the Prize, many companies were launched to develop interference RNA (RNAi) technology, with each claiming a different path to differentiate their platform and generate safe and effective results. RXi emphasized its self-delivering technology which responded to one of the weaknesses inherent in RNAi. To overcome the delivery problem, RXi combined structural features of single-stranded antisense compounds with RNAi compounds which allows for spontaneous cellular uptake and long-lasting intracellular activity.

After developing sd-rxRNA, the company sought an indication with few alternative therapies and where the results could be clearly observed by scientists, regulators and investors. For this reason, RXi selected scarring as a primary focus and rapidly identified the relevant gene responsible for generating scar tissue. The result of this effort was RXI-109 which is currently being investigated in two studies for dermal and retinal scarring.

The applicability of RXi's sd-rxRNA platform is much broader than the scarring indication and work has been done for macular degeneration, fibrosis/scarring, cancer immuno-oncology and other indications. The ability for RNAi to silence almost any gene of interest enables it to address almost any disease. This flexibility combined with market

and regulatory trends supporting immuno-oncology have provided the impetus for RXi to expand into this area with the acquisition of Mirlmmune. The company anticipates partnering its more advanced assets with leading dermatology and ophthalmology companies to focus on developing its internal oncology efforts targeting several cellular immune checkpoints and influencing immune cell differentiation.

While our target price is generated based on commercialization of RXI-109 and Samcyprone there may be additional indications that can be addressed with the sd-rxRNA platform and there are other candidates in RXi's portfolio that may eventually generate revenues. The company anticipates that it can place an oncology indication in the clinic in the next 12 to 18 months with the help of partners, at which time we will assign a value to these programs. Our analysis does not reflect the benefit of participation in an expedited pathway offered by the FDA or EMA and assumes a Phase III trial will be required before RXI-109 and Samcyprone are approved.

Key reasons to own RXi Pharmaceuticals:

- Versatile platform with broad applicability and differentiated delivery mechanism
- Multiple non-dilutive approaches to raise capital
  - o Phase II sd-rxRNA indications in dermal scarring
  - o Phase I/II sd-rxRNA indication in retinal scarring
  - o One Phase II candidate in-licensed indication for warts
  - o Out-licensing opportunities for other therapeutic areas
- > Development pipeline of additional sd-rxRNA assets in oncology and other indications
- Compelling safety and efficacy profile in Phase II studies
- Large end markets for warts indication
- Well-defined markets for scarring with few direct competitors
- > Global rights to intellectual property

In the following sections we describe the mechanism of action for sd-rxRNA and illustrate the broad applicability of the platform. A review of the indications being pursued for the lead candidates is provided, with detail on the disease state, symptoms and existing treatment. We also discuss RXI-109's clinical data and the design of the Phase II trials which are currently in the data analysis stage. The report examines the Samcyprone program, its current status and next steps. We also delve into the the possibilities of the oncology development programs and how they may be synergistic with existing and approved cell therapies. The competitive environment in RNAi and adjacent spaces will be addressed and upcoming milestones will be identified.

## Interference RNA

Interference RNA (RNAi) is thought to have evolved as a cellular defense mechanism against invading viruses and genomic parasites. Research suggests that the RNAi mechanism originated from proteins developed with archaeal, bacterial and bacteriophage origins that are involved in DNA repair and RNA-processing pathways. Beyond its function to defend the genome from invasive nucleic acids, RNAi provides an approach to silence genes by preventing the synthesis of proteins by blocking messenger RNA from being decoded by ribosomes.

This silencing employs a group of mechanisms that use small RNA to direct RNAi. Inside the nucleus of a cell, genes encode proteins through transcription and translation. During transcription, a portion of double stranded DNA generates a single-stranded RNA molecule. An enzyme called RNA polymerase attaches to the template DNA and begins to produce complementary RNA. Certain sequences of DNA indicate transcription initiation and termination, producing a segment which defines the unique gene for the strand. The sequence is followed by a break of the hydrogen bonds between the DNA-RNA helix. If the gene represents a protein, then the RNA is further processed into messenger RNA (mRNA), which is sent out of the nucleus to the cytoplasm through the nuclear pore complex. After the mRNA leaves the nucleus, ribosomes in the cytoplasm catalyze translation of the mRNA to produce a specific amino acid chain, or polypeptide, which subsequently folds into an active protein.

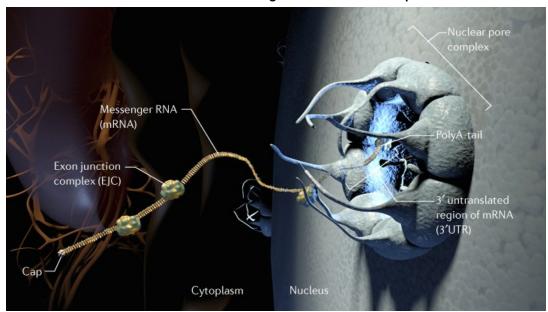


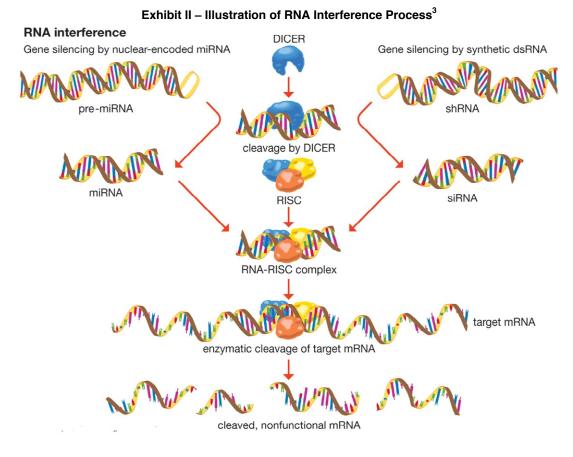
Exhibit I - mRNA Transiting the Nuclear Pore Complex<sup>1</sup>

RNAi can interrupt this process and neutralize targeted mRNA molecules following transcription. Silencing can come from either nuclear encoded micro RNA (miRNA) or from synthetic double stranded RNA (dsRNA). The enzyme Dicer<sup>2</sup> cleaves the miRNA or dsRNA into nucleotide fragments from 19 to 23 base pairs long into what are called small interfering RNAs (siRNAs) which are comprised of a guide strand and a passenger strand. A protein called Argonaute 2 catalyzes the unwinding of this siRNA duplex and then incorporates the siRNA duplex into the RNA Induced Silencing Complex (RISC) maintaining the guide strand while discarding the passenger strand. RISC will then seek specific mRNA guided by precise base pair matching between the siRNA guide strand and the mRNA. When the desired mRNA is identified, the guide strand binds to the mRNA and Argonaute cleaves it resulting in its destruction, thereby silencing the mRNA instructions for a specific protein.

<sup>&</sup>lt;sup>1</sup> RNA Interference, Nature Reviews Genetics. http://www.nature.com/nrg/multimedia/rnai/animation/index.html

<sup>&</sup>lt;sup>2</sup> Dicer (endoribonuclease Dicer) is an enzyme that is part of the RNase III family. It cleaves dsRNA and pre-miRNA and is evolutionarily conserved in worms, flies, plants, fungi and mammals.

The following exhibit illustrates the step by step progression of the RNA interference process.



Interference RNA has many therapeutic uses based on its ability to suppress specific gene expression and can be used to determine the function of genes.

#### Self-delivering Interference RNA (sd-rxRNA)

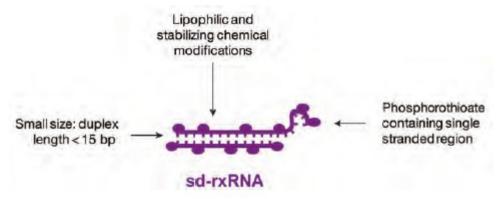
Following the seminal work performed by Fire and Mello and the recognition of their work by the Nobel Committee, many companies were formed to take advantage of the seemingly limitless potential of the RNAi mechanism. Their efforts sought different solutions to address the difficulties that arose to efficiently use it. Some of the hurdles included efficient and safe systemic delivery, biodistribution and subcellular localization, rapid liver clearance and delivery to targeted cells. A variety of approaches arose, including transfection, electroporation and viral mediated delivery among others. These approaches resulted in difficulties related to limited efficacy, stimulating an interferon response, dose dependent toxicity, high rates of cell death, anti-viral response and incorporation of the viral genome into the DNA, among others. To respond to these complications, RXi developed its own approach to self-deliver RNAi using several modifications to transport the nucleotide to the cell. They generated a self-delivering interference RNA that does not require a delivery vehicle to cross the cell membrane and penetrate the cytoplasm of the cell.

Some of the key characteristics of RXi's self-delivering interference RNA (sd-rxRNA) include:

- Ability to overcome high negative charge;
- Phosphorothioate linkages (vs. a phosphodiester) in the single stranded region of the siRNA;
- Hydrophobic conjugate that helps in the delivery to cells and tissues of interest; and
- > Chemical modifications that enhance the stability of the siRNA.

<sup>&</sup>lt;sup>3</sup> Encyclopedia Britannica, RNA Interference. https://www.britannica.com/science/RNA-interference

# Exhibit III - Self-delivering interference RNA<sup>4</sup>



To overcome the disadvantages cited for other delivery mechanisms, RXi developed its sd-rxRNA technology that combines the benefits of conventional RNAi and antisense. Single stranded antisense compounds have characteristics that allow for favorable tissue distribution and cellular uptake. When features such as a single-stranded phosphorothioate region, a short duplex region and the addition of nuclease-stabilizing and lipophilic chemical modifications are incorporated into RNAi compounds, the compounds are able to achieve efficient spontaneous cellular uptake and powerful, durable intracellular silencing activity. This hybrid oligonucleotide compound, sd-rxRNA, may be efficiently taken up into any tissue that is accessible through local administration.

#### Benefits of sd-rxRNA:

- > Efficient cellular uptake without the need for a delivery vehicle;
- Potent RNAi activity;
- More resistant to nuclease degradation than classic siRNA;
- Able to suppress long non-coding RNAs, both in cytoplasm and the nucleus;
- Readily manufactured:
- Local delivery avoids rapid clearance from the circulatory system;
- Potentially more specific for the target gene; and
- More reliable at avoiding immune side effects than classic siRNA

#### Limitations of sd-rxRNA

- Only localized, non-systemic treatment possible with current platform; and
- Can only downregulate unwanted proteins, cannot directly upregulate desired ones

Approaches have been developed to address many of these limitations including using algorithms to design specific siRNA sequences with high potency while minimizing off-target effects.

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 self-delivering RNAi therapeutics.

# sd-rxRNA Safety

In general, siRNA has some challenging properties such as negative charges, large molecular weight and size that make it difficult to place in the cell from an exogenous source. Unwanted side effects include activation of Toll-like receptors, and Type 1 interferon responses and competition with the endogenous RNAi pathway.

There are several components of safety for sd-rxRNA. One relates to the indication being pursued and the impact on the related bodily system. A second factor relates to the impact of the RNAi itself, the proteins that are being downregulated and off-target effects that may occur. A third area of concern is the delivery method for the RNAi,

<sup>&</sup>lt;sup>4</sup> Cardia, James et al.; Self-Delivering RNAi Compounds; September 2010 Vol 10 No 7.

which can be destructive to cells when employing certain approaches. RXi has addressed these concerns through employing self-delivery of the drug, selection of base-pair sequences with minimal off-target effects and local administration.

RXi has conducted several Phase I and Phase II studies for dermal and ocular scarring. These studies have not presented any safety issues or serious adverse events. Off-target impacts are possible and RXi has designed its program to minimize them. One source of off-target effects can be the passenger strand fragment of the siRNA duplex. This could target an unintended segment of mRNA. Therefore, RXi has designed the passenger strand to be too short to incorporate into the RISC complex, eliminating this potential risk. Bio-informatic work is also done to rule out any obvious off-target effects that might be impacted with the indicated sequence. Prior to moving into the clinic, the scientific team conducts additional reviews to ensure no unintended targets will be modified. Off-targeting can cause genes with incomplete complementarity to be unintentionally downregulated by the siRNA. This can be minimized or avoided by designing appropriate controls and design algorithms to avoid off-targeting. Microarray technology can also be used to further refine the approach. Some siRNA can induce off-target effects but certain efforts, such as modifying the guide strand, can limit this.

Another safety aspect is the delivery method used for the RNAi. For the class as a whole, many RNAi safety concerns have revolved around the delivery mechanism used to transport the siRNA. There are several common approaches used to deliver the drug including encapsulation, electroporation, and viral-mediated delivery among others.

Encapsulation is performed in several ways, usually employing lipid-based systems which can deliver to most types of cells. However, the approach is not compatible with all cells and has low efficiency *in vivo*. Encapsulation uses transport vehicles such as liposomes, micelles, microemulsions, and solid lipid nanoparticles which form lipoplexes by electrostatic forces and are taken up by the cell through endocytosis. Rapid liver clearance and toxicity with some lipid formulations are also limitations.

Electroporation functions by applying an electrical charge thereby opening up pores in the cell, allowing for target material to enter. However, the openings may also allow undesirable debris to enter inside and cause a high rate of cell death. The electrical charge can also destroy cells, resulting in low levels of cell viability.

Viruses have the ability to transiently or permanently transduce almost all cell types. They are able to attach to receptors on a cell surface and bind to them. After attachment, the virus and cell are in contact with each other, favoring further interaction of surface proteins and endocytosis. Viral-mediated approaches can carry risks due to potential toxicities due to oncogenesis and incorporation of viral information into the genome. They may also trigger an anti-viral response, negating any benefit from the therapy.

RXi's sd-rxRNA is able to avoid these risks through the use of its own delivery mechanism which employs a single-stranded phosphorothioate region, a short duplex region and the addition of nuclease-stabilizing and lipophilic chemical modifications.

In the immuno-oncology indications used in conjunction with adoptive cell therapy, the process for treating the cells takes place *ex vivo*. In this case the sd-rxRNA is not administered directly to the patient's body, but rather modifies the cells during their *ex vivo* expansion process. The cells are then reintroduced into the patient thereby limiting any impact of the sd-rxRNA on the patient's other cells.

# **RXi's Therapeutic Indications**

RXi is pursuing indications in hypertrophic scarring, retinal scarring in patients with age related macular degeneration and warts. In the following section we discuss the specific condition and the current treatment paradigm for these indications.

# **Hypertrophic Scarring and Keloids**

Hypertrophic scars are comprised of scar tissue that is raised, but less than 4 mm above the skin, are red or pink and can develop anywhere on the body. Keloids are greater than 4 mm above the skin, grow beyond the area of the original wound, are pink or purple, and continually grow -- frequently on the earlobes, shoulders, cheeks and chest. Both of these result from excessive amounts of collagen and proliferation of fibrous tissue stemming from an overproduction of connective tissue growth factor (CTGF).

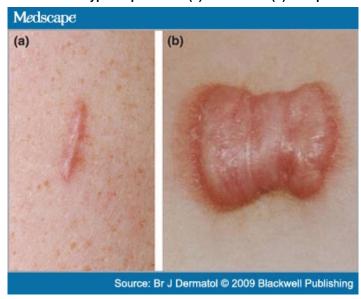


Exhibit IV – Hypertrophic Scar (a) and Keloid (b) Compared<sup>5</sup>

A hypertrophic scar is an abnormal response to trauma or injury and is thicker, raised and wider than what occurs in a normal scar response. When a wound occurs, fibroblasts and myofibroblasts deposit a dense extracellular matrix composed of collagen and glycosaminoglycans. When repairing a wound, hypertrophic scarring occurs when the body produces new collagen fibers faster than the old ones are broken down. Myofibroblasts produce excessive collagen, which is the structural protein that gives skin firmness, strength and durability. While the scars are not dangerous or life threatening, they can be itchy, painful and unsightly.

Keloids are raised nodules that develop at the site of an injury and are considered benign tumors. Keloids occur in approximately 10% of people and darkly pigmented skin is more prone to the condition. Some areas of the body are more susceptible to keloids such as areas with elevated muscle and skin tension and regions close to the head and neck, mandibular border and posterior neck. Trauma is one factor contributing to keloid formation as are infection, excessive tension and foreign bodies. However, keloids may form in the absence of these factors.

# Treatment<sup>6</sup>

Some treatments are available to address scarring following an injury but prior to the formation of the scar tissue; however, once the scar has formed, surgery is appropriate and may include ablative treatments, cryotherapy, or cold excision laser. Following surgery, steroids may be injected to inhibit fibroblast growth and collagen synthesis. Radiation therapy has also been used, however, the risks of this approach are nausea, hair loss, increased likelihood of cancer among many others and perhaps too great for a cosmetic purpose.

<sup>&</sup>lt;sup>5</sup> http://scotdir.com/other/difference-between-keloid-scars-and-hypertrophic

<sup>6</sup> https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4129552/

Keloids are more difficult to treat than hypertrophic scars. One approach to reducing keloids may involve injection of corticosteroids that can shrink the scar, which is temporarily effective in most cases. Surgery may also be used in conjunction with corticosteroid use, pressure therapy and/or radiation treatment. Despite the multi-pronged approach, the keloid will return in most cases. Other approaches are similar to hypertrophic scar treatment and include laser surgery, cryotherapy or ligature treatment. These approaches do not address the underlying issue of excessive production of CTGF suggesting there is potential for inhibitors that can control CTGF expression.

## Age Related Macular Degeneration (Retinal Scarring)

There are two types of age related macular degeneration (AMD), dry and wet. The dry type, or non-exudative, non-neovascular type is thought to result from the effects of aging and the thinning of macular tissues and depositing of pigment in the macula. Wet AMD is usually more severe and arises from the formation of new blood vessels that grow beneath the retina and leak blood and fluid. The extravasation of fluid from the eye can cause damage to retinal cells resulting in spot blindness.<sup>7</sup> About 10% of the total AMD population suffers from the wet version.

Treatments have emerged to address the unwanted growth of blood vessels in the eye with anti-VEGF therapy. Blood vessels grow in the eye due to an overexpression of vascular endothelial growth factor (VEGF), which is a signal protein for blood vessel formation. A number of anti-VEGF drugs have been developed and approved for AMD treatment, including Avastin (bevacizumab), Eylea (aflibercept) and Lucentis (ranibizumab). While anti-VEGF treatment is effective in slowing angiogenesis, retinal scaring also occurs in about half these patients, which is also associated with vision loss.

It is unclear whether or not the anti-VEGF therapy encourages retinal scarring or if it occurs despite this treatment; however, scarring does occur in many AMD patients which negatively impacts visual acuity. Based on a study by Daniel<sup>9</sup>, about 45% of patients receiving anti-VEGF therapy showed signs of scarring after two years. This study also found that "eyes with classic neovascularization, a thicker retina, and more fluid or material under the foveal center of the retina are more likely to develop scar[ing]."

#### **Symptoms**

AMD usually occurs over time and is manifested as an enlarging shadowy area in the middle of a person's vision. Vision can also be fuzzy or distorted. Reduced central vision may occur in one or both eyes, decreased perception of intensity or brightness of colors and a well-defined blurry or blind spot exists in the field of vision. Retinal scarring can further blur vision.

#### Treatment

Laser eye surgery may address some ocular scar tissue and there is some very early stage work being performed using stem cells to improve scarring. However, there are no broadly effective and approved approaches to limit the progression of scarring in wet AMD.

## Warts

Warts are an area of raised, thick skin that can appear anywhere on the body and are caused by the human papillomavirus (HPV). They are not cancerous but are contagious, spread by contact with someone who is infected usually through a break in the skin. Those with a weak immune system are more susceptible to warts. While not dangerous, warts can be unsightly, uncomfortable and painful. In many cases warts will resolve themselves after several months; however, if a wart remains after a few years, it is not likely to resolve on its own.

# **Treatment**

There are many treatments for warts, some that can be performed at home and others at the doctor's office. Home treatments include the application of salicylic acid or sanding the wart and covering with tape. This process can take several months, is labor intensive and is not always effective. Physicians have access to a broader set of tools and can use cryotherapy, surgery, or strong medicines such as cantharidin or imiquimod to treat. These approaches can cause scarring, blistering, damage to nearby nerves, sensitivity and skin damage.<sup>10</sup>

<sup>&</sup>lt;sup>7</sup> http://www.allaboutvision.com/conditions/amd.htm

<sup>&</sup>lt;sup>8</sup> https://www.ncbi.nlm.nih.gov/pubmed/22258164/

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3943618/

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3870211/

# **DRUG CANDIDATES**

#### **RXI-109**

The nomenclature for RXi's lead candidate is RXI-109. It is an interference RNA-based product designed to reduce the expression of connective tissue growth factor (CTGF), a precursor to fibrosis. Clinical trials employing RXI-109 are for indications in dermal and retinal scarring. There is also preclinical discovery work being performed in corneal scarring.

# Connective Tissue Growth Factor

CTGF is a key protein in a number of biological processes including cell adhesion, migration, proliferation, angiogenesis, skeletal development and tissue wound repair. It is also an important element in fibrotic disease and cancer. CTGF is part of the CCN (for CTGF, Cystein rich protein (Cyr61), and Nephroblastoma overexpressed gene) family of regulatory proteins which are key signaling and regulatory molecules involved in many vital biological functions.

The goal of the retinal scarring program is to slow the advance of advanced wet age-related macular degeneration. RXI-109 is not a cure, but can block the formation of further subretinal scarring. Overexpression of CTGF is associated with a number of fibrotic diseases including dermal scarring and subretinal fibrosis. To address this imbalance, RXi has developed RXI-109, its CTGF-targeting RNAi compound to treat the fibrotic component. CTGF imbalance and the resulting fibrosis is also implicated in 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. Success with RXI-109 in its current clinical focus may suggest further opportunities in these additional indications that could also be pursued by a partner.

# **Clinical Trials**

Exhibit V – Summary of Clinical Trials

Indication NCT Status

Trial Name	Drug	Indication	NCT	Status	Phase
RXI-109-1301	RXI-109	Hypertrophic Scars	<u>2030275</u>	Active, Not Recruiting	2A
RXI-109-1401	RXI-109	Keloids	<u>2079168</u>	Active, Not Recruiting	2A
RXI-109-1402	RXI-109	Hypertrophic Scars	<u>2246465</u>	Active, Not Recruiting	2A
RXI-109-1501	RXI-109	Retinal Scarring	<u>2599064</u>	Active, Not Recruiting	1 & 2
RXI-SCP-1502	Samcyprone	Cutaneous Warts	<u>2640820</u>	Active, Not Recruiting	2

## Study 1301 – RXI-109 / Hypertrophic Scars

Study 1301 is a Phase II trial evaluating the use of RXI-109 for hypertrophic scars as part of scar revision surgery. The study was an interventional trial enrolling 25 patients, randomized and double blind. Enrollment began in late 2013 and the trial was completed in June 2016. Trial design applied RXI-109 on one side of a scar and a placebo on the other, beginning immediately after or two weeks after scar revision surgery. Results from study 1301 were used to develop the subsequent Phase II trial for hypertrophic scars, study 1402.

# Study 1401 - RXI-109 / Keloids

Study 1401 was initiated to evaluate the effectiveness of RXI-109 in reducing the recurrence of keloids following excision of the mass. The trial enrolled 16 patients in this Phase II study which was randomized with a blinded patient group. The trial compared two excised keloids on a patient, one receiving application of RXI-109 and the other a placebo treatment. One cohort was dosed immediately following excision and the other two weeks after surgery. The primary endpoint was the reduction in keloid size following excision.

# Study 1402 - RXI-109 / Hypertrophic Scars

In December 2017 RXi announced results from the Phase II trial for dermal scarring. The open-label, multi-center study showed a statistically significantly improved visual appearance of scars after scar revision surgery and

treatment with RXI-109. The results after RXI-109 treatment were compared with control (untreated) scars or scar segments, using detailed scoring techniques and qualitative assessments as well as measurement of patient preferences.

The assessment employed the Investigator Scar Assessment Scale which allows for a structured analysis of scar quality. It evaluates scars based on surface area, pliability, relief, thickness, pigmentation and vascularity. Based on the scale, the improvement for the RXI-109 arm compared to the control arm was a 6.88 point change 3 months after the surgery, a 8.00 point change 6 months after and a 7.53 point change 9 months after. The visual assessment of scars between the active and control arm was also statistically significant. Scores for this element were a 1.58 point change at 3 months, a 1.89 point change at 6 months and a 1.55 point change at 9 months. Patients also evaluated their own scars and 88% of patients identified the RXI-109 treated scar as better.

Side effects were largely limited to injection site pain and the treatment was well tolerated. 17.4% of patients experienced injection site pain and 11.8% experienced injection site erythema.

The next step for RXI-109 in hypertrophic scarring is to initiate a Phase IIb trial which we expect will be pursued by a partner.

# Study 1501 - RXI-109 / Retinal Scarring

Study 1501 is a Phase I/II assessment designed as a multi-dose, dose escalation study conducted in subjects with AMD with evidence of subretinal fibrosis. Each of the 9 subjects enrolled received four doses of RXI-109 by intraocular injection at one month intervals for a total dosing period of three months. The study began in November 2015 and topline results are expected prior to the end of 1Q:18. Primary endpoints for the study are assessment of the incidence and severity of adverse events and determination of peak whole blood concentration ( $C_{max}$ ), area under the whole blood concentration versus time curve (AUC) and drug half-life in whole blood ( $T_{1/2}$ ). The secondary endpoint is an evaluation of the ability of RXI-109 to reduce the formation or progression of subretinal fibrosis.

The trial has completed data collection and is now in the data analysis phase. Topline results for study 1501 are anticipated prior to the end of the first quarter. Further clinical work for RXI-109 is expected to be undertaken by a partner.

## **Phase III Trials in Scarring**

RXi plans to partner its Phase I/II and Phase II assets and further development of these programs will be funded by a partner. It is expected that a Phase IIb trial will be necessary for both the hypertrophic and retinal scarring programs. Both of these indications are chronic and it is estimated they will require multiple hundreds of observations from a safety perspective. We estimate that it will take from one to one and a half years to complete all Phase II work and another three years to complete a Phase III and generate registration-ready results. With about a year to obtain regulatory approval, this places first sales in 2023 for dermal scarring. Results for retinal scarring are several months behind dermal scarring, so we anticipate this program to receive approval six to nine months later, suggesting a 2024 regulatory approval and launch. Partners are expected to steer these programs through the regulatory process and determine trial design along with regulatory agencies.

# Samcyprone

RXi licensed Samcyprone in 2014, which is a proprietary topical formulation of diphenylcyclopropenone (DPCP). The drug has been in use since the 1970s and is used for treating alopecia areata, cutaneous metastases of melanoma and warts, but has not been approved by the FDA or EMA. DPCP has been used as a compounded drug by some licensed pharmacists and physicians for individual patients, but it does not have a standardized formulation, dosing or application schedule. Compounded drug products are not FDA-approved, which means they have not undergone FDA premarket review for safety, effectiveness, and quality. RXi developed a proprietary formulation at a concentration that is lower than that used by dermatologists relying on product generated by compounding pharmacies. The company's optimized formulation is expected to reduce side effects and allow for a standardized response to the drug. Administration of Samcyprone will be via an ointment, which is expected to be a substantial improvement from the liquid, acetone-based formulations used by compounding pharmacies.

DPCP acts as an immunomodulator which activates T-cells and triggers an immune response thereby clearing the wart. The formulation is administered topically first at a higher dose to achieve sensitization after which a lower treatment dose is applied weekly to the wart, inducing a local sensitization reaction. The activated immune system recognizes the active papilloma virus and is able to eliminate it.

Previous studies have been performed using DPCP to evaluate clinical outcome with high rates of success, but without statistical significance. Side effects of the treatment are not serious and include sensitization issues and eczematous eruptions that can be treated with steroids.

Research performed by RXi finds that market size for wart treatment is from \$2 to \$4 billion annually and there are more than 30 million patients that seek treatment for this skin problem. DPCP has also shown efficacy for alopecia and melanoma, which could be potential off-label uses for the drug.

Since DPCP has not been previously approved by the FDA, and will therefore be considered a new chemical entity (NCE) when it is presented to the FDA, the drug will receive five years of new chemical exclusivity upon approval.

## Study 1502 - Samcyprone / Cutaneous Warts

A Phase IIa Samcyprone trial was begun in December 2015 and enrollment was completed in September 2017. The trial was launched to evaluate the safety and effectiveness of DPCP ointment (Samcyprone) in the clearance of verruca vulgaris in adults. The non-randomized, 40 patient, two cohort trial was divided into a sensitization phase and a treatment phase. If patients demonstrate a response during the sensitization phase, they are expected to show a therapeutic response. Sensitization responding patients are then given the DPCP ointment treatment for 10 weeks, after which time responders are given the option for an additional 10 weeks of treatment. Primary endpoints are identifying sensitization response in healthy subjects with common warts by assessing the immunotherapeutic response and evaluation of wart clearance. Secondary endpoints are safety oriented and examine various pharmacokinetic elements of DPCP in the blood.

The study is evaluating two dosing regimens. Patient participation has been completed and RXi is in the process of data collection and analysis. Topline results for study 1502 are expected to be reported in the first half of 2018. Further clinical work for Samcyprone is expected to be undertaken by a partner.

#### **Cosmetic Applications**

RXi has two sd-rxRNA compounds that are intended for skin tone and wrinkles. Since these programs are intended for beautifying, promoting attractiveness and altering appearance and not for treatment of a disease, they fall under FDA rules for cosmetics which do not require approval before marketing. The FDA defines cosmetics as products used for "cleansing, beautifying, promoting attractiveness, or altering the appearance" and not used "in the diagnosis, cure, mitigation, treatment, or prevention of disease" Claims for these products are regulated by the Federal Trade Commission (FTC) in the United States, which prohibits unfair or deceptive acts or practices in or affecting commerce.

The largest market for these products may well be in Asia where many countries have an additional category between cosmetics and pharmaceuticals which are classified as "special cosmetics," quasi-drug or medicated cosmetics. This category requires additional testing for quality and safety which can take from one to three years depending on the country to get approval. While the pathway for cosmetics and beauty products is faster than for pharmaceutical products, the environment is extremely competitive. We believe that a dominant global brand must recognize value in these assets and put the force of their marketing expertise behind them to achieve success. The two targets in the cosmetic applications are tyrosinase and collagenase which are intended to address skin pigmentation and skin laxity (wrinkles) respectively.

RXI-231 targets tyrosinase and has completed consumer testing for irritation, sensitization and impact on skin pigmentation. A readout was provided by the company in November 2017. Tyrosinase is a key enzyme in the synthesis of melanin, which provides the pigment in our skin, hair and eyes. Downregulating tyrosinase can address hyperpigmentation disorders such as age spots, liver spotsand potentially melanoma. It may also lighten

<sup>11</sup> http://www.jidsponline.org/article/S1087-0024(16)30033-8/fulltext

<sup>&</sup>lt;sup>12</sup> FD&C Act, sec. 201(i)

<sup>&</sup>lt;sup>13</sup> FD&C Act, sec. 201(g)(1)

skin overall. Pre-clinical work has shown a reduction in pigmentation in a tissue culture of human epidermis, and consumer/functional testing in humans showed that the product can reduce skin pigmentation induced by UV exposure in vivo. This product is expected to attract attention from cosmetic developers in Asia and India.

RXI-185 targets collagenase, which is an enzyme that breaks down the peptide bonds in collagen. Specifically, RXi's compound addresses matrix metalloproteinase 1 (MMP1) which cleaves collagen I, II and III. RXI-185 has shown the ability to successfully downregulate the production of MMP1 enzyme activity in cell culture. Based on its performance in the lab, selected reduction of MMP1 may affirmatively treat skin aging disorders, arthritis, acne scarring, blistering skin disorders, corneal erosions, endometriosis and possible cancer metastasis.

Below, we summarize the development pipeline for RXi Pharmaceuticals which consists of six named assets. The illustration shows multiple indications in scarring and warts, several oncology indications that are expected to advance to the clinic by next year and the cosmetics/consumer portfolio which consists of treatments for skin tone and wrinkles.

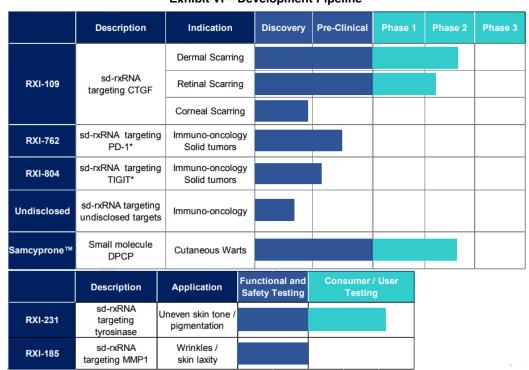


Exhibit VI – Development Pipeline<sup>14</sup>

# **Shifting Focus to Immuno-oncology**

As highlighted in its January 16<sup>th</sup> release, RXi expects to partner its dermatology and ophthalmology programs and expects the transfer of rights will generate upfront funds that can support the immuno-oncology (IO) efforts. RXi has identified several factors that support a renewed focus on the IO space. These factors include higher valuations for companies with IO development programs and easier access to capital; a faster pathway to commercialization in IO allowing for expedited approval; and a greater willingness by regulatory agencies to work with development programs that are addressing cancer.

This shift will reduce cash burn and reallocate resources towards developing RXI-762 and RXI-804 which target PD-1 and TIGIT respectively, <sup>15</sup> and which are intended to treat solid tumors by downregulating checkpoints in adoptive cell therapies. RXi has made strong progress developing relationships with IO-focused academic and research organizations, and expects that this effort will continue and help advance work in hematopoietic stem cells.

<sup>&</sup>lt;sup>14</sup> Source: RXi Pharmaceutical's Corporate Presentation

<sup>&</sup>lt;sup>15</sup> TIGIT, or T-cell immunoreceptor with Ig and ITIM domains is an immune receptor on some T-cells and NK cells and is considered an immune checkpoint. This receptor has been shown to be overexpressed on immune cells in melanoma patients. In a study by Robert Johnson, et al., blockade of TIGIT and PD-1 pathways is associated with tumor rejection in murine models.

natural killer (NK) cells, tumor infiltrating lymphocytes (TILs), chimeric antigen receptor (CAR) T-cells, T-cell receptor (TCR) and engineered NK cells.

# **Oncology Programs**

In early 2017 RXi acquired Mirlmmune, recognizing the potential for sd-rxRNA in immuno-oncology. In its preclinical work Mirlmmune had developed data in *ex vivo* cell-based cancer immunotherapies to target immune inhibitory pathways. The environment for oncology combined with RNAi and adoptive cell therapies has improved substantially in the last two years with the Obama administration's cancer moonshot, the 21<sup>st</sup> Century Cures Act which provided for expedited reviews, <sup>16</sup> and the approval of Yescarta and Kymriah, as well as other gene therapy/cell therapy submissions to regulatory authorities.

Preclinical work performed by Mirlmmune demonstrated that sd-rxRNA could modify immune cells that were being processed *ex vivo* in adoptive cell therapy, including CAR T-cells, resulting in the downregulation of checkpoints on the cells. The result of this checkpoint downregulation is an improved anti-tumor efficacy of these immune cells, as shown by *in-vitro* and *in-vivo* testing. This approach is compatible with many different kinds of immune cells including human T-cells, engineered T-cells, human NK cells and dendritic cells. Initial success has prompted RXi to pursue collaborations and partnerships with industry and academia. The company has recently announced relationships with Medigene, the Center for Cancer Immune Therapy (CCIT), the University of Minnesota and Gustave Roussy which are all pursuing cancer indications. RXi anticipates that with the help of these partnerships it will have a candidate in human trials by mid-year 2019.

**EXTERNAL** Scope TILs sd-rxRNA against various cancer types (incl. melanoma, ovarian cancer) Oncology sd-rxRNA technology platform for use in cancer treatments models medigene **TCRs** sd-rxRNA and TCRs for next generation of recombinant T cell therapies Combination Exploring synergies between PCIs fimaNAc and sd-rxRNA therapy Oncology Syngeneic mouse models models

Exhibit VII - Partnerships

sd-rxRNA is particularly amenable to complement adoptive cell therapies as it has nearly 100% transfection efficiency and high cell viability. The compound is also able to silence multiple genes and is currently pursuing PD-1, TIGIT and others in preclinical work. RXi will be able to isolate immune cells from specific patients, allogenic immune cell banks, or engineered sources (e.g. CAR T) then expand the cells using sd-rxRNA to reprogram these cells. The expanded and modified cells are then returned to the patient. *In vivo* animal model efforts have shown a reduction in ovarian tumor growth one month after treatment as compared to control and *in vitro* work using tumor infiltrating lymphocytes (TILs) indicated greater cytotoxicity against melanoma cells in sd-rxRNA treated TILs.

Benefits of sd-rxRNA in immuno-oncology:

- Competitive with antibodies as they block the same proteins prior to their formation
- > Can target both intracelluar and extracellular proteins involved in any cell function, whereas antibodies only target extracellular proteins
- Can block multiple checkpoints in one *ex vivo* process
- Complementary to other cell therapies
- Potential for expanding efficacy of cell therapies to solid tumors

<sup>&</sup>lt;sup>16</sup> The Regenerative Medicine Advanced Therapy, or RMAT, that offers a new expedited option for certain eligible biologics products.

## IO and Adoptive Cell Therapy (ACT) Drug Development

Regulatory authorities have developed accelerated pathways to support expedited development and approval for medicines that have the potential to demonstrate substantial improvement over existing therapies. These include FDA programs such as Fast Track Designation, Breakthrough Designation, Accelerated Approval, and Priority Review. In addition to these legacy programs, with the passage of the 21<sup>st</sup> Century Cures Act in December 2016, an additional program was enacted for regenerative medicine and further focus was given to cancer therapy development. While sd-rxRNA by itself is not considered a cell based therapy, when used in conjunction with adoptive cell therapies, it may be able to benefit from expedited pathways to approval available to regenerative medicine.

RMAT includes cell therapy, therapeutic tissue engineering product, human cell and tissue product, or any combination product. Medicines that fall into this category also must treat, modify, reverse, or cure a serious or life-threatening disease or condition and preliminary evidence must support this assertion. If a candidate is granted RMAT status, it will be eligible for fast track and breakthrough designation benefits. RMAT is interpreted to include *ex vivo* gene therapies where genetically modified cells are reintroduced into the body, as with CAR-T therapy. RXi's *ex vivo* approach to cell therapy will also benefit from this approach as it can enhance the effectiveness of the cells in downregulating checkpoints and potentially other targets as well.

Benefits of the RMAT designation extend to allowing the sponsor intimate collaboration with the FDA during the development process. Furthermore, if the product is accepted for an NDA, it may be granted accelerated approval which can reduce approval times by several months and required data modules can be submitted as they are ready in a rolling review. If a substantial improvement over existing therapies is shown in human trials, then breakthrough designation may also apply under RMAT. This will confer all of the benefits of fast track and provide intensive FDA guidance on efficient drug development and facilitating the drug development program.

Some therapies in development receiving the RMAT include Kiadis Pharma's ARIR101 for blood cancers, Humacyte's human acellular vessel, and Enzyvant's RVT-802 which incorporates a process for harvesting, culturing, and applying thymic tissue. Vericel Corporation's ixmyelocel-T for heart failure and jCyte's jCell for the treatment of retinitis pigmentosa are also using the RMAT pathway.

#### Chemistry, Manufacturing and Control (CMC)

RXi Pharmaceuticals will rely on partners to manufacture, test and package its products. All facilities that provide FDA and EMA approved services must comply with current good manufacturing practices (cGMP), and other standards and regulations. The company believes it is important to have multiple relationships for manufacturing sd-rxRNA and currently has a program in place to monitor partners for compliance with cGMP and other FDA requirements. On-site spot checks are conducted by the company as needed prior to regulatory agency reviews. Current manufacturing capacity is sufficent to generate commercial quantities of the drug.

RXi has a process in place which ensures that that good manufacturing practices (GMP) are followed, and that there are no outstanding warning letters or FDA Form 483s. Zacks continuously highlights the importance of good practices at partners who perform manufacturing, testing, packaging, fill and finish and other services. This emphasis is justified given the risk of regulatory agency action highlighting partner oversights and focus on partner compliance in spite of a phamaceutical product that is safe and effective.

#### Mirlmmune

In January 2017 RXi obtained a 100% interest in Mirlmmune for 275 thousand shares of common stock and 112 thousand shares of convertible stock. Mirlmmune was a private company that had licensed RXi's sd-rxRNA to develop *ex-vivo* cell-based cancer immunotherapies. The arrangement also includes a milestone payment that will be made within the first two years following the acquisition if certain milestones are met.

<sup>&</sup>lt;sup>17</sup> https://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm585345.htm

<sup>&</sup>lt;sup>18</sup> Share balances have been adjusted for reverse stock split in January 2018.

Mirlmmune's efforts built upon adoptive cell transfer technologies that may modify T-lymphocytes and improve their ability to fight tumor cells by making them less sensitive to tumor resistance. RXi will use Mirlmmune's achievements as a launching pad for further developments of immuno-oncology in the clinic.

In the month prior to the acquisition, Mirlmmune had demonstrated the successful silencing of several immuno-suppressive targets in natural killer (NK) cells using the sd-rxRNA platform. The immunosuppressive checkpoints that they were able to silence include PD-1, CTLA-4 and other targets inside and outside the cell. RXi will continue building on the work in oncology that Mirlmmune has done in these areas, advance efforts to inhibit checkpoints in CAR-T therapy and work with tumor infiltrating lymphocytes in melanoma.

#### **Partnerships**

RXi has developed relationships with several leading cancer research companies and organizations. The most recent relationship was announced in December 2017 with Medigene AG, which is developing recombinant T-cell receptors (TCR) which may benefit from synergies with RXi's gene silencing technology. The combination of the companies' technologies may enhance the ability of T-cells to recognize and destroy certain cancers. A collaboration was announced with Herlev Hospital also in December which is developing ACT, TIL-based therapies, genetic engineering of T-cells and other programs which are expected to synergize with RXi's platform. Gustave Roussy is a leading European cancer research institute conducting research molecular medicine, anti-tumor immunology, DNA repair and rare cancers. The institute is the largest cancer center in Europe and expects to evaluate sd-rxRNA compounds in a human tumor xenograft model. RXi is also working with PCI Biotech (OSE: PCIB) to continue to explore synergies between RXi's technology and fimaNAc, which is a type of nucleic acid therapeutics delivery. The relationship could result in combinations that extend the time and enhance the concentration that sd-rxRNA compounds can reside inside and be active in immune cells.

One of RXi's main goals is to advance a cancer indication into the clinic in the next 12 to 18 months, and we believe that these collaborations with companies, cancer centers and academic institutions can help achieve this goal.

## **Intellectual Property**

RXi has been granted numerous patents worldwide and currently maintains 32 patent families for its portfolio of indications. The company is seeking protection in the United States and around the world. Below is a summary of pending applications and patents granted globally.

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

Exhibit VIII - Patents

Intellectual property includes seventy-eight patents in the area of interference RNA which includes fourteen that are attributable to sd-rxRNA and cover composition and methods of use. The sd-rxRNA related patents relate to connective tissue growth factor (CTGF) protein expression for the treatment of several fibrotic disorders and the expression of checkpoint inhibitors in oncology applications. Beyond patents in support of current clinical efforts, the company has fifty-seven applications in process for new RNAi compounds for use in a broad variety of specific disease states.

**Exhibit IX – Patent Categories** 

Category	Expiration	Pending	Issued	Area
RNAi	2029 - 2035	57	78	RNAi
sd-rxRNA	2029 - 2035	0	14	Composition & Methods of Use
Samcyprone	2019 - 2031	3	1	Composition & Methods of Use

One patent is issued and three are pending for Samcyprone (diphenylcyclopropenone) which cover compositions and methods of use for treatment of warts, human papilloma virus skin infections, skin cancer and immunocompromised patients.

RXi has obtained rights to Samcyprone from Hapten Pharmaceuticals for an upfront payment of cash and shares. The agreement also calls for future milestone payments based on stage of commercialization and royalties based on product sales. Royalties owed Hapten for sales are in the low-double digit range.

RXi has also licensed its technology to others and in May 2016 granted the right to develop therapeutics for neurodegenerative diseases to Thera Neuropharma. The rights allow Thera to research, develop, manufacture and commercialize sd-rxRNA compounds targeting superoxide dismutase 1 (SOD1) to develop therapies for amyotrophic lateral sclerosis (ALS).

BioAxone Biosciences is developing BA-434, an sd-rxRNA based drug targeting PTEN in the treatment of spinal cord injury. In September 2017, BioAxone was awarded a grant from the National Institute of Neurological Disorders and Stroke (NINDS) which will be partially shared with RXi. There is currently no license agreement with BioAxone, however, if sales for their sd-rxRNA product materialize, we anticipate a licensing agreement favorable to RXi will be negotiated.

#### 2017 / 2018 Timeline

RXi is currently wrapping up one Phase I/II and two Phase II trials. The company also has a number of other milestones on the horizon. Over the next year or two we anticipate the following events to take place on or around the indicated date.

- Anticipated Attendance at Various Investor Conferences
  - o BIO CEO Investor Conference February 2018
  - Marcum Microcap Conference June 2018
  - BIO Investor Forum October 2018
  - Biotech and Money Inv€\$tival Showcase November 2018
  - o Jefferies Healthcare Conference November 2018
- > Anticipated Attendance at Various Scientific Conferences
  - o AACR April 2018
  - o ASCO June 2018
  - ESMO September 2018
  - o ASH December 2018
- Capital Draw from Lincoln Park Capital 1H:18
- Equity capital raise 1H:18
- ➤ Report of Retinal Scarring trial results 1H:18
- Report of Cutaneous Warts trial results 1H:18
- ➤ Sale of Dermatology and Ophthalmology Programs 2H:18
- > Entry of Immuno-Oncology Programs into the Clinic 2019

#### **Stock Listing**

On February 2, 2017 the Nasdaq Capital Markets notified RXi that they had 180 days to comply with listing requirements for the exchange. These requirements demand that the company's stock price close at or above \$1.00 for at least ten consecutive days to satisfy the requirement. An extension to the original date was granted, mandating compliance by January 29, 2018. On January 5<sup>th</sup>, the company announced that it would conduct a 1:10 reverse stock split to comply with the requirement. As of January 24<sup>th</sup> 2018, the company had complied with the NASDAQ requirements and is estimated to have approximately 2.4 million shares outstanding.

## **RISKS**

All investments contain an element of risk which reflects the uncertainty of the business and what it will ultimately achieve. Some investments exhibit higher predictability, with current cash flows and established sales. These enterprises will have a lower level of perceived risk while other companies that are developing an undefined, new technology have a much higher level of perceived risk.

The biotechnology space includes companies at both ends of the spectrum, from mega-cap pharmaceutical powerhouses that have multiple products currently generating revenues, to small operations with a handful of employees conducting pre-clinical studies. Many of the risks faced by the large pharmaceutical companies and smaller biotechnology-focused firms are similar; however, there are some hazards that are particular to smaller companies that have not yet established themselves or their products.

For smaller early-stage companies, investing in drug development is an extended process. The timeframe for conducting pre-clinical research to eventually commercializing a drug can take from 12 to 15 years or even longer given market conditions. And with, on average, only one in one thousand compounds eventually making it to the market, the risks are substantial.

Even if a company has a strong, experienced team that is developing a therapy with a high likelihood of success and a large addressable market, securing funding may pose a substantial risk. Access to financing comes and goes in cycles. During periods of improving confidence, capital may be easy to access; however, during a liquidity crisis or a period of heightened risk perception, even companies with bright prospects may be in trouble if they are dependent on the financial markets to fund their work. If capital is needed to sustain operations and it is not readily available, the company may be forced to suspend research and development, sell equity at a substantial discount to previous valuations and dilute earlier shareholders. A lack of funding may leave potentially promising therapies without a viable route to follow or force a company to accept onerous terms.

All drugs must navigate the regulatory approval process in the US, EU and other countries before commercialization in those regions. This effort is a material uncertainty which may take years depending upon the needs and desires of the determining authority. Substantial expense is undertaken to bring a molecule or compound through clinical trials and address all of the regulatory agencies' concerns. Isolating companies that have a long history of research success in drug development, with opinion leaders and experts in the field are important fundamentals that can help mitigate this risk. Companies that have had previous success with the FDA or other regulatory agencies also are more attractive than those who may be new to the process. Some accelerated pathways to approval have been put forth such as the Orphan Drug Act, however, changes in sentiment or perceived safety for pharmaceuticals drugs could change the regulatory environment to demand a more thorough process and these pathways may be extended or additional requirements may be put in place.

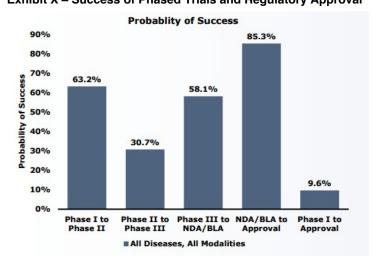


Exhibit X – Success of Phased Trials and Regulatory Approval<sup>19</sup>

<sup>&</sup>lt;sup>19</sup>Clinical Development Success Rates 2006-2015. D. Thomas, Justin Burns, John Audette, Adam Carroll, Corey Dow-Hygelund, Michael Hay.

Currently, RXi is seeking a partner to help develop its lead programs for RXI-109 and Samcyprone. They plan to pass development of these programs to a partner and refocus their efforts on the immuno-oncology space. The oncology indications are currently in discovery and preclinical stages, which historically have had a low level of ultimate success. Our valuation process does not value a compound prior to entering Phase I studies; therefore we do not attach any value to RXi's preclinical programs.

In recent years, contract research organizations (CROs) have taken on a larger role in the development of drug candidates as the complexity and cost of trials has increased. Identifying appropriate populations to participate in clinical trials has become increasingly difficult due to the shift to personalized medicine and orphan indications that address a small population. This shift has increased the dependence on these specialized CROs for project management and clinical monitoring services which add additional risks and dependence on third parties.

In addition to CROs for clinical trials, RXi relies on a third party for manufacturing drug substance and analytical testing. Risks of poor manufacturing processes, quality control issues and product delays may postpone ultimate production of a drug if partners are out of compliance with regulatory agency requirements. RXi Pharmaceuticals has developed relationships with its partners and maintains a process to ensure good practices and compliance. While the company has made efforts to ensure a productive relationship, the partner may lack the desire or skill to successfully maintain the required good practices and the partner may have other competing products under its control that receive greater attention and focus.

Drug price inflation has gained increased attention over the last several years and has contributed materially to the increase in health care costs over the last decades. As new therapies have been approved, drug prices have set new records and increased at a substantial rate. For example, in 1996, new cancer drugs cost roughly \$54,000 for each additional year of life they provided. However, by 2013, this amount increased to over \$200,000. The inflation rate for established drugs has also been very high. In a Forbes article, Novartis' leukemia drug Gleevec was highlighted. This drug cost \$24,000 in 2001 when it was first approved; and 14 years later, in 2015, had risen to a cost of \$90,000. This represents a 10% compound annual growth rate over that period. Other price moves such as the 5,000% price hike for Turing Pharmaceutical's Daraprim and Valeant Pharmaceuticals 500% and 200% price increase for Isuprel and Nitropress last year combined with similar moves by other companies may create a situation where further increases are unsustainable. We also cite the broad response to Mylan's (NASDAQ: MYL) EpiPen price increases which have pressured the company to offer lower priced alternatives and brought a number of competitors into the market.

We highlight several risks that come from these pricing increases. Health care may become unaffordable for a broad segment of the population, reducing the market size to a level below what we could otherwise reasonably forecast. Pharmacy benefit managers and other third party payers may continue to remove drugs from their formularies due to price concerns and sharp price increases will attract the attention of elected officials and regulators who may create legislation and implement regulations that limit drug profitability. Additionally, the government may impose additional non-price related regulation and disclosure requirements that can increase costs for the industry.

While we have discussed a broad variety of risks above, we believe that our forecast parameters, discount rates, success probabilities and valuation metrics address these eventualities and our target price reflects an assumption of these risks faced by all biotechnology companies.

# **COMPETITORS AND COMPETING THERAPIES**

There is a broad assembly of participants in dermatology, ophthalmology and interference RNA around the globe. Below, we highlight the leading companies that are developing therapies in anti-scarring therapies, cell based immunology and RNAi.

Exhibit XI – Peers and Competitors<sup>20</sup>

Ticker	Company	Price	MktCap (MM)	EV (MM)	Therapeutic Area
AGN	Allergan plc	\$162.09	\$53,540	\$76,960	Anti-scarring Therapies
FGEN	FibroGen, Inc	\$57.50	\$4,730	\$4,114	Anti-scarring Therapies
MGEN	Miragen Therapeutics, Inc	\$5.57	\$161	\$119	Anti-scarring Therapies
OPHT	Ophthotech Corp	\$2.67	\$96	(\$84)	Anti-scarring Therapies
Private	CoDa Therapeutics, Inc				Anti-scarring Therapies
Private	Simaomics, Inc				Anti-scarring Therapies
Private	FirstString Research, Inc				Anti-scarring Therapies
Private	Promedior, Inc				Anti-scarring Therapies
Private	Vascular BioSciences				Anti-scarring Therapies
Private	Suneva Medical				Anti-scarring Therapies
JNJ	Johnson & Johnson	\$132.02	\$354,670	\$373,605	Cell-based Immuno-oncology
NVS	Novartis International, AG	\$85.33	\$222,760	\$241,807	Cell-based Immuno-oncology
PFE	Pfizer Inc	\$36.26	\$216,140	\$233,718	Cell-based Immuno-oncology
AMGN	Amgen, Inc	\$186.67	\$135,510	\$129,174	Cell-based Immuno-oncology
GSK	GlaxoSmithKline plc	\$36.84	\$89,740	\$108,043	Cell-based Immuno-oncology
CELG	Celgene Corp.	\$95.61	\$71,920	\$68,446	Cell-based Immuno-oncology
JUNO	Juno Therapeutics, Inc	\$86.58	\$9,890	\$8,995	Cell-based Immuno-oncology
CLLS	Cellectis, SA	\$32.43	\$1,150	\$779	Cell-based Immuno-oncology
ADAP	Adaptimmune Therapeutics plc	\$7.88	\$738	\$506	Cell-based Immuno-oncology
NK	NantKwest, Inc	\$4.85	\$385	\$235	Cell-based Immuno-oncology
BLCM	Bellicum Pharmaceuticals, Inc	\$7.03	\$234	\$152	Cell-based Immuno-oncology
Private	Lion Biotechnologies, Inc				Cell-based Immuno-oncology
Private	EMD Serono, Inc				Cell-based Immuno-oncology
ALNY	Alnylam Pharmaceuticals, Inc	\$121.42	\$11,940	\$10,265	RNAi
DRNA	Dicerna Pharmaceuticals, Inc	\$12.49	\$645	\$569	RNAi
ARWR	Arrowhead Pharmaceuticals, Inc	\$5.80	\$503	\$440	RNAi
ABUS	Arbutus Biopharma Corp	\$5.25	\$289	\$213	RNAi
SLN	Silence Therapeutics, plc	£0.19	£136.00	£106.20	RNAi
BNTC	Benitec Biopharma, Ltd	\$3.30	\$34	\$26	RNAi
Private	Quark Pharmaceuticals, Inc				RNAi
Private	Sylentis SA				RNAi
RXII	RXi Pharmaceuticals Corp	\$3.27	\$7.9	\$2.5	RNAi

 $<sup>^{\</sup>rm 20}$  Price and market capitalization data is as of February 25, 2018

# **MANAGEMENT PROFILES**

# Geert Cauwenbergh, Dr. Med. SC., President and Chief Executive Officer

Dr. Cauwenbergh was appointed President and Chief Executive Officer of RXi Pharmaceuticals Corporation in April of 2012. Prior to joining RXi, Dr. Cauwenbergh served as Chairman and Chief Executive Officer of Barrier Therapeutics, Inc., a publicly-traded biopharmaceutical company he founded in 2001 that focused on dermatology drug development. Barrier 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, 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 is a member of the board of directors of Cutanea Life Sciences and Moberg Pharmaceuticals. 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 a number of books in 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., Chief Development Officer

Dr. Gerrit Dispersyn was appointed Chief Development Officer in April 2017. Dr. Dispersyn is an accomplished leader in clinical, product and business development. He most recently served as the Vice President, Global Head of Clinical Affairs at Integra LifeSciences Corporation. In this role, Gerrit was responsible for Integra's global strategy and execution of Clinical Development, Clinical Operations and Medical Affairs projects and a member of Integra's Senior Management Leadership team, and several of the company's core teams for M&A projects. Dr. Dispersyn has also been involved in Integra's research and business activities related to Human Cells, Tissues, and Cellular and Tissue based Products (HCT/Ps), an experience that could be beneficial for RXi's newly added focus on immuno-oncology and cell therapy. Prior to that role, he was the Vice President, Product Development & Portfolio Management for Barrier Therapeutics, Inc., a pharmaceutical company focused on the development and commercialization of products in the field of dermatology. The company was a spin-out of Johnson & Johnson, and currently part of GlaxoSmithKline. There he led planning and implementation of all aspects of R&D operations and strategy; scientific, competitive and business intelligence; and alliance management. Dr. Dispersyn is the founder of Ingress, LLC, a consultancy company providing R&D and clinical operations support to start-up companies, supporting several pharmaceutical drug development programs. Dr. Dispersyn holds a Dr. Med. Sc. (Ph.D. in Medical Sciences), from the Faculty of Medicine, Maastricht University, Maastricht, the Netherlands, a postgraduate degree in Biomedical Imaging, and a M.Sc. in Biochemistry, both from the University of Antwerp, Belgium.

# Karen Bulock, Ph.D., Vice President, Research

Dr. Bulock currently serves as Vice President Research for RXi Pharmaceuticals, Corporation. She joined Galena Biopharma, Inc. in October of 2007 and served as the Associate Director of Research until April 2012. Dr. Bulock has over twenty years of experience in assay development and discovery project management. Since joining RXi in 2011, and previously while at Galena, Dr. Bulock has managed several key programs, including the discovery and preclinical development of RXI-109, RXi's first clinical candidate. Prior to joining RXi, Dr. Bulock spent several years leading assay development and screening projects to support small molecule drug discovery programs in the fields of metabolic disease and anti-infectives at CytRx Corporation and Essential Therapeutics, Inc. Dr. Bulock received a Ph.D. in Pharmacology from Yale University. Dr. Bulock has authored numerous scientific articles and is a co-inventor on four patent applications.

#### **Financial Results**

RXi Pharmaceuticals filed a press release announcing third quarter 2017 results on November 8, 2017 in conjunction with their 10-Q SEC filing. The company highlighted progress that it had made with its platform in cancer therapeutics and the anticipated near-term release of its results for scarring and warts. During the quarter, Dr. Alexey Eliseev departed the company and his responsibilities were assumed by Dr. James Cardia, RXi's director of Business Development.

No revenues were generated in the 3Q:17 and expenses of \$2.5 million were recognized, which compares to zero revenues and expenses of \$2.2 million in the same quarter of the prior year. Research and development expenses were \$1.5 million, essentially flat with the prior period where higher expenses for the Samcyprone trial and new immunotherapy efforts were offset by a decrease in stock compensation costs. General and administrative expenses of \$1.0 million were up from \$0.8 million in 3Q:16 due to higher payroll-related outflows and severance benefits for the company's former chief business officer. On a per share basis, net loss was (\$1.05), compared to a loss of (\$3.36) in the quarter a year before. Average share balance outstanding in 3Q:17 increased to 2.35 million units from 660 thousand units in 3Q:16.<sup>21</sup>

The balance sheet indicates \$5.4 million in cash and equivalents and no debt as of September 30. Cash used in operations for the nine months of 2017 was (\$7.3) million and capital expenditures were \$203 thousand. On a quarterly basis cash burn was approximately (\$2.5) million.

<sup>&</sup>lt;sup>21</sup> Share balances have been adjusted for the 1:10 reverse stock split on January 8, 2018.

#### VALUATION

RXi has two candidates in Phase II and one in Phase I/II development. The indications are in hypertrophic scarring, warts and retinal scarring. There are few competing products in the scarring space, which has many applications beyond the current indication and RXI-109 should enjoy a dominant position in the market if approved by the FDA and EMA. The treatment paradigm for warts is much more developed; however, the market is immense and existing treatments have only limited effectiveness suggesting a substantial opportunity. RXi's interference RNA is able to downregulate unwanted proteins in the cell, and prevent disease via this mechanism. The company also inlicensed its wart program, Samcyprone, which it has taken through Phase II trials with results expected shortly.

RXi expects to partner these successful programs to a global dermatology and/or ophthalmology company, who will guide the candidates through the rest of the development process and obtain regulatory approval. Our analysis anticipates that these programs will generate upfront cash and royalties once sales begin. Since the details of the sale have not yet been determined, we assume that an upfront of \$20 million will be received and that a royalty of 5% will be paid once sales begin. RXi will in turn have to pay 1% of its RXi based royalty revenues to Advirna and we estimate 15% of its Samcyprone based royalty revenues to Hapten Pharmaceuticals.

Our assumptions for RXI-109 in the hypertrophic scarring indications is for an additional Phase III and then Phase III trial to take place which are expected to last 1.5 years and 2.5 years respectively, followed by a new drug application (NDA) with the FDA which will take an additional year. This suggests approval and first sales will take place in 2023. The target population is currently forecast to be approximately 180,000 in the United States<sup>23</sup> and we assume that the incidence in Europe is similar to the US,<sup>24</sup> this generates an addressable population of 458,000, which we forecast to grow at a 1% annual rate. In the first year of sales we anticipate 2% penetration into this population at a cost of \$2,000 per treatment. Penetration is forecasted to grow over several years to reach 20% of the market. As this program will be partnered, we anticipate a 5% royalty rate for RXi. RXi owes a royalty for sdrxRNA products to Advirna of 1%, which will be deducted from RXi's royalty revenues.

Our assumptions for RXI-109 in the retinal scarring indication are for an additional Phase II and Phase III trial to be conducted prior to submission of an NDA. Similar to the dermal scarring indication, we anticipate a Phase II to be 1.5 years in duration and a Phase III to be 2.5 years, following by submission to the FDA. We anticipate results from the current retinal trial to be promulgated shortly, and the follow-on Phase II to begin late 2018. These assumptions place the retinal scarring indication in the market by 2024. We estimate that there are eleven million<sup>25</sup> persons with AMD of which 10% of this group will have wet AMD. We also assume that the European population will have a similar prevalence of the disease, resulting in a total addressable population of 2.8 million<sup>26</sup> who may pursue anti-VEGF therapy. In its first year of launch we estimate a 5% penetration into the anti-VEGF therapy patient population, growing to 38% of the addressable market by 2029. Pricing for RXI-109 is forecast to be about \$5,000 per course of treatment, which is at the low end of pricing for anti-VEGF therapies when first launched. As the program is expected to be launched by a partner, we expect that RXi will receive a royalty based on revenues of 5% given the stage of the program. RXi owes a royalty for sd-rxRNA products to Advirna of 1%, which will be deducted from RXi's royalty revenues.

Our assumptions for Samcyprone in the warts indication include a Phase III trial following the reporting of results for the in-process Phase IIa trial. We anticipate that a registrational trial could take approximately three years followed by a year-long new drug application review and approval. The addressable market for Samcyprone is estimated to be approximately one billion, representing the developed world and a portion of developing countries. Warts are extremely common in the population and we estimate that the product can be made widely available for home use by a global health products company. Penetration into this vast market is expected to be slight at 0.06% in the

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<sup>&</sup>lt;sup>22</sup> RXi has indicated a double digit royalty required by the Samcyprone licensing agreement. Based on our experience with other, similar agreements we estimate a 15% rate.

<sup>&</sup>lt;sup>23</sup> According to the American Society for Plastic Surgery, there are approximately 180,000 scar revision surgeries in the United States every year

year.

24 If we estimate that the incidence in Europe is similar to the US, this will add an additional (510 million persons in EU/330 million persons x 180,000 = 278,181) 278 thousand to the mix. Total addressable population is then 458,181

<sup>&</sup>lt;sup>25</sup> Based on data provided by Pennington KL, DeAngelis MM: Epidemiology of Age-related Macular Degeneration. Eye Vis (London). 2016, 22;3-34, there are approximately 11 million individuals are affected with AMD in the U.S. and a global prevalence of 170 million.

<sup>&</sup>lt;sup>26</sup> The US population with wet AMD is assumed to be about 10% of the 11 million with AMD, which is 1.1 million. Grossing this up by the European market assumes a similar prevalence in the EU. (510 million EU population / 330 million US population x 1.1 million = 1.7 million. Combining the US and EU populations (1.1 million + 1.7 million = 2.8 million) yields 2.8 million total addressable population.

initial year of launch followed by growth to approximately 2.0% of the market over the next decade. When approved by the FDA, Samcyprone will be given five years of exclusivity as it is a new chemical entity not previously approved by the agency. We assume this will allow for premium pricing to other wart treatments of \$250 per treatment unit over the exclusivity period. Following the exclusivity period, we anticipate competition will bring the product price down to \$150, after which the price is expected to grow at normal inflationary rates. As this will be developed by a partner, we anticipate that the partner will pay a royalty on revenues of 5% to RXi. RXi further owes a royalty to Hapten Pharmaceutical which has not been precisely disclosed and we estimate to be 15%.

Our valuation methodology does not attach value to programs prior to their entry into the clinic. Based on historical approval rates as discussed in the Risks section, we apply a 10% probability of approval to Phase I assets, a 15% probability of approval for Phase II assets and a 50% probability of approval for Phase III assets. All of RXi's Phase II assets are given a 15% likelihood of eventual approval and commercialization.

While we do not calculate gross margin, sales or other development costs for the Phase II assets as they will be assumed by a partner, we do note that gross margin for sd-rxRNA products is expected to be approximately 75% to 95%, depending on the therapeutic area, given the low manufacturing costs anticipated as a result of the future competitive market for manufacturing oligonucleotides.

RXi's strategic goal is to use the proceeds from its dermatology and ophthalmology programs to support development of sd-rxRNA in immuno-oncology. In the near term we anticipate annual research and development expenses to be approximately \$5.5 million in 2018 and to grow by a million dollars per year over the next two years as the immuno-oncology programs move into the clinic. General and administrative expenses are expected to fall in 2018 to \$3.6 million as the company refines its focus on IO and does not incur the expense from the recently resigned Chief Business Officer, Dr. Eliseev. Hiring is expected to pick up in 2019, and expenses will follow with anticipated G&A of \$4.4 million. Note that we do not attach any revenues in our DCF model to these expenses and only anticipate doing so after the projects have begun human trials.

Based on current law, corporate tax rates are 21% for federal and 5% for state and local. We anticipate that state taxes will rise as a function of increased shift of federal costs to the states and assume a higher long-term state and local rate of 10%, bringing the total rate to 31%. This rate is anticipated to be paid following the company consuming its NOLs.

Our target price is generated using forecasts over the next 20 years after which we assume a terminal growth rate of 2%. We use a discount rate of 15% in our NPV model and apply a 15% probability of FDA approval and ultimate commercialization for the Phase II assets based on the guidance provided in the Biomedtracker analysis.<sup>28</sup>

Based on the assumptions above and after adjusting for shares, restricted stock and options outstanding, we generate a target price of \$20.00.

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<sup>&</sup>lt;sup>27</sup> We anticipate a wart kit type product for sale at drugstores intended for home use sufficient for several applications.

<sup>&</sup>lt;sup>28</sup> Clinical Development Success Rates 2006-2015. David W. Thomas, Justin Burns, John Audette, Adam Carroll, Corey Dow-Hygelund, Michael Hav.

#### CONCLUSION

Interference RNA is an exciting space with seemingly limitless potential to address disease. While we are still in the early stages of this technology, the FDA and EMA are currently considering a candidate in this class. RXi has developed dermal, retinal and wart assets which can be monetized to support pre-clinical work in immuno-oncology. The company believes that the IO space has many factors in its favor in terms of time to market, size of trials and potential market size. With recent efforts in regenerative medicine, cell therapy and oncology, the FDA has expedited programs available to move breakthrough therapies with good safety profiles through the approval process expeditiously. RXi has developed many relationships with leaders in adoptive cell therapy in both the US and Europe which is expected to advance the company's immuno-oncology compounds into the clinic within the next 12 to 18 months.

Our valuation thesis is built upon the development of the company's Phase II assets in scarring and warts which are currently being marketed to global dermatology and ophthalmology firms. These partners will guide the programs through registrational trials and the approval process and ultimately commercialize them. Our model anticipates only sales to the US and Europe; however, it is possible that the products can be developed globally, providing upside to our target price. Upfront payments and royalties from these programs will be used to fund development programs. We do not attach any value to the preclinical programs and anticipate doing so following a successful investigational new drug (IND) submission and the launch of human trials.

# Key reasons to own:

- > Versatile platform with broad applicability and differentiated delivery mechanism
- Multiple non-dilutive approaches to raise capital
  - Phase II sd-rxRNA indications in dermal scarring
  - Phase I/II sd-rxRNA indication in retinal scarring
  - One Phase II candidate in-licensed indication for warts
  - Out-licensing opportunities for other therapeutic areas
- Development pipeline of additional sd-rxRNA assets in oncology and other indications
- Compelling safety and efficacy profile in Phase II studies
- > Large end markets for warts indication
- Well-defined markets for scarring with few direct competitors
- Global rights to intellectual property

In summary, we believe that RXi's sd-rxRNA platform has advanced candidates with convincing safety data and proof of concept for large and lucrative indications. Few competing therapies in scarring and an immense market in warts provide many opporutunities for a global health company to exploit, in turn providing a favorable partnership environment for RXi. The exciting work in immuno-oncology is expected to soon be in the clinic, providing yet another component of value to our current target price. While our valution only accounts for sales of RXI-109 and Samcyprone, the company's other candidates will maintain our focus as they advance. Based on our analysis and forecasts, we initiate RXi Pharmaceuticals with a target price of \$20.00.

<sup>&</sup>lt;sup>29</sup> Alnylam Pharma's RNAi candidate Patisiran,is currently in front of the FDA and EMA for approval, which is indicated for Hereditary ATTR (hATTR) Amyloidosis. A response is expected by the FDA in August 2018.

# **PROJECTED FINANCIALS**

# **RXi Pharmaceuticals Corp. - Income Statement**

RXi Pharmaceuticals Corp	2016 A	Q1 A	Q2 A	Q3 A	<b>Q4</b> E	<b>2017</b> E	2018 E	2019 E
<b>Total Revenues</b>	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
YOY Growth								
Research & Development	\$5.4	\$1.3	\$1.3	\$1.5	\$1.4	\$5.6	\$5 <i>5</i>	\$6.5
Acquired In-process R&D	\$0.0	\$3.0	\$0.1	\$0.0	\$0.0	\$3.1	\$0.0	\$0.0
General & Administrative	\$3.6	\$1.1	\$1.1	\$1.0	\$0.9	\$4.1	\$3.6	\$4.4
Income from operations	(\$9.0)	(\$55)	(\$25)	(\$25)	(\$23)	(\$12.8)	(\$9.1)	(\$109)
Operating Margin	0%	0%	0%	0%	0%	0%	0%	0%
Interest Income	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Other Income	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Pre-Tax Income	(\$9.0)	(\$55)	(\$25)	(\$25)	(\$23)	(\$12.8)	(\$9.1)	(\$109)
Provision for Income Tax	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Tax Rate	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Net Income	(\$9.0)	(\$5.5)	(\$2.5)	(\$2.5)	(\$2.3)	(\$12.8)	(\$9.1)	(\$10.9)
Reported EPS	(\$13.33)	(\$2.65)	(\$1.12)	(\$1.05)	(\$0.96)	(\$5.79)	(\$3.44)	(\$3.59)
YOY Growth								
Basic Shares Outstanding	0.675	2.057	2.239	2.351	2.400	2.26	2.65	3.05

Source: Company Filing // Zacks Investment Research, Inc. Estimates

# HISTORICAL STOCK PRICE

RXi Pharmaceuticals Corp. – Share Price Chart



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