As filed with the Securities and Exchange Commission on February 13, 2012

Registration No. 333-177498

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

AMENDMENT NO. 5 TO

FORM S-1

REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933

RXi PHARMACEUTICALS CORPORATION

(Exact name of registrant as specified in its charter)

Delaware	2834	45-3215903
(State or other jurisdiction of incorporation or organization)	(Primary Standard Industrial Classification Code Number)	(I.R.S. Employer Identification No.)

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60 Prescott Street
Worcester, Massachusetts 01605
(508) 767-3861
(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

Mark J. Ahn, Ph.D.
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RXi Pharmaceuticals Corporation
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Approximate date of commencement of proposed sale to public: As soon as practicable after this registration statement becomes effective.

If any of the securities being registered on this form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, check the following box. ☐

If this form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act of 1933, please check the following box and list the Securities Act of 1933 registration statement number of the earlier effective registration statement for the same offering. ☐

If this form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act of 1933, check the following box and list the Securities Act of 1933 registration statement number of the earlier effective registration statement for the same offering. ☐

If this Form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act of 1933, check the following box and list the Securities Act of 1933 registration statement number of the earlier effective registration statement for the same offering. ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Securities Exchange Act of 1934. (Check

one):

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

The registrant hereby amends this registration statement on such date or dates as may be necessary to delay its effective date until the registrant shall file a further amendment which specifically states that this registration statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933 or until the registration statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.

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The information in this preliminary prospectus is not complete and may be changed. These securities may not be distributed until the registration statement filed with the Securities and Exchange Commission is effective. This preliminary prospectus is not an offer to sell nor does it seek an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.

SUBJECT TO COMPLETION, DATED February 13, 2012

PROSPECTUS

Shares of Common Stock

This prospectus is being furnished to the holders of common stock of Galena Biopharma, Inc. ("**Galena**") in connection with the distribution by Galena to its stockholders of 47,341,594 shares of common stock of RXi Pharmaceuticals Corporation ("**RXi**"). Assuming the full conversion of RXi's Series A Convertible Preferred Stock without regard to applicable conversion limitations, the RXi shares being distributed pursuant to this prospectus will constitute approximately 8% of the fully diluted shares of RXi common stock immediately following the distribution and the other transactions referred to in this prospectus. Each holder of Galena common stock as of the close of business on [_____], 2012, the record date for the distribution, will receive a dividend of one share of our common stock for each share of Galena common stock held by such holder. The distribution will be made on or about [_____], 2012. Galena expects that the distribution will be treated as a taxable distribution. See the "Material United States Federal Income Tax Consequences" section of this prospectus. Holders of Galena common stock should consult with their own individual tax advisors regarding the tax consequences of the distribution.

This prospectus describes the distribution and contains important information about RXi. No vote or approval of Galena's stockholders is required in connection with the distribution. Galena's stockholders will not be required to pay for the shares of RXi common stock to be received by them in the distribution, or to surrender shares of Galena common stock in order to receive RXi common stock, and Galena's stockholders will continue to own all shares of Galena common stock held by them.

Galena currently holds all outstanding shares of RXi common stock, and there is no current trading market for RXi common stock. We will apply for trading of our common stock in the OTC Markets Group under the symbol "RXII" in conjunction with the effectiveness of the registration statement of which this prospectus is a part. We expect that our common stock will begin trading in the OTC Markets Group following the distribution.

In reviewing this prospectus, you should carefully consider the matters described under the heading "Risk Factors" beginning on page 11.

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 date of this prospectus is _____, 2012.

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All references to "**RXi**," "**we**," "**our**," "**us**" and similar terms in this prospectus refer to RXi Pharmaceuticals Corporation. All references to "**Galena**" in this prospectus refer to Galena Biopharma, Inc. and its wholly owned subsidiary, Apthera, Inc.

You should rely only on the information contained in this prospectus. We have not authorized anyone to provide you with different information. You should not assume that the information contained in this prospectus is accurate as of any date other than the date on the front of this prospectus.

Some of the industry data contained in this prospectus are derived from data from various third-party sources. While we are not aware of any misstatements regarding any industry data presented herein, such data are subject to change based on various factors, including those discussed under the heading "Risk Factors" in this prospectus.

Neither RXi nor Galena will receive any consideration for the shares of RXi common stock that are being distributed pursuant to this prospectus. The registration fee that is set forth in the registration statement of which this prospectus is a part was calculated based on our book value and does not reflect any assessment of the market value of our common stock.

PROSPECTUS SUMMARY

The following is a summary of some of the information contained in this prospectus. In addition to this summary, we urge you to read the entire prospectus carefully, especially the risks relating to our business and common stock discussed under the heading "Risk Factors" and our financial statements.

Immediately following the record date for the distribution, we will declare and pay a 236,708-for-1 stock dividend with respect to our outstanding common stock. Unless otherwise indicated, all share data in this prospectus give retroactive effect to this stock dividend. Unless otherwise indicated, all share data in this prospectus also assume the acquisition by Tang Capital Partners, LP and RTW Investments, LLC of our Series A Convertible Preferred Stock on the terms described in this prospectus.

RXi Pharmaceuticals Corporation

Our Business

We are a biotechnology company focused on discovering, developing and commercializing innovative therapies addressing major unmet medical needs using RNAi-targeted technologies. We are pursuing proprietary therapeutics based on RNA interference ("**RNAi**"), which is a naturally occurring cellular mechanism that has the potential to effectively and selectively interfere with, or "silence," expression of targeted disease-associated genes.

Certain human diseases result from overexpression of one or more genes. We believe that these types of human diseases can potentially be treated by silencing (reducing) the overexpressed genes. While no therapeutic RNAi products have been approved by the Food and Drug Administration ("FDA") to date, there has been significant interest in the field of RNAi therapeutic development. This interest is driven by the potential ability to exploit the RNAi mechanism to develop lead compounds that specifically and selectively reduce single target genes, many of which are thought to be incapable of being inhibited by other modalities. We are currently focusing our internal therapeutic development efforts in fibrosis. We have demonstrated that treatment with RXI-109, our first RNAi product candidate, can significantly reduce CTGF (connective tissue growth factor) *in vivo* in rodent skin models, and we believe that RXI-109 may inhibit CTGF in human fibrotic disease. RXI-109 is initially being developed as a dermal anti-scarring therapy. The highlights of our RXI-109 development program are the following:

- We are currently working towards filing an investigational new drug application ("**IND**") for RXI-109 and initiating a Phase I/II clinical trial in 2012.
- As reported in Cytokine & Growth Factor Reviews (2008) and other publications, CTGF overexpression is implicated in scarring and fibrotic diseases. Data obtained from studies of RXI-109 in preclinical models using direct local administration to the skin demonstrate robust cellular delivery and statistically significant, dose-dependent silencing of CTGF that lasts for at least one week with a single injection.
- We believe that the potential commercial market for an effective dermal anti-scarring therapy is significant. According to data available publicly on the Center for Disease Control's (**"CDC"**) website at www.CDC.gov, approximately 42 million surgical procedures are performed annually, with many patients experiencing hypertrophic scarring and keloids.
- Because abnormal overexpression of CTGF is implicated in dermal scarring and fibrotic disease, we believe that RXI-109, or other CTGF-targeting compounds that reduce CTGF, or block its action, may be able to treat other indications where fibrosis is a factor. These include pulmonary, liver, and renal fibrotic diseases, as well as ocular scarring, acute spinal injury (where scarring impedes regeneration) and restenosis (a complication arising from vessel damage following stent placement). If clinical studies of RXI-109 produce successful results in dermal anti-scarring, we may explore opportunities in these indications, as well as other possible dermatology applications.

We intend to maintain our core RNAi discovery and development capability and to develop products both on our own and through collaborations. By utilizing our expertise in RNAi and the comprehensive RNAi platform that we have established, we believe we will be able to discover and develop lead compounds and progress them into and through clinical development for potential commercialization. Our proprietary therapeutic platform is comprised of two main components:

- *Novel RNAi Compounds,* referred to as rxRNA® compounds, that are distinct from, and we believe convey significant advantages over, classic siRNA (conventionally-designed "small interfering RNA" compounds), and offer many of the properties that we believe are important to the clinical development of RNAi-based drugs. We have developed a number of unique forms of rxRNA® compounds, all of which have been shown to be highly potent both in vitro and in preclinical in vivo models. These RNAi compounds include rxRNAori®, rxRNAsolo® and sd-rxRNA®, or "self-delivering" RNA. Based on our research, we believe that these different, novel siRNA configurations have various potential advantages for therapeutic use. These potential advantages include high potency, increased resistance to nucleases and off-target effects, and, in the case of the sd-rxRNA® compounds, access to cells and tissues with no additional formulation required.
- *Advanced Delivery Technologies* that enable the delivery of our rxRNA compounds to potentially treat a variety of acute and chronic diseases using both local and systemic approaches, potentially providing a competitive advantage in the development of many RNAi therapeutic compounds. Our suite of delivery technologies is comprised of delivery vehicles, which can be combined with various rxRNA® compounds, as well as sd-rxRNA® compounds, which are chemically modified and have the unique property of entering cells and tissues to effect silencing without the need for any additional delivery vehicle. This suite of delivery technologies has broad applications for multiple therapeutic areas targeting both local and systemic applications for the delivery of the RNAi drug.

We have not generated revenue to date and may not generate product revenue in the foreseeable future, if ever. We expect to incur significant operating losses as we advance our product candidates through the drug development and regulatory process.

Our Separation from Galena Biopharma, Inc.

Prior to September 24, 2011, our business was owned and operated by Galena Biopharma, Inc., a Delaware corporation ("**Galena**"). On September 8, 2011, we were incorporated in Delaware as a wholly owned subsidiary of Galena.

On September 24, 2011, we entered into a contribution agreement with Galena pursuant to which:

- Galena assigned and contributed to us substantially all of its RNAi-related technologies and assets, which consist primarily of novel RNAi compounds and licenses relating to its RNAi technologies, as well as the lease of its Worcester, Massachusetts laboratory facility, fixed assets and other equipment located at the facility and its employment arrangements with certain scientific, corporate and administrative personnel who have become our employees, as well as research grants of approximately $800,000 that are subject to the approval of the granting institutions; and
- We agreed to assume approximately $411,000 of accrued expenses of the RXi-109 development program, including assumed capital lease obligations, and all future obligations under the contributed licenses, employment arrangements and other agreements. Additionally, we agreed to make future milestone payments to Galena of up to $45 million, consisting of two one-time payments of $15 million and $30 million, respectively, if we achieve annual net sales equal to or greater than $500 million and $1 billion, respectively, of any covered products that may be developed with the contributed RNAi technologies.

The Distribution of RXi Common Stock

Assuming the full conversion of RXi's Series A Convertible Preferred Stock without regard to applicable conversion limitations, the 47,341,594 RXi shares being distributed pursuant to this prospectus will constitute approximately 8% of the fully diluted shares of our common stock immediately upon the completion of the spin-off transaction. Each holder of Galena common stock as of the close of business on [_____], 2012, the record date for the distribution, will receive a dividend of one share of our common stock for each

share of Galena common stock held by such holder. The distribution will be made on or about [_____], 2012.

No vote or approval of Galena's stockholders is required in connection with the distribution. Galena's stockholders will not be required to pay for the shares of RXi common stock to be received by them in the distribution, or to surrender shares of Galena common stock in order to receive RXi common stock, and Galena's stockholders will continue to own all shares of Galena common stock held by them.

Galena expects that the distribution will be treated as a taxable distribution in an amount equal to the fair market value of our shares on the distribution date. This amount will be treated as a taxable dividend to the extent of any current year earnings and profits of Galena, including gain resulting from the distribution, with any excess treated as a non-taxable return of capital to the extent of a holder's tax basis in Galena's common stock and any remaining excess treated as capital gain. For a discussion of the tax consequences to Galena and Galena's stockholders of the distribution, see the "Material United States Federal Income Tax Considerations" section of this prospectus. Galena's stockholders should consult with their own individual tax advisors regarding the tax consequences of the distribution.

Agreements with Tang Capital Partners, LP and RTW Investments, LLC

On September 24, 2011, we entered into a securities purchase agreement with Galena, Tang Capital Partners, LP ("**TCP**") and RTW Investments, LLC ("**RTW**") pursuant to which:

- TCP and RTW agreed to purchase a total of $9,500,000 of our Series A Convertible Preferred Stock (the "**Series A Preferred Stock**") at the closing of the spin-off transaction and to lend to us up to $1,500,000 to fund our operations prior to the closing, with the outstanding principal and accrued interest on the loan to be converted into Series A Preferred Stock at the closing, at a conversion price of $1,000 per share, and such conversion will be applied to the $9,500,000 total investment by TCP and RTW;
- We agreed that the Series A Preferred Stock will be convertible by TCP or RTW at any time into shares of our common stock, except to the extent that the holder would own more than 9.999% of the shares of our common stock outstanding immediately after giving effect to such conversion. Without regard to this conversion limitation, the shares of the Series A Preferred Stock to be held by TCP and RTW would be convertible into shares of our common stock representing approximately 83% of the fully diluted shares of our common stock upon the completion of the spin-off transaction;
- We agreed that the Series A Preferred Stock will have the rights, preferences, privileges and restrictions summarized below under "Description of Capital Stock—Preferred Stock";
- Galena agreed to contribute $1.5 million of cash to us;
- Galena agreed to distribute to its stockholders the shares of RXi common stock that are the subject of this prospectus; the distribution by Galena of the shares of RXi common stock and RXi's separation from Galena is referred to in this prospectus as the "**spin-off transaction**";
- We and Galena agreed to take all necessary actions to constitute our initial board of directors as described in the "Management" section of this prospectus; and
- We agreed, upon completion of the spin-off transaction, to reimburse Galena for up to a total of $300,000, and to reimburse TCP and RTW for a total of up to $100,000, of transaction costs relating to the contribution agreement with Galena, the

securities purchase agreement summarized above and the transactions contemplated by those agreements.

The securities purchase agreement may be terminated by mutual consent of the investors and us, or by either the investors or us if the partial spin-off of RXi has not occurred by March 5, 2012 or in the event of a breach by the other of the agreement.

Advirna Agreement

As part of the transactions contemplated by the contribution and securities purchase agreements, on September 24, 2011, we entered into agreements 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 pay Advirna an annual $100,000 maintenance fee and a one-time $350,000 milestone payment upon the future issuance of the first patent with valid claims covering the assigned patent and technology rights;
- We will be required to pay a 1% royalty to Advirna for any licensing revenue received by us with respect to future licensing of the assigned Advirna patent and technology rights;
- We have granted back to Advirna a license under the assigned patent and technology for fields of use outside the fields of human therapeutics and diagnostics; and
- We have agreed to issue to Advirna, upon the completion of the spin-off transaction, shares of our common stock equal to approximately 5% of the fully diluted shares of RXi common stock assuming the conversion in full of all outstanding Series A Preferred Stock.

See "Business — Intellectual property — Other Technology Agreements; Advirna" on page 55 of this prospectus for more information about our license from Advirna.

Anastasia Khvorova, Ph.D., our Senior Vice President and Chief Scientific Officer, is a director and 50% owner of Advirna. Dr. Khvorova's husband is the other director and 50% owner of Advirna.

Risks Related to RXi

We face a number of risks and uncertainties relating to our separation from Galena and our business. These risks and uncertainties include:

- We may be unable to achieve some or all of the benefits that we expect to achieve from our separation from Galena.
- We may be unsuccessful in recruiting a Chief Executive Officer or other key employees.
- We may not be able to obtain sufficient funding and may not be able to commercialize our product candidates.
- The approach we are taking to discover and develop novel therapeutics using RNAi is unproven and may never lead to marketable products.
- We may not be able to maintain the third-party relationships that are necessary to develop or commercialize some or all of our product candidates.
- If our preclinical testing does not produce successful results or our clinical trials do not demonstrate safety and efficacy in humans, our products may not receive FDA approval and we will not be able to commercialize our drug candidates.
- Even if we receive regulatory approval to market our product candidates, our product candidates may not be accepted commercially, which may prevent us from becoming profitable.
- We are dependent on technologies we license, and if we lose the right to license such technologies or we fail to license new technologies in the future, our ability to develop new products would be harmed.

For further discussion of these and other risks and uncertainties that RXi faces, see the "Risk Factors" section beginning on page 11 of this prospectus and "Management's Discussion and Analysis of Financial Condition and Results of Operations" section beginning on page 35 of this prospectus.

Corporate Information

Our principal executive offices are located at 60 Prescott Street, Worcester, Massachusetts 01605, 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 Distribution

Distributing company	Galena Biopharma, Inc., a Delaware corporation.
Distributed company	RXi Pharmaceuticals Corporation, a Delaware corporation.
Securities to be distributed	A fixed number of 47,341,594 shares of RXi common stock will be distributed to Galena's stockholders.
Reasons for the distribution	Galena's lead therapeutic programs involve peptide-based immunotherapy products for the treatment of various cancers, while our therapeutic programs are focused on RNAi. The discovery and development of immunotherapy products requires skills, patents and management expertise that are different from the skills, patents and management expertise that are required for RNAi drug development and discovery. Because of the difference in focus with respect to therapeutic programs, and the difficulties that may arise adequately funding and managing programs in both of these areas, the Galena board of directors determined that the best strategy for realizing the potential value of Galena's RNAi assets was to contribute them to RXi, with a focus on developing and commercializing RNAi therapeutics, followed by the spin-off of RXi as described in this prospectus.

Distribution ratio and record date	Each holder of Galena common stock as of the close of business on [_____], 2012, the record date for the distribution, will receive a dividend of one share of RXi common stock for each share of Galena common stock held by such holder.
Manner of effecting the distribution	The distribution will consist of Galena's payment of a dividend to Galena's stockholders in the form of shares of RXi common stock. No vote or approval of Galena's stockholders is required in connection with the distribution. You will not be required to make any payment, or to surrender or exchange your shares of Galena's common stock, or take any other action to receive your shares of our common stock, and Galena's stockholders will continue to own all shares of Galena common stock held by them. If you own Galena common stock as of the close of business on the record date, Galena, with the assistance of Computershare, the distribution agent and RXi's transfer agent, will electronically issue shares of our common stock to you or to your brokerage firm on your behalf by way of direct registration in book-entry form. Computershare will mail to you a book-entry account statement that reflects your shares of RXi common stock, or your bank or brokerage firm will credit your account for the shares. If you sell shares of Galena common stock in the "regular-way" market up to and including through the distribution date, you will be selling your right to receive shares of RXi common stock in the distribution. Following the distribution, stockholders may request that their shares be transferred to a brokerage or other account at any time, without charge. Please see "The Distribution —Direct Registration System" section of this prospectus for a more detailed description of the direct registration system and how shares of Galena common stock may be sold and transferred.
Expected distribution date	[_____], 2012.
Distribution agent, transfer agent and registrar for the shares	Computershare will be the distribution agent for the distribution and the transfer agent and registrar for RXi common stock following the distribution.
United States federal income tax consequences of the distribution	Galena expects that the distribution will be treated as a taxable distribution in an amount equal to the fair market value of the RXi shares on the distribution date. This amount will be treated as a dividend to the extent of any current year earnings and profits of Galena, including any gain resulting from the distribution, with the excess treated as a non-taxable return of capital,

	to the extent of a holder's tax basis in Galena common stock and any remaining excess treated as capital gain. For a discussion of the tax consequences to Galena and Galena's stockholders of the distribution, see the "Material United States Federal Income Tax Considerations" section of this prospectus. Galena's stockholders should consult with their own individual tax advisors regarding the tax consequences of the distribution.
Trading market	There currently is no public market for our common stock. We will apply for trading of our common stock in the OTC Markets Group under the symbol "RXII" in conjunction with the effectiveness of the registration statement of which this prospectus is a part. We expect that our common stock will begin trading in the OTC Markets Group following the distribution. We cannot predict whether or when trading of our common stock will begin or the trading prices for our common stock.
Relationship with Galena after the distribution	Immediately following the completion of the spin-off transaction, Galena will own approximately 4% of our common stock on a fully diluted basis assuming the conversion in full of all Series A Preferred Stock without regard to applicable conversion limitations. We are a party to several agreements with Galena relating to its ownership of our common stock and other matters as described in the "Certain Relationships and Related Party Transactions" section of this prospectus.
Post-distribution dividend policy	Immediately following the record date for the distribution, we will declare and pay a 236,708-for -1 stock dividend with respect to our outstanding common stock. Unless otherwise indicated, all share data in this prospectus give retroactive effect to this stock dividend. RXi has never declared a cash dividend on its common stock and does not plan to do so for the foreseeable future.
Risk factors	You should carefully consider the matters discussed in the "Risk Factors" section of this prospectus.
Where Galena's stockholders can obtain more information	If you have any questions relating to the separation of RXi from Galena, you should contact: Mark J. Ahn, Ph.D President and Chief Executive Officer Galena Biopharma, Inc. 310 N. State Street, Suite 208 Lake Oswego, Oregon 97034 (855) 855-4253

Summary Historical Financial Information

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

Prior to December 31, 2010, Galena was engaged primarily in conducting discovery research and preclinical development activities based on RNAi, and Galena's financial statements for periods prior to December 31, 2010 reflected solely the assets, liabilities and results of operations attributable to Galena's RNAi-based assets, liabilities and results of operations. Subsequent to December 31, 2010, Galena broadened its strategic direction by adding the development and commercialization of cancer therapies that utilize peptide-based immunotherapy products, including a main product candidate, NeuVax, for the treatment of various cancers. Accordingly, the historical financial information for the nine-month periods ended September 30, 2011 and 2010, the fiscal years ended December 31, 2010 and 2009 as well as the cumulative period from inception (January 1, 2003) through September 30, 2011 has been "carved out" of the financial statements of Galena, as our "Predecessor," for such periods. Such carved-out financial information reflects Galena's RNAi-related activities, assets and liabilities only, and excludes activities, assets and liabilities attributable to Galena's cancer therapies. On September 24, 2011, Galena contributed to RXi substantially all of Galena's RNAi-related technologies and assets. The financial information for the periods ended September 30, 2011 also includes the results of RXi, "Registrant," for the period from September 24, 2011 to September 30, 2011. RXi was formed on September 8, 2011 and was not engaged in any activities other than its initial incorporation from September 8, 2011 to September 23, 2011. Also included is the balance sheet of RXi (Registrant) as of September 8, 2011, the date of incorporation. There was no other activity on that date. Accordingly, no statement of expenses or cash flows has been presented for the period ended September 8, 2011.

The carved-out financial information includes both direct and indirect expenses. The historical direct expenses consist primarily of the various costs for technology license agreements, sponsored research agreements, fees paid to scientific advisors and employee expenses of employees directly involved in RNAi-related activities. Indirect expenses represent employee expenses incurred by Galena that were allocable to the RNAi business. The indirect expenses are based upon (1) estimates of the percentage of time spent by Galena employees working on RNAi business matters and (2) allocations of various expenses associated with the employees, including salary, benefits, rent associated with the employees' office space, accounting and other general and administrative expenses. The percentage of time spent by Galena employees was multiplied by these allocable expenses to arrive at the total employee expenses allocable to the RNAi business and reflected in the carved out financial statements. Management believes the assumptions underlying the carved-out financial information are reasonable; however, the financial position and expenses may have been materially different if the RNAi business had operated as a stand-alone entity during the periods presented.

The information presented as of September 30, 2011 and for the nine-month periods ended September 30, 2011 and 2010, respectively, is unaudited and has been prepared on the same basis as the audited financial statements and includes all adjustments, consisting of only normal recurring adjustments, necessary for the fair presentation of this information in all material respects. The results of any interim period are not necessarily indicative of the results of operations to be expected for a full fiscal year.

	Predecessor (RNAi) and RXi (Registrant)(1)	Predecessor (RNAi)			
	Period from January 1, 2003 (Date of Inception) to September 30, 2011	Nine Months Ended September 30,		Years Ended December 31,	
		2011	2010	2010	2009
		(Amounts in thousands)			
Statement of Expenses Data:					
Expenses:					
Research and development expense	$ 44,181	$ 5,074	$ 6,126	$ 7,873	$ 8,892
General and administrative expense	36,276	5,206	6,803	8,752	8,628
Total operating expenses	80,457	10,280	12,929	16,625	17,520
Interest income (expense)	629	1	5	5	(5)
Other income (expense)	6,278	2,513	2,762	4,627	(862)
Net loss	$ (73,550)	$ (7,766)	$ (10,162)	$ (11,993)	$ (18,387)

	RXi (Registrant)		Predecessor (RNAi)	
			December 31,	
	September 8, 2011	September 30, 2011	2010	2009
		(Amounts in thousands)		
Balance Sheets Data:				
Cash and cash equivalents	$ —	$ 422	$ 6,891	$ 5,684
Total current assets	$ —	$ 720	$ 7,041	$ 5,804
Equipment and furnishings, net	$ —	$ 428	$ 419	$ 432
Total assets	$ —	$ 1,148	$ 7,476	$ 6,252
Total liabilities	$ —	$ 2,962	$ 5,046	$ 5,511
Total stockholder's equity (deficit)	$ —	$ (1,814)	$ —	$ —
Divisional equity	$ —	$ —	$ 2,430	$ 741
Total liabilities, stockholder's equity and divisional equity	$ —	$ 1,148	$ 7,476	$ 6,252

(1) The statements of expenses for the nine months ended September 30, 2011 and for the period from January 1, 2003 (date of inception) to September 30, 2011 include the results of operations of the carved-out Predecessor (RNAi) entity from the beginning of the periods presented to September 23, 2011 combined with the results of operations of RXi (Registrant) for the period September 24, 2011 to September 30, 2011.

RISK FACTORS

You should carefully consider the risks described below and all of the other information contained in this prospectus in evaluating us and our common stock. If any of the following risks and uncertainties develop into actual events, they could have a material adverse effect on our business, financial condition or results of operations. In that case, the trading price of our common stock could decline.

Risks Relating to Our Spin-off From Galena

We may be unable to achieve some or all of the benefits that we expect to achieve from our spin-off from Galena.

As a separate company, we believe that our business will benefit from, among other things, an enhanced ability to compete with other companies dedicated to developing proprietary RNAi therapeutics. However, we may not be able to achieve some or all of the benefits that we expect to achieve as a separate, independent public company. For example, we may not be able to raise funds as a separate company, which funds might have been available to a combined company that may have offered a broader investment opportunity to a wider range of potential investors. Nor will we have the benefit of Galena's relationships with sources of funding.

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

We may be unsuccessful in recruiting a Chief Executive Officer or other executives.

We will need to recruit and hire a Chief Executive Officer to replace Mark J. Ahn, Ph.D., who currently serves, on a part-time basis, as our President. We also are seeking a new Chief Financial Officer to work on a part-time basis, as well as other key employees. There is intense competition for experienced executive officers and other key personnel, and we may not be able to recruit and retain the personnel we need. If we fail to do so, our business prospects may suffer.

Dr. Ahn is not compensated by us, spends only part of his time on our business and is subject to potential conflicts of interest between Galena and us.

Dr. Ahn, who is not compensated by us, spends an average of only approximately 30 hours a month on our business and operations, and he devotes the majority of his business time and attention to Galena's business and operations. Because Dr. Ahn has dual obligations to Galena and us, he is subject to potential conflicts of interest between Galena and us.

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

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

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

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

development plans, obtain third-party contracts or any needed financing, or achieve the other components of our business plan.

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

In connection with the distribution of our common stock, we will become subject to the reporting requirements of the Securities Exchange Act of 1934, as amended (the "**Exchange Act**"), and the Sarbanes-Oxley Act of 2002. The Exchange Act requires that we file annual, quarterly and current reports. Our failure to prepare and disclose this information in a timely manner could subject us to penalties under federal securities laws, expose us to lawsuits and restrict our ability to access financing. The Sarbanes-Oxley Act requires that we, among other things, establish and maintain effective internal controls and procedures for financial reporting and we are presently evaluating our existing internal controls in light of the standards adopted by the Public Company Accounting Oversight Board. During the course of our evaluation, we may identify areas requiring improvement and may be required to design enhanced processes and controls to address issues identified through this review. This could result in significant cost to us and require us to divert substantial resources, including management time, from other activities.

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

Risks Relating to Our Business

We will be dependent on the success of our lead drug candidate, which may not receive regulatory approval or be successfully commercialized.

RXI-109, our first RNAi-based product candidate, targets CTGF and may have a variety of medical applications. We are planning to file an IND application with the FDA and begin a Phase I/II clinical trial in 2012 for RXI-109. The FDA, however, may deny our application or require additional information before approving the application, and such information may be costly to provide. There is no assurance that we will be able to successfully develop RXI-109 or any other product candidate.

We currently generate no revenue from sales and may never be able to develop marketable products. The FDA or similar foreign governmental agencies must approve our products in development before they can

be marketed. The process for obtaining FDA approval is both time-consuming and costly, with no certainty of a successful outcome. Before obtaining regulatory approval for the sale of any drug candidate, we must conduct extensive preclinical tests and clinical trials to demonstrate the safety and efficacy in humans of our product candidates. We have not yet shown safety or efficacy in humans for any RNAi-based product candidates, including RXI-109. A failure of any preclinical study or clinical trial can occur at any stage of testing. The results of preclinical and initial clinical testing of these products may not necessarily indicate the results that will be obtained from later or more extensive testing. It is also possible to suffer significant setbacks in advanced clinical trials, even after obtaining promising results in earlier trials.

A number of different factors could prevent us from obtaining regulatory approval or commercializing our product candidates on a timely basis, or at all.

We, the FDA or other applicable regulatory authorities or an institutional review board ("**IRB**") may suspend clinical trials of a drug candidate at any time for various reasons, including if we or they believe the subjects or patients participating in such trials are being exposed to unacceptable health risks. Among other reasons, adverse side effects of a drug candidate on subjects or patients in a clinical trial could result in the FDA or other regulatory authorities suspending or terminating the trial and refusing to approve a particular drug candidate for any or all indications of use.

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

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

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

- Delays in filing the initial drug application for RXI-109 or other product candidates;
- Difficulty in securing centers to conduct trials;
- Conditions imposed on us by the FDA or comparable foreign authorities regarding the scope or design of RXi's clinical trials;
- Problems in engaging IRBs to oversee trials or problems in obtaining or maintaining IRB approval of studies;
- Difficulty in enrolling patients in conformity with required protocols or projected timelines;
- Third-party contractors failing to comply with regulatory requirements or to meet their contractual obligations to us in a timely manner;
- Our drug candidates having very different chemical and pharmacological properties in humans than in laboratory testing and interacting with human biological systems in unforeseen, ineffective or harmful ways;

- The need to suspend or terminate clinical trials if the participants are being exposed to unacceptable health risks;
- Insufficient or inadequate supply or quality of our drug candidates or other necessary materials necessary to conduct our clinical trials;
- Effects of our drug candidates not being the desired effects or including undesirable side effects or the drug candidates having other unexpected characteristics;
- The cost of our clinical trials being greater than we anticipate;
- Negative or inconclusive results from our clinical trials or the clinical trials of others for similar drug candidates or inability to generate statistically significant data confirming the efficacy of the product being tested;
- Changes in the FDA's requirements for testing during the course of that testing;
- Reallocation of our limited financial and other resources to other clinical programs; and
- Adverse results obtained by other companies developing similar drugs.

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

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

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

RNA interference is a relatively new scientific discovery. Our RNAi technologies have not yet been clinically tested, nor are we aware of any clinical trials for efficacy having been completed by third parties involving these technologies. To date, no company has received regulatory approval to market therapeutics utilizing RNAi, and a number of clinical trials of RNAi technologies by other companies have been unsuccessful. The scientific evidence to support the feasibility of developing drugs based on these discoveries is both preliminary and limited. To successfully develop RNAi-based products, we must resolve a number of issues, including stabilizing the RNAi material and delivering it into target cells in the human body. We may spend large amounts of money trying to resolve these issues and may never succeed in doing so. In addition, any compounds that we develop may not demonstrate in patients the chemical and pharmacological properties ascribed to them in laboratory studies, and they may interact with human biological systems in unforeseen, ineffective or even harmful ways.

The FDA could impose a unique regulatory regime for RNAi therapeutics.

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

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

Some drug candidates that we develop may need to be administered using specialized vehicles, such as an implantable pump, that deliver RNAi therapeutics directly to diseased parts of the body. The drug delivery vehicles that we expect to utilize to deliver our drug candidates have not been approved by the FDA or other regulatory agencies. In addition, the FDA may regulate the product as a combination product of a drug and a device or require additional approvals or clearances for the modified delivery.

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

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

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

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

We believe numerous companies are investigating or plan to investigate a variety of proposed anti-scarring therapies in clinical trials. The companies include large and small pharmaceutical, chemical and biotechnology companies, as well as universities, government agencies and other private and public research organizations. Such companies include Renovo Group plc, CoDa Therapeutics, Inc., Sirnaomics, Inc., FirstString Research, Inc., Merz Pharmaceuticals, LLC, Capstone Therapeutics, Halscion, Inc., Garnet Bio Therapeutics, Inc., AkPharma Inc., Promedior, Inc., Kissei Pharmaceutical Co., Ltd., Eyegene, Derma Sciences, Inc., Healthpoint Biotherapeutics and Pharmaxon. In particular, Excaliard Pharmaceuticals, Inc., which has been acquired by Pfizer, Inc., has successfully advanced an anti-CTGF antisense oligonucleotide through several Phase I and Phase II trials, demonstrating improved scar outcome over placebo.

We believe other companies working in the RNAi area, generally, include Alnylam Pharmaceuticals, Inc., Marina Biotech, Inc., Tacere Therapeutics, Inc., Benitec Limited, OPKO Health, Inc., Silence Therapeutics plc, Quark Pharmaceuticals, Inc., Rosetta Genomics Ltd., Lorus Therapeutics, Inc., Tekmira Pharmaceuticals Corporation, Arrowhead Research Corporation, Regulus Therapeutics Inc. and Santaris, as well as a number of large pharmaceutical companies. 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.

Most of these competitors have substantially greater research and development capabilities and financial, scientific, technical, manufacturing, marketing, distribution and other resources than we have, and we may not be able to successfully compete with them. In addition, even if we are successful in developing our product candidates, in order to compete successfully we may need to be first to market or to demonstrate that our RNAi based products are superior to therapies based on different technologies. A number of our competitors have already commenced clinical testing of RNAi product candidates and may be more advanced than we are in the process of developing products. If we are not first to market or are unable to demonstrate superiority, any products for which we are able to obtain approval may not be successful.

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

Many patents in the RNAi field have already been exclusively licensed to third parties, including our competitors. If any of our existing licenses are terminated, the development of the products contemplated by the licenses could be delayed or terminated and we may not be able to negotiate additional licenses on acceptable terms, if at all, which would have a material adverse effect on our business.

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

Therapeutic applications of gene silencing technologies, delivery methods and other technologies that we license from third parties are claimed in a number of pending patent applications, but there is no assurance that these applications will result in any issued patents or that those patents would withstand possible legal challenges or protect our technologies from competition. The United States Patent and Trademark Office and patent granting authorities in other countries have upheld stringent standards for the RNAi patents that have been prosecuted so far. Consequently, pending patents that we have licensed and those that we own may continue to experience long and difficult prosecution challenges and may ultimately issue with much narrower claims than those in the pending applications. Third parties may hold or seek to obtain additional patents that could make it more difficult or impossible for us to develop products based on RNAi technology without obtaining a license to such patents, which licenses may not be available on attractive terms, or at all.

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

We have received a letter from Alnylam Pharmaceuticals, Inc., or Alnylam, claiming that we require access to Alnylam's patent and patent applications and demanding that we stop engaging in unspecified alleged infringing activities unless we obtain a license from Alnylam. We understand that other companies working in the RNAi area have received similar letters from Alnylam. Although we believe, based on the advice of our patent counsel, that our current and planned activities do not infringe any valid patent rights of Alnylam, there is no assurance that we will not need to alter our development candidates or products or obtain a license to Alnylam's rights to avoid any such infringement.

There is no guarantee that future licenses will be available from third parties for our product candidates on timely or satisfactory terms, or at all. To the extent that we are required and are able to obtain multiple licenses from third parties to develop or commercialize a product candidate, the aggregate licensing fees and milestones and royalty payments made to these parties may materially reduce our economic returns or even cause us to abandon development or commercialization of a product candidate.

Our success depends upon our ability to obtain and maintain intellectual property protection for our products and technologies.

The applications based on RNAi technologies claim many different methods, compositions and processes relating to the discovery, development, delivery and commercialization of RNAi therapeutics. Because this field is so new, very few of these patent applications have been fully processed by government patent offices around the world, and there is a great deal of uncertainty about which patents will issue, when, to whom and with what claims. Although we are not aware of any blocking patents or other proprietary rights, it is likely that there will be significant litigation and other proceedings, such as interference and opposition proceedings in various patent offices, relating to patent rights in the RNAi field. It is possible that we may become a party to such proceedings.

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

We do not have the facilities or expertise to manufacture supplies of any of our potential product candidates for clinical trials. Accordingly, we will be dependent upon contract manufacturers for these supplies. We currently obtain supplies for RXI-109 from a single supplier, Agilent Technologies, Nucleic Acid Solutions Division. If for any reason we are unable to obtain RXI-109 from this supplier, we would have to seek to obtain it from another major digonucleotide manufacturers. There is no assurance that we will be able to timely secure needed supply arrangements on satisfactory terms, or at all. Our failure to secure these arrangements as needed could have a material adverse effect on our ability to complete the development of our product candidates or, if we obtain regulatory approval for our product candidates, to commercialize them.

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

We expect to depend on collaborators, partners, licensees, clinical research organizations and other third parties to support our discovery efforts, to formulate product candidates, to manufacture our product candidates and to conduct clinical trials for some or all of our product candidates. We cannot guarantee that we will be able to successfully negotiate agreements for or maintain relationships with collaborators, partners, licensees, clinical investigators, vendors and other third parties on favorable terms, if at all. Our ability to successfully negotiate such agreements will depend on, among other things, potential partners' evaluation of the superiority of our technology over competing technologies, the quality of the preclinical and clinical data that we have generated and the perceived risks specific to developing our product candidates. If we are unable to obtain or maintain these agreements, we may not be able to clinically develop, formulate, manufacture, obtain regulatory approvals for or commercialize our product candidates. We cannot necessarily control the amount or timing of resources that our contract partners will devote to our research and development programs, product candidates or potential product candidates, and we cannot guarantee that these parties will fulfill their obligations to us under these arrangements in a timely fashion. We may not be able to

readily terminate any such agreements with contract partners even if such contract partners do not fulfill their obligations to us.

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

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

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

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

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

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

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

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

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

Additionally, third-party payors are increasingly attempting to contain health care costs by limiting both coverage and the level of reimbursement for medical products and services. Levels of reimbursement may decrease in the future, and future legislation, regulation or reimbursement policies of third-party payors may adversely affect the demand for and price levels of our products. If our customers are not reimbursed for our products, they may reduce or discontinue purchases of our products, which could have a material adverse effect on our business, financial condition and results of operations.

Comprehensive health care reform legislation, which was recently adopted by Congress and was subsequently signed into law, could adversely affect our business and financial condition. Among other provisions, the legislation provides that a "biosimilar" product may be approved by the FDA on the basis of analytical tests and certain clinical studies demonstrating that such product is highly similar to an existing, approved product and that switching between an existing product and the biosimilar product will not result in diminished safety or efficacy. This abbreviated regulatory approval process may result in increased competition if we are able to bring a product to market. The legislation also includes more stringent compliance programs for companies in various sectors of the life sciences industry with which we may need to comply and enhanced penalties for non-compliance with the new health care regulations. Complying with new regulations may divert management resources, and inadvertent failure to comply with new regulations may result in penalties being imposed on us.

Some states and localities have established drug importation programs for their citizens, and federal drug import legislation has been introduced in Congress. The Medicare Prescription Drug Plan legislation, which became law in December 2003, required the Secretary of Health and Human Services to promulgate regulations for drug reimportation from Canada into the United States under some circumstances, including

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

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

Our business prospects are dependent on our management team. The loss of Dr. Anastasia Khvorova (our Senior Vice President and Chief Scientific Officer) or Dr. Pamela Pavco (our Senior Vice President of Pharmaceutical Development), or any of our other key employees, or our inability to identify, attract, retain and integrate additional qualified key personnel, could make it difficult for us to manage our business successfully and achieve our business objectives.

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

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

With the proceeds received in connection with the spin-off transaction, we believe that we have sufficient working capital to fund our currently planned expenditures through December 31, 2012. However, in the future we may need to incur debt or issue equity in order to fund our planned expenditures as well as to make acquisitions and other investments. We cannot assure you that debt or equity financing will be available to us on acceptable terms or at all. If we cannot, or are limited in the ability to, incur debt, issue equity or enter in strategic collaborations, we may be unable to fund discovery and development of our product candidates, address gaps in our product offerings or improve our technology.

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

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

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

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

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

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

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

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

If we are unable to achieve or sustain profitability or to secure additional financing, we may not be able to meet our obligations as they come due, raising substantial doubts as to our ability to continue as a going concern. Any such inability to continue as a going concern may result in our common stock holders losing their entire investment. There is no guarantee that we will become profitable or secure additional financing. Our financial statements contemplate that we will continue as a going concern and do not contain any adjustments that might result if we were unable to continue as a going concern. Changes in our operating plans, our existing and anticipated working capital needs, the acceleration or modification of our expansion plans, increased expenses, potential acquisitions or other events will all affect our ability to continue as a going concern.

Risks Relating to Our Common Stock

The distribution of our common stock to Galena's stockholders is expected to be taxable, and our stockholders will be required to pay U.S. federal income taxes.

Galena expects that the distribution of our common stock will be taxable to holders of Galena common stock. An amount equal to the fair market value of our common stock on the distribution date will be treated as a dividend to the extent of any current year's earnings and profits of Galena, including any gain

resulting from the distribution, with the excess treated as non-taxable return of capital to the extent of a holder's tax basis in Galena common stock and any remaining excess treated as capital gain. Although Galena will be ascribing a value to our shares in this distribution for tax purposes, this valuation is not binding on the Internal Revenue Service or any state taxation agency. These taxing authorities could ascribe a higher valuation to our shares, particularly if our stock trades at prices significantly above the value ascribed to our shares by Galena in the period immediately following the distribution. Galena's stockholders should consult with their own tax advisors regarding the tax consequences of the distribution.

There is no current trading market for our common stock, and any trading market that may develop for our common stock may be volatile, and you may not be able to sell your shares at or above the initial market price of our stock following the distribution.

Although there is no current trading market for our common stock, we will apply for trading of our common stock in the OTC Markets Group under the symbol "RXII" in conjunction with the effectiveness of the registration statement of which this prospectus is a part. We expect that our common stock will begin trading in the OTC Markets Group following the distribution. We cannot predict, however, the extent to which investors' interest will lead to a liquid trading market or whether the market price of our common stock will be volatile. Any trading market that develops for our common stock could be volatile for many reasons, including the following factors:

- Announcements of regulatory developments or technological innovations by us or our competitors;
- Changes in our relationship with our licensors and other strategic partners;
- Our quarterly and annual operating results;
- Developments in patent or other technology ownership rights;
- Public concern regarding the safety of our technology;
- Government regulation of drug pricing; and
- General changes in the economy, the financial markets or the pharmaceutical or biotechnology industries.

In addition, factors beyond our control may also have an impact on the price of our common stock. For example, to the extent that other large companies within our industry experience declines in their stock price, our stock price may decline as well. In addition, when the market price of a company's common stock drops significantly, stockholders often institute securities class action lawsuits against the company. A lawsuit against us could cause us to incur substantial costs and could divert the time and attention of our management and other resources.

As a result, there is no assurance that you will be able to sell your shares of our common stock at or above the initial market price of our stock following the distribution.

You may have difficulty selling your shares if our common stock is deemed a "penny stock."

Since our common stock will not be listed on a national securities exchange during the foreseeable future, trading in our common stock will be subject to the requirements of rules promulgated under the Exchange Act that require additional disclosure by broker-dealers in connection with any trades involving a stock defined as a "penny stock." We believe it is likely that, upon the completion of the distribution of our common stock, our common stock will be deemed to be a penny stock, which generally means any non-national securities exchange equity security that has a market price of less than $5.00 per share, subject to certain exceptions. Such rules require the delivery, prior to any penny stock transaction, of a disclosure schedule

explaining the penny stock market and the risks associated therewith and impose various sales practice requirements on broker-dealers who sell penny stocks to persons other than established customers and accredited investors (generally defined as an investor with a net worth in excess of $1,000,000 or annual income exceeding $200,000 individually or $300,000 together with a spouse). For these types of transactions, the broker-dealer must make a special suitability determination for the purchaser and have received the purchaser's written consent to the transaction prior to the sale. The broker-dealer also must disclose the commissions payable to the broker-dealer, current bid and offer quotations for the penny stock and, if the broker-dealer is the sole market-maker, the broker-dealer must disclose this fact and the broker-dealer's presumed control over the market. Such information must be provided to the customer orally or in writing before or with the written confirmation of trade sent to the customer. Monthly statements must be sent disclosing recent price information for the penny stock held in the account and information on the limited market in penny stocks. The additional burdens imposed upon broker-dealers by such requirements could discourage broker-dealers from effecting transactions in our common stock, which could severely limit the market liquidity of the common stock and the ability of holders of the common stock to sell their shares.

Our shares of common stock distributed to Galena's stockholders will be eligible for immediate sale, which may adversely affect our stock price.

The shares of our common stock that Galena distributes to its stockholders generally may be sold immediately in the public market. Any sales of substantial amounts of our common stock in the public market, or the perception that such sales might occur, whether as a result of the distribution or otherwise, may cause the market price of our common stock to decline. We are unable to predict the extent to which common stock will be sold in the open market following the distribution or whether a sufficient number of buyers for our common stock will be in the market at that time.

We will issue preferred stock upon the closing of the spin-off transaction and possibly may issue more preferred stock in the future, and the terms of the preferred stock may reduce the value of our common stock.

We are authorized to issue up to 10,000,000 shares of preferred stock in one or more series, and we will issue 9,500 shares of our Series A Preferred Stock to TCP and RTW upon the completion of the spin-off transaction. Our board of directors may determine the terms of future preferred stock offerings without further action by our stockholders. The issuance of our preferred stock could affect your rights or reduce the value of our outstanding common stock. In particular, rights granted to holders of preferred stock may include voting rights, preferences as to dividends and liquidation, conversion and redemption rights and restrictions on our ability to merge with or sell our assets to a third party. For a summary of the rights granted to the holders of our Series A Preferred Stock, see the "Description of Capital Stock — Preferred Stock" section of this prospectus.

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

As part of our business strategy, we may pursue future acquisitions of other complementary businesses and technology licensing arrangements. We also may pursue strategic alliances. We have no experience with respect to acquiring other companies and limited experience with respect to the formation of collaborations, strategic alliances and joint ventures. We may not be able to integrate such acquisitions successfully into our existing business, and we could assume unknown or contingent liabilities. We also could experience adverse effects on our reported results of operations from acquisition related charges, amortization of acquired technology and other intangibles and impairment charges relating to write-offs of goodwill and other intangible assets from time to time following the acquisition. Integration of an acquired company requires management resources that otherwise would be available for ongoing development of our existing

business. We may not realize the anticipated benefits of any acquisition, technology license or strategic alliance.

To finance future acquisitions, we may choose to issue shares of our common stock or preferred stock as consideration, which would dilute your ownership interest in us. Alternatively, it may be necessary for us to raise additional funds through public or private financings. Additional funds may not be available on terms that are favorable to us and, in the case of equity financings, may result in dilution to our stockholders. Any future acquisitions by us also could result in large and immediate write-offs, the incurrence of contingent liabilities or amortization of expenses related to acquired intangible assets, any of which could harm our operating results.

The holders of our Series A Preferred Stock may be able to delay or prevent a change in corporate control that would be beneficial to our stockholders.

The holders of our Series A Preferred Stock have the right to convert at any time their shares of our Series A Preferred Stock into shares of our common stock, except to the extent that the holder would own more than 9.999% of our common stock outstanding immediately after giving effect to the conversion. Without regard to this conversion limitation, our Series A Preferred Stock would be convertible, at the completion of the spin-off transaction, into approximately 83% of the fully diluted shares of our common stock then outstanding. Although our Series A Preferred Stock generally is non-voting stock, the holders of our Series A Preferred Stock will be entitled to vote on an as-converted basis together with our common stock with respect to any transaction that would constitute a deemed liquidation event under our charter, including any proposal merger or sale of Company. By virtue of their voting rights, the holders of our Series A Preferred Stock will be able to significantly influence the outcome of the vote on any deemed liquidation event required to be submitted to a vote of our stockholders. This right may adversely affect the market price of our common stock by:

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

Future sales of our common stock by TCP and RTW, or the possibility of such sales, could adversely affect our stock price.

We have agreed in the securities purchase agreement with TCP and RTW to file a registration statement with the SEC covering the resale of 20% of the shares of our common stock underlying their Series A Preferred Stock. The availability of a significant number of our shares of common stock for resale publicly by TCP and RTW, as well as any actual sales of these shares, could adversely affect the market price of our shares following the distribution.

We do not anticipate paying cash dividends in the foreseeable future.

Immediately following the record date for the distribution, will declare and pay a 236,708-for -1 stock dividend with respect to our outstanding common stock. Unless otherwise indicated, all share data in this prospectus give retroactive effect to this stock dividend.

Our business requires significant funding. We currently plan to invest all available funds and future earnings in the development and growth of our business and do not anticipate paying any cash dividends on our common stock in the foreseeable future. As a result, capital appreciation, if any, of our common stock will be your sole source of potential gain for the foreseeable future.

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

Our certificate of incorporation and bylaws contain provisions that could discourage, delay or prevent a change of control of our company or changes in our management that the stockholders of our company may deem advantageous. These provisions:

- Authorize the issuance of "blank check" preferred stock that our board could issue to increase the number of outstanding shares and to discourage a takeover attempt;
- Prohibit stockholder action by written consent, which requires all stockholder actions to be taken at a meeting of our stockholders;
- Provide that the board of directors is expressly authorized to adopt, alter or repeal our bylaws; and
- Establish advance notice requirements for nominations for election to our board or for proposing matters that can be acted upon by stockholders at stockholder meetings.

Although we believe these provisions collectively provide for an opportunity to receive higher bids by requiring potential acquirers to negotiate with our board, they would apply even if the offer may be considered beneficial by some stockholders. In addition, these provisions may frustrate or prevent any attempts by our stockholders to replace or remove our current management team by making it more difficult for stockholders to replace members of our board, which is responsible for appointing the members of our management.

Moreover, because we are incorporated in Delaware, we are governed by the provisions of Section 203 of the Delaware General Corporation Law, which prohibits a person who owns in excess of 15% of our outstanding voting stock from merging or combining with us for a period of three years after the date of the transaction in which the person acquired in excess of 15% of our outstanding voting stock, unless the merger or combination is approved in a prescribed manner. The restrictions contained in Section 203 are not applicable to any of our existing stockholders that will own 15% or more of our outstanding common stock upon the completion of the spin-off of RXi.

FORWARD-LOOKING STATEMENTS

Any statements in this prospectus about our expectations, beliefs, plans, objectives, assumptions or future events or performance are not historical facts and are forward-looking statements. These statements are often, but not always, made through the use of words or phrases such as "believe," "will," "expect," "anticipate," "estimate," "intend," "plan" and "would." For example, statements concerning financial condition, possible or assumed future results of operations, growth opportunities, industry ranking, plans and objectives of management, markets for our common stock and future management and organizational structure are all forward-looking statements. Forward-looking statements are not guarantees of performance. They involve known and unknown risks, uncertainties and assumptions that may cause actual results, levels of activity, performance or achievements to differ materially from any results, levels of activity, performance or achievements expressed or implied by any forward-looking statement.

Any forward-looking statements are qualified in their entirety by reference to the risk factors discussed throughout this prospectus. Some of the risks, uncertainties and assumptions that could cause actual results to differ materially from estimates or projections contained in the forward-looking statements include but are not limited to:

- We may be unable to achieve some or all of the benefits that we expect to achieve from our spin-off from Galena;
- We may be unsuccessful in recruiting a Chief Executive Officer, Chief Financial Officer or other key employees;
- Higher costs associated with being a separate, publicly traded company;
- The difficulty in evaluating our financial information due to the distribution;
- The inability to raise additional future financing and lack of financial and other resources to us as a separate company;
- Our ability to control product development costs;
- We may not be able to attract and retain key employees;
- We may not be able to compete effectively;
- We may not be able enter into new strategic collaborations;
- Changes in government regulation affecting our RNAi-based therapeutics could increase our development costs;
- Our involvement in patent and other intellectual property litigation could be expensive and could divert management's attention;
- The possibility that there will be no market acceptance for our products; and
- Changes in third-party reimbursement policies could adversely affect potential future sales of any of our products that are approved for marketing.

The foregoing list sets forth some, but not all, of the factors that could affect our ability to achieve results described in any forward-looking statements. Stockholders are cautioned not to place undue reliance on such statements, which speak only as of the date of this prospectus. We assume no obligation and expressly disclaim any duty to update any forward-looking statement to reflect events or circumstances after the date of this prospectus or to reflect the occurrence of unanticipated events. In addition, we cannot assess the impact of each factor on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements contained in this prospectus.

All subsequent written and oral forward-looking statements attributable to us or any person acting on our behalf are expressly qualified in their entirety by the cautionary statements contained or referred to in this section.

PLAN OF DISTRIBUTION

Reasons for the Distribution

The Galena board of directors periodically reviews and assesses strategic alternatives to ensure that all of its technologies and other assets are being utilized in the best manner to create value for Galena and its stockholders. The Galena board determined that the best strategy for realizing the potential value of Galena's RNAi assets was to contribute them to us, with our focus on developing and commercializing RNAi therapeutics.

The Galena board of directors believes that the spin-off transaction will:

- Allow us direct access to capital markets to finance our RNAi drug development activities;
- Allow our management and the management of Galena to each pursue its own separate business strategies and strategic relationships based on its specific technologies and assets;
- Potentially enhance the ability of Galena and us to attract advisors and collaborators who are leaders in the particular fields of research and development being pursued by the separate companies, including collaborators who may be competitors or potential competitors of the other company;
- Facilitate acquisitions, joint ventures and partnerships by Galena and us with other companies focusing on the same or complementary technologies;
- Provide Galena's stockholders with a direct ownership interest in us, in addition to the indirect interest in us that they will have as Galena's stockholders, recognizing the possibility that there may be greater collective investment demand for the separate, publicly traded shares of Galena and us;
- Enhance public disclosures regarding Galena and us and improve investor understanding of the two companies; and
- Allow for stock options and other equity securities in our company with a value related directly to our own drug development efforts and the performance of our business, with such equity securities enabling us to provide incentives for our management and other key employees that are directly related to the market performance of our publicly traded shares and improve our ability to attract, retain and motivate additional qualified personnel.

The Galena board considered a number of potentially negative factors in evaluating the separation of RXi from Galena, including the following:

- We may not achieve the expected benefits of our separation from Galena;
- We may be unable to obtain financing for our business and activities as a stand-alone company and will be subject to the other risks described in the "Risk Factors" section of this prospectus;
- Galena and we will each incur substantial transaction costs in connection with the contribution and spin-off transactions;
- As two companies, the general and administrative costs incurred by Galena and us, collectively, will be greater than the general and administrative expenses that Galena has historically incurred;
- Galena expects that the distribution will be treated as a taxable distribution to its stockholders;
- Pending the distribution, Mark J. Ahn, Ph.D. will devote only a limited amount of time in his capacity as our President and Chief Financial Officer and will devote the majority of his business time and attention to Galena's business and operations, and he will be subject to potential conflicts of interest between Galena and us; and
- The distribution and the investment by TCP and RTW in our Series A Preferred Stock are subject to closing conditions, including the absence of any "material adverse effect" on us, and there is no assurance it will be completed.

The Galena board concluded, however, that the potential benefits of the separation outweighed these negative factors.

In view of the numerous factors considered in connection with the evaluation of the separation of RXi from Galena and the complexity of these matters, the Galena board did not find it useful to, and did not attempt

to, quantify, rank or otherwise assign relative weights to the factors considered. The individual members of the Galena board likely may have given different weights to different factors.

The distribution of RXi common stock is not being underwritten by an investment bank or otherwise. We anticipate that the fees and expenses attributable to the distribution of RXi common stock and the other transactions described in this prospectus that relate to the spin-off transaction will be approximately $595,000. We expect to bear approximately $450,000 of these total fees and expenses directly or indirectly, by reason of our agreement to reimburse costs incurred by Galena and by TCP and RTW.

Manner of the Distribution

Galena expects to effect the distribution on or about [_____], 2012 by distributing shares of RXi common stock to Galena's stockholders as of the close of business on [_____], 2012, which is the record date for the distribution. To be entitled to receive shares of our common stock in the distribution, Galena's stockholders must be such at the close of business (Eastern Time) on the record date of [_____], 2012. Each holder of Galena common stock as of the record date will receive a dividend of one share of our common stock for each share of Galena common stock held by such holder.

For Galena's stockholders as of the record date whose shares are held in their own names, our transfer agent will credit their shares of RXi common stock to book entry direct registration accounts established to hold their RXi common stock. Our distribution agent will send these stockholders a statement reflecting their RXi common stock ownership. Book entry refers to a method of recording stock ownership in our records in which no physical certificates are used. For Galena's stockholders who own Galena common stock through a broker or other nominee that is a member of (or has a correspondent relationship with) the Depository Trust Company, their shares of RXi common stock will be credited to the stockholders' accounts by the broker or other nominee**.**

Galena's stockholders will not be required to pay for shares of our common stock received in the distribution or to surrender or exchange shares of Galena common stock to receive RXi common stock.

Direct Registration System

We will have a direct registration (book-entry) program with respect to record ownership of our common stock. Direct registration is a service that allows shares to be owned, reported and transferred electronically without having a physical stock certificate issued. Persons who acquire shares of our common stock will not be entitled to receive a physical stock certificate; rather, ownership of the shares will be recorded in the names of such persons electronically on our books and records. Direct registration is intended to alleviate problems relating to stolen, misplaced or lost stock certificates and to reduce the paperwork relating to the transfer of ownership of our common stock.

Upon completion of the distribution, Galena's stockholders as of the record date whose shares are registered in their own names will receive statements confirming the issuance to them of the appropriate number of shares of our common stock through direct registration, rather than issuing a physical stock certificate. For stockholders who hold Galena common stock through a broker or other nominee that is a member of (or has a correspondent relationship with) the Depository Trust Company, their shares of RXi common stock will be credited to these stockholders' accounts by the broker or other nominee.

To utilize the services of a stockbroker to sell their shares, a stockholder holding his shares through direct registration must first add the appropriate stockbroker information to the direct registration account maintained by the transfer agent. Thereafter, such stockholder may transfer our common stock by telephone to a brokerage account and then may sell or transfer such shares by giving instructions to the broker.

Results of the Distribution

After the distribution of RXi common stock made under this prospectus, we will be an SEC reporting company. We will apply for trading of our common stock in the OTC Markets Group under the symbol "RXII" in conjunction with the effectiveness of the registration statement of which this prospectus is a part. We expect that our common stock will begin trading in the OTC Markets Group following the distribution. Immediately after the distribution, we expect to have approximately 742 record holders of shares of our common stock and 100,600,887 shares of our common stock outstanding.

Immediately following the distribution of RXi common stock under this prospectus: (1) the Galena stockholders who receive RXi shares under this prospectus will own 47,341,594 shares of our outstanding common stock; (2) Galena will own 23,670,797 shares of our outstanding common stock; and (3) Advirna will own 29,588,496 shares of our outstanding common stock.

Immediately following the distribution of our common stock, TCP and RTW will own shares of our Series A Preferred Stock that are convertible by either or both stockholders at any time into shares of RXi common stock, except to the extent that the holder would own more than 9.999% of the shares of our common stock outstanding immediately after giving effect to such conversion. Without regard to this conversion limitation, upon the completion of the spin-off transaction, the shares of the Series A Preferred Stock to be held by TCP and RTW would be convertible into shares of our common stock representing approximately 83% of the fully diluted shares of our common stock after the conversion of the Series A Preferred Stock. Assuming such conversion in full of our Series A Preferred Stock: (1) the Galena stockholders who receive RXi shares under this prospectus would own approximately 8% of the fully diluted shares of RXi common stock upon the completion of the spin-off transaction; (2) Galena would own approximately 4% of the fully diluted shares of RXi common stock; and (3) Advirna would own approximately 5% of the fully diluted shares of RXi common stock.

Other Transactions Related to the Distribution of RXi Common Stock

On September 24, 2011, we entered into a securities purchase agreement with Galena, TCP and RTW pursuant to which:

- TCP and RTW agreed to purchase a total of $9,500,000 of our Series A Preferred Stock at the closing of the spin-off transaction and to lend to us up to $1,500,000 to fund our operations prior to the closing, with the outstanding principal and accrued interest from the loan to be converted into Series A Preferred Stock at the closing, at a conversion price of $1,000 per share, and such conversion will be applied to the $9,500,000 total investment by TCP and RTW;
- We agreed that the Series A Preferred Stock will be convertible by TCP or RTW at any time into shares of our common stock, except to the extent that the holder would own more than 9.999% of the shares of our common stock outstanding immediately after giving effect to such conversion;
- We agreed that the Series A Preferred Stock will have the rights, preferences, privileges and restrictions summarized in the "Description of Capital Stock—Preferred Stock" section of this prospectus;
- Galena agreed to contribute $1.5 million of cash to us;
- Galena agreed to distribute to its stockholders, on a share-for-share basis, the RXi common stock that is the subject of this prospectus; the distribution of the RXi common stock and our separation from Galena is referred to in this prospectus as the "**spin-off transaction**"; and
- We agreed, upon completion of the spin-off transaction, to reimburse Galena for up to a total of $300,000, and to reimburse TCP and RTW for up to a total of $100,000, of transaction costs relating to the contribution agreement with Galena, the securities purchase agreement and the transactions contemplated by the agreements.

The securities purchase agreement may be terminated by mutual consent of the investors and us, or by either the investors or us if the partial spin-off of RXi has not occurred by March 5, 2012 or in the event of a breach by the other of the agreement.

Advirna Agreement

As part of the transactions contemplated by the contribution and securities purchase agreements, on September 24, 2011, we entered into agreements with Advirna, which is affiliated with Anastasia Khvorova, Ph.D., our Senior Vice President and Chief Scientific Officer, pursuant to which:

- Advirna has assigned its existing patent and technology rights related to sd-rxRNA technology in exchange for an annual $100,000 maintenance fee and a one-time $350,000 milestone payment to Advirna upon the future issuance of the first patent with valid claims covering the assigned technology;
- We will be required to pay a 1% royalty to Advirna for any licensing revenue received by RXi on the license of the assigned Advirna technology;
- We have granted back to Advirna a license under the assigned technology for fields of use outside the fields of human therapeutics and diagnostics; and
- We have agreed to issue to Advirna, upon the completion of the spin-off transaction, a number of shares of our common stock equal to approximately 5% of the fully diluted shares of RXi common stock upon completion of the spin-off transaction.

"See Business — Intellectual property — Other Technology Agreements; Advirna" on page 55 of this prospectus for more information about our license from Advirna.

Compensatory Arrangements with Certain Officers

On September 24, 2011, we entered into employment agreements with Anastasia Khvorova, Ph.D., and Pamela Pavco, Ph.D., pursuant to which:

- Dr. Khvorova serves as our Senior Vice President and Chief Scientific Officer at an annual salary of $310,000 and is entitled to a grant of stock options to purchase 2% of the fully diluted common stock after the spin-off transaction at an exercise price per share to be determined based on the fair value of our common stock at the date of grant; the options will be subject to vesting in equal monthly installments over the four-year period following the effective date of her employment, subject to accelerated vesting in some events; and
- Dr. Pavco serves as our Senior Vice President of Pharmaceutical Development at an annual salary of $300,000 and also is entitled to a grant of stock options to purchase 2% of the fully diluted common stock after the spin-off transaction at an exercise price per share to be determined based on the fair value of RXi common stock at the date of grant; the options will be subject to vesting in equal monthly installments over the four-year period following the effective date of her employment, subject to accelerated vesting in some events.

Trading Market

Galena currently owns all outstanding shares of our common stock, and there is no current public market for our common stock. We will apply for trading of our common stock in the OTC Markets Group under the symbol "RXII" in conjunction with the effectiveness of the registration statement of which this prospectus is a part. We expect that our common stock will begin trading in the OTC Markets Group following the distribution. We cannot predict, however, the extent to which investors' interest will lead to a liquid trading market or whether the market price of our common stock will be volatile. Prices will be determined by the marketplace and may bear no relationship to the book

value per share or other common indicators of the value of our common stock. The future prices at which trading in shares of our common stock occurs may fluctuate significantly. These prices may be influenced by the factors disclosed in the "Risk Factors" section of this prospectus. In addition, the stock market in general has experienced extreme price and volume fluctuations that have affected the market price of many stocks and that have often been unrelated or disproportionate to the operating performance of these companies.

Shares of our common stock that you will receive in the distribution will be freely tradable, except if you are considered an "affiliate" of ours under Rule 144 under the Securities Act. Persons who can be considered our affiliates after the distribution generally include individuals or entities that directly, or indirectly through one or more intermediaries, control, are controlled by, or are under common control with us, and may include our directors, executive officers and principal stockholders. Our affiliates may only sell common stock received in the distribution under:

- A registration statement that the SEC has declared effective under the Securities Act; or
- An exemption from registration under the Securities Act, such as the exemption afforded by Rule 144, as summarized below in "Shares Eligible for Future Sale."

Trading of Galena Shares Between the Record Date and Distribution Date

Beginning on or shortly before the record date and continuing up to and including the distribution date, there will be two markets in Galena common stock: a "regular-way" market and an "ex-distribution" market. Shares of Galena common stock that trade on the "regular-way" market will trade with an entitlement to our shares of common stock distributed pursuant to the distribution. Shares that trade on the "ex-distribution" market will trade without an entitlement to our shares of common stock distributed pursuant to the distribution. Therefore, if you sell shares of Galena common stock in the "regular-way" market up to and including the distribution date, you will be selling your right to receive shares of our common stock in the distribution. If you own shares of Galena common stock at the close of business on the record date and sell those shares on the "ex-distribution" market, up to and including through the distribution date, you will still receive the shares of our common stock that you would be entitled to receive pursuant to your ownership of the shares of Galena common stock.

Reason for Furnishing this Prospectus

This prospectus is being furnished to provide information to Galena's stockholders who are entitled to receive shares of RXi common stock in the distribution of such shares by Galena. This prospectus is not, and is not to be construed as, an inducement or encouragement to buy, hold or sell RXi common stock or Galena common stock.

We believe that the information in this prospectus is accurate as of the date set forth on the cover page. Changes may occur after that date, and neither RXi nor Galena undertakes any obligation to update such information except in the normal course of its respective public disclosure obligations.

USE OF PROCEEDS

We will not receive any proceeds as a result of the distribution of our shares of common stock by Galena.

DIVIDEND POLICY

Immediately following the record date for the distribution, will declare and pay a 236,708-for -1 stock dividend with respect to our outstanding common stock. Unless otherwise indicated, all share data in this prospectus give retroactive effect to this stock dividend.

We 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. Additionally, our ability to pay future dividends is subject to the terms of our Series A Preferred Stock and may be restricted by the terms of any future credit facility or other debt financing to which we are a party.

CAPITALIZATION

The following table presents our capitalization as of September 30, 2011 on (1) an actual unaudited historical basis and (2) an unaudited as adjusted basis to give effect to a 236,708 - for - 1 stock split effected by us immediately following the record date for the distribution, the distribution of our common stock described in this prospectus and the purchase by TCP and RTW of a total of $9,500,000 of our Series A Preferred Stock, which purchase is described above under "Prospectus Summary." The following table excludes shares of our common stock that will be issuable upon the exercise of stock options that may be granted to our directors and officers, including stock options to be granted to Anastasia Khvorova, Ph.D. and Pamela Pavco, Ph.D. as described in the "Executive Compensation—Employment Agreements" section of this prospectus.

You should read the information below in connection with our financial statements and related notes and the "Management's Discussion and Analysis of Financial Condition and Results of Operations" section of this prospectus.

	As of September 30, 2011	
	Actual	As Adjusted
	(unaudited)	
	(Amounts in thousands)	
Cash and cash equivalents	$ 422	$ 9,422
Convertible notes payable	$ 500	$ —
Stockholders' equity:		
Series A Convertible Preferred Stock, $0.0001 par value; no shares authorized or issued and outstanding (actual); 9,500 shares authorized and issued and outstanding (as adjusted)	$ —	$ 9,500
Common stock, $0.0001 par value; 1,000 shares authorized and 100 shares issued and outstanding (actual); 1,500,000,000 shares authorized and 100,600,887 shares issued and outstanding (as adjusted)	$ —	$ 10
Deficit accumulated during development stage(1)	$ (1,814)	$ (1,824)
Total stockholders' equity (deficit)	$ (1,814)	$ 7,686
Total capitalization (deficit)	$ (1,314)	$ 7,686

(1) This amount includes the deficit of the Predecessor (RNAi) and RXi (Registrant) from inception.

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

You should read the following discussion in conjunction with our financial statements and the notes to financial statements included elsewhere in this prospectus. This discussion contains forward-looking statements that reflect our plans, estimates and beliefs. Our actual results could differ materially from those discussed in the forward-looking statements as a result of various factors discussed below and elsewhere in this prospectus, particularly in the "Risk Factors" and "Forward-Looking Statements" sections.

Overview

We are a biotechnology company focused on discovering, developing and commercializing innovative therapies addressing major unmet medical needs using RNAi-targeted technologies. We are pursuing proprietary therapeutics based on RNA interference ("**RNAi**"), a naturally occurring cellular mechanism that has the potential to effectively and selectively interfere with, or "silence," expression of targeted disease-associated genes.

Certain human diseases result from overexpression of one or more genes. We believe that these types of human diseases can potentially be treated by silencing (reducing) the overexpressed genes. While no therapeutic RNAi products have been approved by the Food and Drug Administration ("FDA") to date, there has been significant interest in the field of RNAi therapeutic development. This interest is driven by the potential ability to use RNAi to develop lead compounds that specifically and selectively inhibit single target genes, many of which are thought to be incapable of being inhibited by other modalities. RXI-109, our first RNAi product candidate, is a dermal anti-scarring therapy that targets connective tissue growth factor ("**CTGF**"). We are currently working towards filing an investigational new drug application ("**IND**") for RXI-109 and commencing a Phase I/II clinical trial in 2012. Because abnormal overexpression of CTGF is implicated in dermal scarring and fibrotic disease, we believe that RXI-109 or other CTGF-targeting RNAi compounds may be able to treat other indications, including pulmonary fibrosis, liver fibrosis, acute spinal injury, ocular scarring and restenosis. We intend to maintain our core RNAi discovery and development capability and to develop products both on our own and through collaborations.

Research and Development

To date, our research programs have focused on identifying product candidates and optimizing the delivery method and technology necessary to make RNAi compounds available by local, systemic or oral administration, as appropriate for disease for which we intend to develop an RNAi therapeutic. Since we commenced operations, research and development has comprised a significant proportion of our total operating expenses and is expected to comprise the majority of our spending for the foreseeable future.

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

- Our ability to advance product candidates into 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.

License Agreements

We have entered into licensing relationships with academic institutions, research foundations and commercial entities, and may seek to enter into additional licenses with pharmaceutical and biotechnology companies. We also may enter into strategic alliances to expand our intellectual property portfolio and to potentially accelerate our development programs by gaining access to technology and funding, including equity sales, license fees and other revenues. For each product that we develop that is covered by the patents licensed to us including our material licenses discussed elsewhere in this prospectus, we are obligated to make additional payments upon the attainment of certain specified product development milestones. See the "Business — Intellectual Property" section of this prospectus for information on our material license agreements.

Critical Accounting Policies and Estimates

Predecessor's Financial Statements and Carve-Out Financial Statements

Prior to December 31, 2010, Galena was engaged primarily in conducting discovery research and preclinical development activities based on RNAi, and Galena's financial statements for periods prior to December 31, 2010 reflected solely the assets, liabilities and results of operations attributable to Galena's RNAi-based assets, liabilities and results of operations. Subsequent to December 31, 2010, but prior to September 30, 2011, Galena broadened its strategic direction by adding the development and commercialization of cancer therapies that utilize peptide-based immunotherapy products, including a main product candidate, NeuVax, for the treatment of various cancers. On September 24, 2011, Galena contributed to RXi, a newly formed subsidiary of Galena, substantially all of Galena's RNAi-related technologies and assets. The newly formed RXi was incorporated on September 8, 2011 with the issuance of 100 initial shares at a price of $0.01 per share for total consideration of $1.00. RXi was not engaged in any activities other than its initial incorporation from September 8, 2011 to September 23, 2011.

Accordingly, the historical financial information for the nine-month periods ended September 30, 2011 and 2010, the fiscal years ended December 31, 2010 and 2009, as well as the cumulative period from inception (January 1, 2003) through September 30, 2011, has been "carved-out" of the financial statements of Galena, as our "Predecessor (RNAi)," for such periods, and includes activities through September 23, 2011. Such financial information is limited to Galena's RNAi-related activities, assets and liabilities only, and excludes activities, assets and liabilities that are attributable to Galena's cancer therapy activities. The financial information for the periods ended September 30, 2011 also includes the results of RXi, "Registrant," for the period from September 24, 2011 to September 30, 2011. RXi was formed on September 8, 2011 and was not engaged in any activities other than its initial incorporation from September 8, 2011 to September 23, 2011. The Company has also included the balance sheet of RXi (Registrant) as of September 8, 2011, the date of incorporation. There was no other activity on that date. Accordingly, no statement of expenses or cash flows has been presented for the period ended September 8, 2011.

The carved-out financial information includes both direct and indirect expenses. The historical direct expenses consist primarily of the various costs for technology license agreements, sponsored research agreements, fees paid to scientific advisors and employee expenses of employees directly involved in RNAi-related activities. Indirect expenses represent employee expenses incurred by Galena that were allocable to the RNAi business. The indirect expenses are based upon (1) estimates of the percentage of time spent by Galena employees working on RNAi business matters and (2) allocations of various expenses associated with the employees, including salary, benefits, rent associated with the employees' office space, accounting and other general and administrative expenses. The percentage of time spent by Galena employees was multiplied by these allocable expenses to arrive at the total employee expenses allocable to the RNAi business and reflected in the carved out financial statements. Management believes the assumptions underlying the carve-out financial information are reasonable; however, the financial position, expenses and cash flows may have been materially different if the RNAi business had operated as a stand-alone entity during the periods presented.

The information presented as of and for the nine-month periods ended September 30, 2011 and 2010, respectively, is unaudited and has been prepared on the same basis as the audited financial statements and includes all adjustments, consisting of only normal recurring adjustments necessary for the fair presentation of this information in all material respects. The results of any interim period are not necessarily indicative of the results of operations to be expected for a full fiscal year.

We have generated no revenues since our inception, and anticipate that no revenues will be generated for the year ending December 31, 2012. Accordingly, for accounting purposes we are considered a development stage company.

Use of Estimates

Management's discussion and analysis of our financial condition and results of operations include the financial statements as of and for the years ended December 31, 2010 and 2009 and as of and for the nine months ended September 30, 2011 and 2010. The preparation of these financial statements required management to make estimates, allocations and judgments that affected the reported amounts of assets, liabilities, revenues and expenses, and related disclosure of contingent assets and liabilities. On an ongoing basis, management evaluates its estimates, including those related to impairment of long-lived assets, accrued liabilities and certain expenses. We base our estimates about the carrying values of assets and liabilities that are not readily apparent from other sources on historical experience and on other assumptions believed to be reasonable under the circumstances. Actual results may differ materially from these estimates under different assumptions or conditions. Additionally, the financial information included here may not necessarily reflect the financial position, operating results, changes in our invested equity and cash flows in the future or what they would have been had we been a separate, stand-alone entity during the periods presented.

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

Research and Development Expenses

Research and development costs are expensed as incurred. Included in research and development costs are wages, benefits and other operating costs, facilities, supplies, external services and overhead directly related to our research and development departments as well as costs to acquire technology licenses.

Stock-Based Compensation

The following stock-based compensation information relates to stock options issued by Galena. Stock-based compensation expense is allocated to the carved-out financial statements based on an estimate of time spent by galena employees, board members, scientific advisory board members and outside consultants on RXi related matters. Galena follows the provisions of the Financial Accounting Standards Board ("**FASB**") Accounting Standards Codification ("**ASC**") Topic 718, " *Compensation — Stock Compensation* " ("**ASC 718**"), which requires the measurement and recognition of compensation expense for all share-based payment awards made to employees, non-employee directors and consultants, including employee stock options. Stock compensation expense based on the grant date fair value estimated in accordance with the provisions of ASC 718 is recognized as an expense over the requisite service period.

For stock options granted as consideration for services rendered by non-employees, Galena recognizes compensation expense in accordance with the requirements of FASB ASC Topic 505-50 ("**ASC 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 vesting period of the underlying stock options. At the end of each financial reporting period prior to vesting, the value of these options, as calculated using the Black-Scholes option-pricing model, will be re-measured using the fair value of our 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.

With respect to options to acquire its common stock granted by our predecessor, Galena, during the nine months ended September 30, 2011 and 2010 and the years ended December 31, 2010 and 2009 and reflected in the financial statements that are included in this prospectus, the fair value of each option grant is estimated using the Black-Scholes option-pricing model, with the following weighted average assumptions:

	For the Nine Months ended September 30,	
	2011	**2010**
Weighted average risk-free interest rate	1.59%	3.02%
Weighted average expected volatility	103.27%	121.19%
Weighted average expected lives (years)	5.49	7.37
Weighted average expected dividend yield	0.00%	0.00%

Galena's expected common stock price volatility assumption was based upon the volatility of a basket of comparable companies. The expected life assumptions for employee grants were based upon the simplified method provided for under ASC 718, which averages the contractual term of our options of ten years with the average vesting term of four years for an average of six years. The expected life assumptions for non-employees were based upon the contractual term of the option. The dividend yield assumption of zero was based upon the fact that we have never paid cash dividends and presently have no intention of paying cash dividends in the future. The risk-free interest rate used for each grant was also based upon prevailing short-term interest rates.

The financial statements reflect an estimated annualized forfeiture rate of 15.0% for options granted to employees, and 8.0% for options granted to senior management and no forfeiture rate for the directors. An additional expense was recorded if the actual forfeitures were lower than estimated and a recovery of prior expense was recorded if the actual forfeiture rates were higher than estimated.

Derivative Financial Instruments

During the normal course of business, from time to time, Galena issues warrants and options to vendors as consideration to perform services. Galena may also issue warrants as part of a debt or equity financing. The Company does not enter into any derivative contracts for speculative purposes.

We recognize all derivatives as assets or liabilities measured at fair value with changes in fair value of derivatives reflected as current period income or loss unless the derivatives qualify for hedge accounting and are accounted for as such. During the period ended September 30, 2011 and the years ended December 31, 2010 and 2009, Galena issued derivatives to purchase 17,950,000, 540,000 and 978,142 shares of its common stock, respectively, in connection with an equity transaction. In accordance with ASC Topic 815-40, "*Derivatives and Hedging — Contracts in Entity's Own Stock*" ("ASC 815-40"), the value of these derivatives is required to be recorded as a liability, as the holders have an option to put the derivatives back to Galena in certain events, as defined.

Results of Operations for the Nine Months Ended September 30, 2011 and 2010

For the nine months ended September 30, 2011, our net loss was approximately $7,766,000 compared with a net loss of $10,162,000 for the nine months ended September 30, 2010. Reasons for the variations in the losses between the two periods are discussed below.

Results of Operations for the Years Ended December 31, 2010 and 2009

For the year ended December 31, 2010, our net loss was approximately $11,993,000, compared with a net loss of $18,387,000 for the year ended December 31, 2009. Reasons for the variations in the losses between the years are discussed below.

Revenues

Since we are a development-stage biopharmaceutical company, we have not generated any revenues since inception.

Research and Development Expense (in thousands)

	For the Nine Months Ended September 30,	
	2011	2010
Research and development expense	$ 4,652	$ 4,589
Research and development employee stock-based compensation expense	471	814
Research and development non-employee stock-based compensation expense	(49)	723
Total research and development expense	$ 5,074	$ 6,126

	For the Years Ended December 31,	
	2010	2009
Research and development expense	$ 6,046	$ 6,728
Research and development employee stock-based compensation expense	1,084	867
Research and development non-employee stock-based compensation expense	743	1,297
Total research and development expense	$ 7,873	$ 8,892

Research and development expense consists primarily of compensation-related costs for our employees dedicated to research and development activities and for our Scientific Advisory Board ("**SAB**") members as well as licensing fees, patent prosecution costs and the cost of lab supplies used in our research and development programs. We expect to continue to devote a substantial portion of our resources to research and development programs. We expect research and development expenses to increase as we expand our research and development activities.

Research and development expenses were approximately $5,074,000 for the nine months ended September 30, 2011, compared with $6,126,000 for the nine months ended September 30, 2010. The decrease of $1,052,000, or 17%, was due primarily to decreases of $772,000 in non-employee non-cash stock based compensation and $343,000 in employee non-cash stock based compensation, which decreases were partially offset by an increase of $63,000 in research and development cash expenses associated with ocular and dermal anti-scarring related studies and reduction-in-force expenses.

Research and development expenses for the year ended December 31, 2010 were approximately $7,873,000 as compared to $8,892,000 for the year ended December 31, 2009. The decrease of $1,019,000, or 11%, was primarily due to decreases of $554,000 in non-employee non-cash stock based compensation and $682,000 in research and development cash expenses related to the timing of patent applications and prosecution on internal discoveries, which decreases were partially offset by an increase of $217,000 in costs associated with employee non-cash stock based compensation primarily related to timing and changes in Galena Black-Scholes assumptions.

Research and Development Non-Employee Stock-Based Compensation Expense

Galena issued options to purchase shares of its common stock as compensation to SAB members and consultants. For financial statement purposes, these shares were valued at their fair value. Fluctuations in non-employee stock-based compensation expense results from variations in the number of common stock options issued, vesting schedules and the Black-Scholes fair values of common stock options granted to SAB members.

General and Administrative Expense (in thousands)

	For the Nine Months Ended September 30,	
	2011	2010
General and administrative expenses	$ 3,527	$ 4,228
Fair value of Parent Company common stock warrants issued for general and administrative expense	91	654
Fair value of Parent Company common stock issued in exchange for general and administrative expense	23	—
General and administrative employee stock-based compensation expense	1,565	1,921
Total general and administrative expense	$ 5,206	$ 6,803

	For the Years Ended December 31,	
	2010	2009
General and administrative expenses	$ 5,493	$ 5,483
Fair value of Parent Company common stock warrants issued for general and administrative expense	718	826
Fair value of Parent Company common stock issued in exchange for general and administrative expense	—	281
General and administrative employee stock-based compensation expense	2,541	2,038
Total general and administrative expense	$ 8,752	$ 8,628

General and administrative expenses include compensation-related costs for our employees dedicated to general and administrative activities, legal fees, audit and tax fees, consultants and professional services and general corporate expenses.

General and administrative expenses were approximately $5,206,000 for the nine months ended September 30, 2011, compared with $6,803,000 for the nine months ended September 30, 2010. The decrease of $1,597,000, or 23%, was primarily due to decreases of $563,000 in non-cash stock based compensation related to business advisory services, $356,000 in employee non-cash stock based compensation and $701,000 in general and administrative expenses due to severance payments in connection with a reduction-in-force offset, which decreases were partially offset by a $23,000 increase in non-cash stock based compensation expense.

General and administrative expenses were $8,752,000 for the year ended December 31, 2010 compared with $8,628,000 for the year ended December 31, 2009. The increase of $124,000, or 1%, was primarily due to an increase in headcount, including $2,541,000 in non-cash stock based compensation expense in 2010 compared to $2,038,000 in 2009, which increase was partially offset by a decrease of $108,000 in stock based compensation related to business advisory services, as well as the expensing in 2009 of shares related to a standby equity distribution agreement.

Interest Income (Expense)

Interest income (expense) was negligible for both the nine months ended September 30, 2011 and September 30, 2010 and the years ended December 31, 2010 and December 31, 2009. The key objectives of our investment policy are to preserve principal and ensure sufficient liquidity, so our invested cash may not earn as high a level of income as longer-term or higher risk securities, which generally have less liquidity and more volatility. The interest rates available on lower risk, shorter-term investments in today's market are lower than rates available in the prior period.

Other Income (expense)

Other income (expense) is summarized as follows (in thousands):

	For the Nine Months Ended September 30,	
	2011	2010
Change in fair value of derivatives issued	$ 2,513	$ 2,762
Other income (expense), net	$ 2,513	$ 2,762

	For the Years Ended December 31,	
	2010	2009
Change in fair value of derivatives issued	$ 3,049	$ (858)
Reduction of potential redemption liability	785	—
Other income	793	(4)
Other income (expense), net	$ 4,627	$ (862)

Other income (expense) for the nine months ended September 30, 2011 was approximately $2,513,000, which was attributable to a non-cash gain from a change in the fair value of the derivatives issued in connection with several transactions in 2009, 2010 and 2011. Other income and expense for the nine months ended September 30, 2010 includes $2,762,000 in non-cash income related to a gain on the change in the fair value of derivatives issued in connection with several transactions in 2009 and 2010.

Other income (expense) was $4,627,000 and $(862,000) for the years ended December 31, 2010 and 2009, respectively. The overall increase of $5,489,000, or 637%, was due to an increase of $3,907,000 attributable to the change in fair value of derivatives issued, the reduction of potential redemption liability of $785,000 and an increase of $797,000 of other income, representing primarily an increase in grant income.

Income Taxes

There was no income tax expense for the nine months ended September 30, 2011 and September 30, 2010 and the years ended December 31, 2010 and 2009 due to the fact that we have incurred significant tax losses since we began operations. A tax benefit would have been recorded for losses however, due to the uncertainty of realizing these assets, a valuation allowance was recognized which fully offset the deferred income tax assets.

Liquidity and Capital Resources

Overview

We had cash and cash equivalents of approximately $6.9 million as of December 31, 2010, $0.4 million as of September 30, 2011 and $1.4 million as of November 30, 2011. Our cash and cash equivalents as of November 30, 2011 included the remaining proceeds of the $1,500,000 capital contribution to us by Galena and of the initial $500,000 of bridge loans provided by TCP and RTW.

We have not generated revenue to date and may not generate product revenue in the foreseeable future, if ever. We expect to incur significant operating losses as we advance our product candidates through the drug development and regulatory process. We will need to generate significant revenues to achieve profitability and might never do so. In the absence of product revenues, our potential sources of operational funding are expected to be the proceeds from the sale of equity, funded research and development payments and payments received under partnership and collaborative agreements.

The newly formed RXi was incorporated on September 8, 2011 with the issuance of 100 initial shares at a price $0.01 per share for a total consideration of $1.00. On September 24, 2011, RXi entered into a contribution agreement with Galena pursuant to which, among other things, Galena assigned and contributed to RXi all of its RNAi-related technologies and assets. Also on this date, derivative liabilities amounting to $9,249,000 related to warrants exercisable for Galena common stock were reclassified to divisional deficit, as RXi was released of any obligation to settle these liabilities upon the signing of this agreement. Contemporaneously, the divisional deficit was eliminated in a recapitalization to reflect the capital structure of the newly formed RXi entity.

On September 24, 2011, we entered into a securities purchase agreement pursuant to which TCP and RTW agreed to purchase a total of $9,500,000 of our Series A Preferred Stock at the closing of our spin-off from Galena and to lend to us up to $1,500,000 to fund our operations between September 24, 2011 and the closing of the spin-off transaction, with the outstanding principal and accrued interest from the loans to be converted into shares of our preferred stock at the closing. As of November 30, 2011, TCP and RTW have advanced $500,000 to RXi under this bridge loan arrangement. We believe that the cash to be received under the securities purchase agreement should be sufficient to fund our operations through December 31, 2012. In the future, we will be dependent on obtaining funding from third parties, such as proceeds from the 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. If we fail to obtain additional funding when needed, we would be forced to scale back, or terminate, our operations or to seek to merge with or to be acquired by another company.

Net Cash Flow from Operating Activities

Net cash used in operating activities was approximately $7,179,000 for the nine months ended September 30, 2011, compared with $8,388,000 for the nine months ended September 30, 2010. The decrease of approximately $1,209,000 resulted primarily from a net loss of $7,766,000, of which $1,987,000 related to stock-based compensation, $124,000 related to depreciation, $900,000 related to the loss on exchange of equity instruments, $3,413,000 that reflects derivatives issued in financings completed by Galena in 2009, 2010 and 2011 and $875,000 related to changes in current assets and liabilities.

Net cash used in operating activities was approximately $10,257,000 for the year ended December 31, 2010 compared with $11,769,000 net cash used in operating activities for the year ended December 31, 2009.

The decrease of approximately $1,512,000 resulted primarily from a net loss of $11,993,000, less the add back of non-cash items of $1,424,000, of which $4,368,000 related to stock-based compensation, $718,000 related to stock based compensation expense in exchange for services, $785,000 related to a reduction of potential redemption liability, $172,000 related to depreciation and $312,000 related to changes in current assets and liabilities and $3,049,000 that reflects the fair value of derivatives issued with the registered direct financings completed by Galena in 2009 and 2010.

Net Cash Flow from Investing Activities

Net cash used in investing activities was approximately $53,000 for the nine months ended September 30, 2011, compared with $6,055,000 for the nine months ended September 30, 2010. The decrease was due to $53,000 in purchases of equipment and furnishings in 2011 compared with $5,990,000 in short-term investments and $65,000 in purchases of equipment and furnishing for the same period in 2010.

Net cash used in investing activities was approximately $106,000 for the year ended December 31, 2010, compared with net cash used in investing activities of $83,000 for the year ended December 31, 2009. The increase of approximately $23,000 in cash used in investing activities was primarily due to purchases of equipment and furnishings in 2010.

Net Cash Flow from Financing Activities

Net cash provided by financing activities was $763,000 for the nine months ended September 30, 2011, compared with net cash provided by financing activities of $11,595,000 for the nine months ended September 30, 2010. The decrease was primarily due to net cash distributions to Galena in the amount of $369,000 and proceeds of $500,000 from a convertible note in 2011 compared with net cash contributions from Galena of $11,640,000 in 2010.

Net cash provided by financing activities was $11,570,000 for the year ended December 31, 2010, compared with $7,680,000 for the year ended December 31, 2009. This increase was primarily due to net cash contributions from Galena of $11,640,000 in 2010 compared to $7,714,000 in 2009.

Recently Issued Accounting Standards

Effective January 1, 2010, the Company adopted Accounting Standards Update (ASU) No. 2010-06, *Fair Value Measurements and Disclosures (Topic 820): Improving Disclosures about Fair Value Measurements*, or ASU 2010-06. A reporting entity should provide additional disclosures about the different classes of assets and liabilities measured at fair value, the valuation techniques and inputs used, the activity in Level 3 fair value measurements, and the transfers between Levels 1, 2, and 3 fair value measurements. The adoption of the additional disclosures for Level 1 and Level 2 fair value measurements did not have an impact on the Company's financial position, results of operations or cash flows. The disclosures regarding Level 3 fair value measurements were adopted by the Company January 1, 2011 and did not have an impact on the Company's financial position, results of operations or cash flows or require additional disclosures.

Effective January 1, 2010, the Company adopted ASU No. 2009-17, *Consolidations (Topic 810): Improvements to Financial Reporting by Enterprises Involved with Variable Interest Entities,* or ASU 2009-17. The amendments in this update replace the quantitative-based risks and rewards calculation for determining which reporting entity, if any, has a controlling financial interest in a variable interest entity with an approach focused on identifying which reporting entity has the power to direct the activities of a variable interest entity that most significantly impact the entity's economic performance and (1) the obligation to absorb losses of the entity or (2) the right to receive benefits from the entity. An approach that is expected to be primarily qualitative will be more effective for identifying which reporting entity has a controlling financial interest in a variable interest entity. The amendments in this update also require additional disclosures about a reporting entity's involvement in

variable interest entities, which will enhance the information provided to users of financial statements. The Company evaluated its business relationships to identify potential variable interest entities and has concluded that consolidation of such entities is not required for the periods presented. On a quarterly basis, the Company will continue to reassess its involvement with variable interest entities.

In December 2010, the FASB issued ASC Update 2010-29, *Business Combinations (Topic 805) - Disclosure of Supplementary Pro Forma Information for Business Combinations* (Update No. 2010-29). This update requires a public entity to disclose pro forma information for business combinations that occurred in the current reporting period. The disclosures include pro forma revenue and earnings of the combined entity for the current reporting period as though the acquisition date for all business combinations that occurred during the year had been as of the beginning of the annual reporting period. If comparative financial statements are presented, the pro forma revenue and earnings of the combined entity for the comparable prior reporting period should be reported as though the acquisition date for all business combinations that occurred during the current year had been as of the beginning of the comparable prior annual reporting period. This update affects any public entity that enters into business combinations that are material on an individual or aggregate basis and is effective prospectively for business combinations for which the acquisition date is on or after the beginning of the first annual reporting period beginning on or after December 15, 2010. The Company adopted update No. 2010-29 beginning January 1, 2011. The Company does not expect this standard will have a material impact on its financial statements.

In May 2011, the FASB issued a new accounting standard that clarifies the application of certain existing fair value measurement guidance and expands the disclosures for fair value measurements that are estimated using significant unobservable (Level 3) inputs. This new standard is effective on a prospective basis for annual and interim reporting periods beginning on or after December 15, 2011. The Company does not expect that adoption of this new standard will have a material impact on its financial statements.

In February 2010, the FASB issued ASC Update No. 2010-09, *Subsequent Events (Topic 855) Amendments to Certain Recognition and Disclosure Requirements (Update No. 2010-09).* This update requires SEC registrants to evaluate subsequent events through the date that the financial statements are issued and removes the requirement to disclose the date through which management evaluated subsequent events. This guidance was effective immediately upon issuance.

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 Other*s." To date, we have not encountered material costs as a result of such obligations and have not accrued any liabilities related to such obligations and have not accrued any liabilities related to such obligations in our financial statements. See Note 7 to our audited financial statements included in this prospectus for further discussion of these indemnification agreements.

BUSINESS

Overview

We are a biotechnology company focused on discovering, developing and commercializing innovative therapies addressing major unmet medical needs using RNAi-targeted technologies. We are pursuing proprietary therapeutics based on RNA interference ("**RNAi**"), which is a naturally occurring cellular mechanism that has the potential to effectively and selectively interfere with, or "silence," expression of targeted disease-associated genes. Our principal executive offices are located at 60 Prescott Street, Worcester, Massachusetts 01605, and our telephone number is (508) 767-3861. Prior to September 24, 2011, our business was operated as an unincorporated division within Galena. We were incorporated in Delaware as a wholly owned subsidiary of Galena on September 8, 2011.

Certain human diseases result from overexpression of one or more genes. We believe that these types of human diseases can potentially be treated by silencing (reducing) the overexpressed genes. While no therapeutic RNAi products have been approved by the Food and Drug Administration ("**FDA**") to date, there has been significant interest in the field of RNAi therapeutic development. This interest is driven by the potential ability to exploit the RNAi mechanism to develop lead compounds that specifically and selectively reduce single target genes, many of which are thought to be incapable of being inhibited by other modalities. We are currently focusing our internal therapeutic development efforts in fibrosis. We have demonstrated that treatment with RXI-109, our first RNAi product candidate, can significantly reduce CTGF (connective tissue growth factor) *in vivo* in rodent skin models, and we believe that RXI-109 may inhibit CTGF in human fibrotic disease. RXI-109 is initially being developed as a dermal anti-scarring therapy. The highlights of our RXI-109 development program are the following:

- We are currently working towards filing an investigational new drug application ("**IND**") for RXI-109 and initiating a Phase I/II clinical trial in 2012.
- As reported in Cytokine & Growth Factor Reviews (2008) and other publications, CTGF overexpression is implicated in scarring and fibrotic diseases. Data obtained from studies of RXI-109 in preclinical models using direct local administration to the skin demonstrate robust cellular delivery and statistically significant, dose-dependent silencing of CTGF that lasts for at least one week with a single injection.
- We believe that the potential commercial market for an effective dermal anti-scarring therapy is significant. According to data available publicly on the Center for Disease Control's ("**CDC**") website at www.CDC.gov, approximately 42 million surgical procedures are performed annually, with many patients experiencing hypertrophic scarring and keloids.
- Because abnormal overexpression of CTGF is implicated in dermal scarring and fibrotic disease, we believe that RXI-109, or other CTGF-targeting compounds that reduce CTGF or block its action, may be able to treat many other indications where fibrosis is a factor. These include pulmonary, liver, and renal fibrotic diseases, as well as ocular scarring, acute spinal injury (where scarring impedes regeneration) and restenosis (a complication arising from vessel damage following stent placement). If clinical studies of RXI-109 produce successful results in dermal anti-scarring, we may explore opportunities in these indications as well as other dermatology applications.

We intend to maintain our core RNAi discovery and development capability and to develop products both on our own and through collaborations. By utilizing our expertise in RNAi and the comprehensive RNAi platform that we have established, we believe we will be able to discover and develop lead compounds and progress them into and through clinical development for potential commercialization. Our proprietary therapeutic platform is comprised of two main components:

- *Novel RNAi Compounds*, referred to as rxRNA® compounds, that are distinct from, and we believe convey significant advantages over, classic siRNA (conventionally-designed "small interfering RNA" compounds), and offer many of the properties that we believe are important to the clinical development of RNAi-based drugs. We have developed a number of unique forms of rxRNA compounds, all of which have been shown to be highly potent both *in vitro* and in preclinical *in vivo* models. These RNAi compounds include rxRNAori®, rxRNAsolo® and sd-rxRNA®, or "self-delivering" RNA. Based on our research, we believe that these different, novel siRNA configurations have various potential advantages for therapeutic use. These potential advantages include high potency, increased resistance to nucleases and off-target effects, and, in the case of the sd-rxRNA compounds, access to cells and tissues with no additional formulation required.
- *Advanced Delivery Technologies* that enable the delivery of our rxRNA® compounds to potentially treat a variety of acute and chronic diseases using both local and systemic approaches, potentially providing a competitive advantage in the development of many RNAi therapeutic compounds. Our suite of delivery technologies is comprised of delivery vehicles, which can be combined with various rxRNA® compounds, as well as sd-rxRNA® compounds, which are chemically modified and have the unique property of entering cells and tissues to effect silencing without the need for any additional delivery vehicle. This suite of delivery technologies has broad applications for multiple therapeutic areas targeting both local and systemic applications for the delivery of the RNAi drug.

According to a recent review of "Current prospects for RNA interference-based therapeutics" published in Nature Reviews Genetics in 2011 and other sources (clinicaltrials.gov), many human diseases, including TTR Amyloidosis, Hepatocelular Carcinoma, Hypercholesterolaemia, Fibrosis and Age Related macular degeneration, in which the over-expression of a particular gene is known to be a contributing factor, might be targeted using RNAi-based therapeutics.

Recent Business Developments

During 2011, we announced several important developments that are outlined below.

- In November 2010, we announced that the United States Internal Revenue Service awarded us four Therapeutic Discovery Project, or TDP, grants totaling $977,917 as part of the Patient Protection and Affordable Care Act of 2010. The TDP grants were awarded in four equal amounts for developing: (1) sd-rxRNAi® therapeutics for fibrotic disease; (2) sd-rxRNAi® therapeutics for age-related macular degeneration; (3) sd-rxRNAi® therapeutics for ALS (Lou Gehrig's disease); and (4) glucan-encapsulated siRNAs that can be delivered orally for rheumatoid arthritis.
- In January 2011, we announced positive research results in collaboration with Generex Biotechnology Corporation, and its wholly owned subsidiary Antigen Express, Inc., in developing proprietary vaccine formulations for active immunotherapy. Initial results demonstrated success in using sd-rxRNA® compounds to silence genes up to 80% in hematopoietic cells. The ability to reduce expression of certain genes in isolated hematopoietic-derived cancer cells (*ex vivo*) has the potential to convert them into specific immune-stimulants.
- In January 2011, we announced positive initial results as part of our collaboration with miRagen Therapeutics, Inc. in creating microRNA mimics, or artificial copies of microRNAs, using our sd-rxRNA® technology. In particular, the collaboration demonstrated efficient down-regulation of a reporter gene (*in vitro*) whose expression is controlled by the microRNA in cell culture model systems develop by miRagen. Increasing the level of particular microRNAs by using therapeutic mimics may treat certain diseases, including cardiovascular, cancer, and inflammatory, fibrotic and metabolic disorders.
- In February 2011, we announced the initiation of our development program for RXI-109. IND-enabling toxicology studies of RXI-109 are currently underway and the manufacturing of the clinical drug supply is ongoing. We are on track for an IND submission and a Phase I/II trial in 2012.
- In March 2011, we announced new preclinical data using our proprietary sd-rxRNA® compounds, including RXI-109. We announced preclinical *in vivo* data showing robust, dose dependent, long-lasting, target-specific silencing data with an sd-rxRNA® compound targeting CTGF. Included in these new data were our preclinical results using intradermal injection of CTGF targeting sd-rxRNAs® that showed strong silencing for more than a week, as well as downstream effects related to abrogation of scar formation.
- In April 2011, we announced that the National Institutes of Health ("NIH") awarded us two Small Business Innovation Research grants totaling approximately $580,000. The first grant was in the amount of $304,559 to provide funding for an ongoing collaboration between us and Robert Brown, M.D., D.Phil., Chair of the Department of Neurology at UMASS, which is focused on the preclinical development of novel RNAi therapeutics for ALS and other neurodegenerative disorders. The second grant was in the amount of $273,824 to provide funding for a project seeking to improve the delivery of RNAi therapeutics through medicinal chemistry.
- In April 2011, we announced that our collaborative project on development of an sd-rxRNA® based ALS therapeutic with Dr. Brown was selected to receive $500,000 of additional funding from Massachusetts Life Sciences Center Cooperative Research Grant.
- In September 2011, we announced new preclinical data using our proprietary sd-rxRNA® compounds, including RXI-109, at the 7th Annual Meeting of the Oligonucleotide Therapeutics Society. The data included preclinical efficacy data of RXI-109 demonstrating robust, dose dependent, long-lasting, target-specific silencing of CTGF in skin, which in turn, impacted myofibroblast differentiation and collagen deposition, key markers of the fibrosis process. In addition, intraocular efficacy and safety data were presented along with preliminary data clarifying the mechanism of cellular uptake of sd-rxRNA® compounds in cultured cells.

Financial Condition

We have not generated revenue to date and may not generate product revenue in the foreseeable future, if ever. We expect to incur significant operating losses as we advance our product candidates through

the drug development and regulatory process. We will need to generate significant revenues to achieve profitability and might never do so. In the absence of product revenues, our potential sources of operational funding are expected to be the proceeds from the sale of equity, funded research and development payments and payments received under partnership and collaborative agreements.

In the future, we will be dependent on obtaining funding from third parties, such as proceeds from the 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. 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.

As described in the "Certain Relationships and Related Party Transactions" section of this prospectus, on September 24, 2011, we entered into a securities purchase agreement pursuant to which TCP and RTW agreed to purchase a total of $9,500,000 of our Series A Preferred Stock at the closing of our spin-off from Galena and to lend up to $1,500,000 to us to fund our operations between September 24, 2011 and the closing of the spin-off transaction, with the outstanding principal and accrued interest from the loans to be converted into shares of our preferred stock at the closing. Such conversion will be applied to the $9,500,000 total investment by TCP and RTW.

Introduction to the Field of RNAi Therapeutics

RNAi is a naturally occurring phenomenon where short double-stranded RNA molecules interfere with the expression of targeted genes. RNAi technology takes advantage of this phenomenon and potentially allows us to effectively interfere with particular genes within living cells by designing RNA-derived molecules targeting those genes. RNAi is regarded as a significant advancement in the scientific community, as evidenced by the journal *Science's* selection of RNAi as the "Breakthrough of the Year" in 2002 and by the awarding of the 2006 Nobel Prize in Medicine to the co-discoverers of RNAi, including Dr. Craig Mello, a founder of Galena.

RNAi offers a novel approach to the drug development process because, as described below under "The RNAi Mechanism," RNAi compounds can potentially be designed to target any one of the thousands of human genes, many of which are undruggable by other modalities. In contrast, an article published in the December 2005 edition of *Drug Discovery Today*, by Andreas P. Russ and Stefan Lampel, has demonstrated that only a subset of the proteins encoded in the human genetic code (human genome) are able to be targeted efficiently by traditional medicinal chemistry or antibody-based approaches. The specificity of RNAi is achieved by an intrinsic well-understood biological mechanism based on designing the sequence of an RNAi compound to match the sequence of the targeted gene. According to studies cited in *Nature Review of Drug Discovery*, the specificity of RNAi may be sufficient to permit therapeutic targeting of only a single gene, and may even selectively reduce or eliminate expression from a single abnormal copy of a gene while preserving expression from a normal copy ("allele-specific" targeting). This is critical in diseases such as cancer and neurodegenerative disorders that are often caused by abnormal copies of genes. In one study cited, for example, an siRNA was introduced into the cell and the specificity of silencing was evaluated using microarray analysis. According to the article, each siRNA silenced the intended target to the highest extent guided by sequence homology.

The RNAi Mechanism

The genome is made of a double-strand of DNA (the double helix) that acts as an instruction manual for the production of the roughly 30,000 to 50,000 human proteins. Proteins are important molecules that allow cells and organisms to live and function. With rare exceptions, each cell in the human body has the entire complement of genes. However, only a subset of these genes directs the production of proteins in any particular cell type. For example, a muscle cell produces muscle-specific protein, whereas a skin cell does not.

In order for a gene to guide the production of a protein, it must first be copied into a single-stranded chemical messenger (messenger RNA or mRNA), which is then translated into protein. RNAi is a naturally occurring process by which a particular messenger RNA can be destroyed before it is translated into protein. The process of RNAi can be artificially induced by introducing a small double-stranded fragment of RNA corresponding to a particular messenger RNA into a cell. A protein complex within the cell called RISC (RNA-Induced Silencing Complex) recognizes this double-stranded RNA fragment and splits the double-strands apart, retaining one strand in the RISC complex. The RISC then helps this guide strand of RNA bind to and destroy its corresponding cellular messenger RNA target. Thus, RNAi provides a method to potentially block the creation of the proteins that cause disease.

Since gene expression controls most cellular processes, the ability to inhibit gene expression provides a potentially powerful tool to treat human diseases. Furthermore, since the human genome has already been decoded, and based on numerous gene-silencing reports, we believe that RNAi compounds can readily be designed to interfere with the expression of any specific gene. Based on our internal research and our review of certain scientific literature, we also believe that our RNAi platform may allow us to develop create therapeutics with significant potential advantages over traditional drug development methods, including:

- High specificity for targeted genes;
- High potency (low doses);
- Ability to interfere with the expression of potentially any gene;
- Accelerated generation of lead compounds; and
- Low toxicity, natural mechanism of action.

RXi's RNAi Therapeutic Platform

RNAi Compound Design

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

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

In the case of classic siRNA, double-stranded RNA with single-stranded overhangs is used. 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. It is the combination of the length, the nucleotide sequence and the configuration of chemical modifications that are important for effective RNAi therapeutics.

Our internal research leads us to believe that next generation rxRNA compounds offer significant advantages over classic siRNA used by other companies developing RNAi therapeutics, highlighted by the following characteristics:

- Up to 100 times more active than classic siRNA;
- More resistant to nuclease degradation;
- Readily manufactured;
- Potentially more specific for the target gene;
- More reliable at blocking immune side effects than classic siRNA; and
- In the case of *sd*-rxRNA, the unique ability to be "self-delivering," without the need for any additional delivery vehicle.

Based on our own research, we have developed a variety of novel siRNA configurations with potential advantages for therapeutic use. The first of these has been termed rxRNA *ori* . This configuration has some similarities to classic siRNA in that it is composed of two, short RNA strands. We have found that by using a somewhat longer length (25-29 bp), removing the overhangs and using proprietary chemical modification patterns we achieve a higher hit rate of very potent (picomolar potency) compounds in a given target sequence. These rxRNA *ori* compounds are modified to increase resistance to nucleases and to prevent off-target effects including induction of an immune response. These novel RNAi compounds are distinct from the siRNA compounds used by many other companies developing RNAi therapeutics in that they are designed specifically for therapeutic use and offer many of the properties that we believe are important to the clinical development of RNAi-based drugs.

The second novel configuration has been called "*sd*-rxRNA" to indicate its novel "self-delivering" properties which do not require additional delivery vehicles for efficient cellular uptake and RISC-mediated silencing. A combination of at least three characteristics is required for activity: (1) specific, proprietary chemical modifications; (2) a precise number of chemical modifications; and (3) reduction in oligonucleotide content. Kineteic analyses of fluorescently-labeled compounds demonstrate that efficient cellular internalization is observed within minutes of exposure. These molecules are taken up efficiently and cause target gene silencing in diverse cell types (cell lines and primary cells). This novel class of RNAi compounds may afford a broad opportunity for therapeutic development.

We believe that both chemical modification and formulation of RNAi compounds may be utilized to develop RNA drugs suitable for therapeutic use. 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 circulation clearance and 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 local, systemic and oral delivery approaches. We work with chemically synthesized RNAi compounds that are optimized for stability and efficacy and combine delivery at the site of action and formulation with delivery agents to achieve optimal delivery to specific target tissues.

Local Delivery

sd-rxRNA® molecules have unique properties which improve tissue and cell uptake. Delivery of *sd*-rxRNA® by a local route of administration may avoid hurdles associated with systemic approaches such as rapid clearance from the bloodstream and inefficient extravasation (*e.g.*, crossing the endothelial barrier from the blood stream). We have studied *sd*-rxRNA® molecules in a rat model of dermal delivery. Direct application of *sd*-rxRNA® with no additional delivery vehicle to the skin (incision introduced) demonstrates that target gene silencing can be measured after topical delivery. The dose levels required for these direct injection methods are small and suitable for clinical development suggesting that local delivery indications will be very accessible with the *sd*-rxRNA® technology platform. Target tissues that are potentially accessible for local delivery using *sd*-rxRNA® compounds include lung, eye, skin, CNS, mucosal tissues, sites of inflammation and tumors (direct administration).

Systemic Delivery

Systemic delivery occurs when a drug accesses the tissue of interest through the circulatory system. In some cases, such as in targeting a treatment to the liver, the optimal route of delivery may be by a systemic route. We have developed a portfolio of systemic delivery solutions utilizing our RNAi therapeutic platforms. One novel approach involves the use of *sd*-rxRNA® compounds. The self-delivering technology introduces properties required for *in vivo* efficacy such as cell and tissue penetration and improved blood clearance and distribution properties. Systemic delivery of these compounds to mice has resulted in gene specific inhibition with no additional delivery vehicle required. In addition, we have developed novel nanotransporter formulations to aid in transport of RNAi compounds to both liver and various other target tissues in the body. These nanotransporters are chemically synthesized molecules that form nanometer-sized particles when mixed with RNAi compounds and alter the clearance, distribution and tissue penetration properties of the RNAi compounds. Delivery of RNAi compounds to the liver might be critical for the treatment of many diseases and using rxRNA® in conjunction with such delivery vehicles has enabled us to demonstrate gene specific inhibition at low doses in a mouse model after intravenous, systemic delivery. Target tissues that are potentially accessible using rxRNA® compounds by systemic delivery include liver, lung, adipocytes, cardiomyocytes, bone marrow, sites of inflammation, tumors, vascular endothelium and kidney.

Oral Delivery

Most RNAi therapeutic products being developed today require recurring intravenous injections or other forms of administration which are not patient friendly. To address the desire for RNAi therapeutics with improved modes of administration, we are testing a novel formulation technology, Glucan-Encapsulated RNAi Particles (GeRPs) that may allow our rxRNA® compounds to be incorporated into orally administered pills. Early data to date suggest that the GeRP delivery system appears to be more potent than previous methods used for systemic delivery of RNAi therapeutics by intravenous injection. Additional studies will need to be conducted to clearly establish the flexibility of the GeRP system and to determine whether they can either be used to administer a single RNAi compound, multiple RNAi compounds, or could potentially allow co-delivery of RNAi, DNA, protein and small molecule combinations.

Alliance Partners in Therapeutic Areas

We are actively seeking to leverage our technology platforms by seeking to work with pharmaceutical and biotechnology partners in the partners' fields of interest. Our team has experience targeting genes in virtually every major therapeutic area, and based on this experience, we believe we can discover many more drug candidates by working with partners than we can develop with our own resources. We are seeking to work with partners in the discovery and development of drugs in a number of therapeutic areas.

Intellectual Property

We actively seek protection for 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

(described throughout herein as rxRNA), 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.

We have also obtained rights to various patents and patent applications under licenses with third parties, which require us to pay royalties or 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 immunotherapy or RNAi technology platforms, or in our product discovery or development activities.

Patents and Patent Applications

We are actively prosecuting 13 patent families, including four pending PCT patent applications and nine patent families that have entered national stage. The nine patent families that have entered national stage include ten (including one continuation-in-part application) United States, four Canadian, two Chinese, four European, and five Japanese pending patent applications. Our portfolio does not include any issued patents. The patent applications encompass what we believe to be important new compounds and their use as therapeutics in RNAi, 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). Any patents that may issue from these pending patent applications will be set to expire between 2028 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 processes for making or using human drug products).

License Agreements

We have secured exclusive and non-exclusive rights to develop RNAi therapeutics by licensing key RNAi technologies and patent rights from third parties. These rights relate to chemistry and configuration of RNAi compounds, delivery technologies of RNAi 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 space.

University of Massachusetts Medical School. We hold a non-exclusive license from the University of Massachusetts Medical School ("**UMMS**"). This license grants to us rights under certain UMMS patent applications to make, use and sell products related to applications of RNAi technologies in particular fields, including HCMV and retinitis, amyotrophic lateral sclerosis, known as "ALS" or "Lou Gehrig's Disease," diabetes and obesity. Throughout the term of the license, we must pay UMMS an annual maintenance fee of $15,000. We also will be required to pay to UMMS customary royalties of up to 10% of (i) any future net sales of licensed products, (ii) income received from any sublicensees under this license, and (iii) net sales of commercial clinical laboratory services, subject to a minimum royalty of $50,000 beginning in 2016. We also agreed to pay expenses incurred by UMMS in prosecuting and maintaining the licensed patents.

The UMMS license was effective on April 15, 2003 and will remain in effect until: (i) the expiration of all issued patents within the "patent rights" (as defined); or (ii) for a period of ten years after the effective date if no such patents have issued within the ten-year period, unless earlier terminated in accordance with the provisions of the license. In the event that either party commits a material breach of its obligations under the UMMS license and fails to cure that breach within 60 days after receiving written notice thereof, the other party may terminate the UMMS license immediately upon written notice to the party in breach.

The UMMS license may be amended, supplemented, or otherwise modified only by signed written agreement of the parties.

Other Technology Agreements

Dharmacon. We have entered into a license agreement with Dharmacon, Inc. (now part of Thermo Fisher Scientific Inc.), pursuant to which we obtained an exclusive license to certain RNAi sequences to a number of target genes for the development of our rxRNA® compounds. Furthermore, we hold the right to license additional RNAi sequences, under the same terms, disclosed by Thermo Fisher Scientific Inc. in its pending patent applications against target genes and have received an option for exclusivity for other siRNA configurations. As partial consideration for this license, we have agreed to pay future clinical milestone payments in an aggregate amount of up to $2,000,000 and royalty payments of either 0.25% or 0.5% based on the level of any future sales of siRNA compositions developed in connection with the licensed technology.

The Dharmacon license will remain in effect for the duration of any patents issued with respect to the technologies covered by such agreement, unless otherwise terminated earlier by us.

The Dharmacon license may be amended, supplemented or otherwise modified only by signed written agreement of the parties.

Advirna. We have entered into agreements with 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 pay Advirna an annual $100,000 maintenance fee and a one-time milestone payment of $350,000 upon the issuance of the first patent with valid claims covering the assigned technology. Additionally, we will be required to pay a 1% royalty to Advirna for any licensing revenue received by us with respect to future licensing of the assigned Advirna patent and technology rights. We also agreed to grant back to Advirna a license under the assigned patent and technology rights for fields of use outside human therapeutics and diagnostics and to issue to Advirna, upon the completion of the spin-off transaction, shares of common stock equal to approximately 5% of our outstanding common stock on a fully diluted basis assuming the conversion of all outstanding Series A Preferred Stock.

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) included in the Advirna agreement; 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 in advance 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), 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 written notice to the other party a material breach of 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 agreement by written notice to the party in breach.

The Advirna agreement may only be altered or supplemented by written mutual agreement by the parties.

Competition

We believe numerous companies are investigating or plan to investigate a variety of proposed anti-scarring therapies in clinical trials. The companies include large and small pharmaceutical, chemical and biotechnology companies, as well as universities, government agencies and other private and public research organizations. Such companies include Renovo Group plc, CoDa Therapeutics, Inc., Sirnaomics, Inc., FirstString Research, Inc., Merz Pharmaceuticals, LLC, Capstone Therapeutics, Halscion, Inc., Garnet Bio Therapeutics, Inc., AkPharma Inc., Promedior, Inc., Kissei Pharmaceutical Co., Ltd., Eyegene, Derma Sciences, Inc., Healthpoint Biotherapeutics and Pharmaxon. In particular, Excaliard Pharmaceuticals, Inc., which has been acquired by Pfizer, Inc., has successfully advanced an anti-CTGF antisense oligonucleotide through several Phase I and Phase II trials, demonstrating improved scar outcome over placebo.

We believe other companies working in the RNAi area, generally, include Alnylam Pharmaceuticals, Inc., Marina Biotech, Inc., Tacere Therapeutics, Inc., Benitec Limited, OPKO Health, Inc., Silence Therapeutics plc, Quark Pharmaceuticals, Inc., Rosetta Genomics Ltd., Lorus Therapeutics, Inc., Tekmira Pharmaceuticals Corporation, Arrowhead Research Corporation, Regulus Therapeutics Inc. and Santaris, as well as a number of large pharmaceutical companies. 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.

Most of these competitors have substantially greater research and development capabilities and financial, scientific, technical, manufacturing, marketing, distribution and other resources than we have, and we may not be able to successfully compete with them. In addition, even if we are successful in developing our product candidates, in order to compete successfully we may need to be first to market or to demonstrate that our RNAi based products are superior to therapies based on different technologies. A number of our competitors have already commenced clinical testing of RNAi product candidates and may be more advanced than we are in the process of developing products. If we are not first to market or are unable to demonstrate superiority, any products for which we are able to obtain approval may not be successful.

Government Regulation

The United States and other developed 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, 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 I trials consist of testing the product candidate in a small number of patients or healthy volunteers, primarily for safety at one or more doses. Phase II trials, in addition to safety, evaluate the efficacy of the product candidate in a patient population somewhat larger than Phase I trials. Phase III trials typically involve additional testing for safety and clinical efficacy in an expanded population at multiple test sites. A company must submit to the FDA a clinical protocol, accompanied by the approval of the Institutional Review Boards at the institutions participating in the trials, prior to commencement of each clinical trial.

To obtain FDA marketing authorization, a company must submit to the FDA the results of the 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 good manufacturing practices regulations. Our manufacturers will have to continue to comply with those requirements. Failure to comply with these requirements subjects the manufacturer to possible legal or regulatory action, such as suspension of manufacturing or recall or seizure of product. Adverse patient experiences with the product must be reported to the FDA and could result in the imposition of marketing restrictions through labeling changes or market removal. Product approvals may be withdrawn if compliance with regulatory requirements is not maintained or if problems concerning safety or efficacy of the product occur following approval.

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

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

Environmental Compliance

Our research and development activities involve the controlled use of potentially harmful biological materials as well as hazardous materials, chemicals and various radioactive compounds. We are subject to federal, state and local laws and regulations governing the use, storage, handling and disposal of these materials and specific waste products. We are also subject to numerous environmental, health and workplace safety laws and regulations, including those governing laboratory procedures, exposure to blood-borne pathogens and the handling of 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.

Human Resources

As of September 30, 2011, we had ten full-time employees, eight of whom were engaged in research and development and two of whom were engaged in management, administration and finance. None of our employees is represented by a labor union or covered by a collective bargaining agreement, nor have we experienced any work stoppages.

Insurance

We currently purchase insurance policies for property and liability risks arising out of current operations.

Properties

We occupy our facility located at 60 Prescott Street, Worcester, Massachusetts, pursuant to a lease agreement, dated September 25, 2007, with Newgate Properties, LLC (an affiliate of Worcester Polytechnic Institute). The facility is approximately 6,800 square feet, of which 5,600 square feet is laboratory space used for research and development and the additional 1,200 square feet is used for general and administrative offices. On June 9, 2011, the lease was extended through July 31, 2012. The monthly rental fee is approximately $16,000. In May 2011, we reduced space occupied by us to approximately 5,355 square feet. We believe that the space is suitable for our current 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.

MANAGEMENT

Board of Directors

Mark J. Ahn, Ph.D., currently serves as our only director. Upon completion of the spin-off transaction, our authorized number of directors will be no fewer than two nor more than five. Our initial board of directors at the time of the spin-off will consist of Dr. Ahn and two other directors, Kevin C. Tang and Roderick T. Wong. Information regarding our initial directors is set forth below. In connection with the distribution, Dr. Ahn will tender his resignation as a director, effective upon our reimbursement of expenses to Galena as provided in the securities purchase agreement, and Messers. Tang and Wong will tender their conditional resignations as directors, which resignations will become effective upon the appointment of a new board of directors consisting solely of "independent" directors within the meaning of NASDAQ Marketplace Rule 5605(a)(2), except that our Chief Executive Officer or other senior officer also may serve as a member of our board of directors.

Mark J. Ahn, Ph.D. (49). Dr. Ahn has served on a part-time basis as our President and Chief Financial Officer since our inception on September 9, 2011, and has served as the President and Chief Executive Officer of Galena since March 31, 2011 and as a director since 2007. He is not compensated by us and spends an average of only approximately 30 hours a month on our business and operations. Dr. Ahn has served as the interim Chief Financial Officer of Galena since September 26, 2011. Dr. Ahn provides to us a limited amount of his business time and attention as is required by our business and operations, and he devotes the majority of his business time and attention to Galena's business and operations. He brings more than 20 years of experience in the biopharmaceutical industry. Prior to RXi, Dr. Ahn was Principal at Pukana Partners, Ltd., which provides strategic consulting to life science companies, and Associate Professor, Global Management at Atkinson Graduate School of Management, Willamette University. He previously served as Chair, Science & Technology Management, Victoria University at Wellington, New Zealand. Dr. Ahn was also founder, President, and Chief Executive Officer of Hana Biosciences, Inc. Prior to Hana, he served as Vice President, Hematology and corporate officer at Genentech, Inc., as well as held positions of increasing responsibility at Amgen Inc. and Bristol-Myers Squibb Company. Dr. Ahn also serves as a director of several public and venture capital-backed companies, including RXi, Access Pharmaceuticals Inc., Mesynthes Ltd. and ScribesSTAT, Inc. Dr. Ahn is the author of over 50 peer-reviewed journal articles and books. Dr. Ahn received a B.A. and M.B.A. from Chaminade University and an M.A. from Victoria University. He was a graduate fellow in Economics at Essex University and obtained a Ph.D. from the University of South Australia. Dr. Ahn is a Henry Crown Fellow at the Aspen Institute. Dr. Ahn's qualifications as a director include his extensive prior experience as both an executive and a director of a number of pharmaceutical and biotech companies, and his scientific and academic qualifications, as well as his expertise in financial and other related matters pertaining to the operation of publicly traded pharmaceutical companies. Accordingly, we believe Dr. Ahn has the appropriate skills to serve on our board of directors.

Kevin C. Tang (44). We have agreed in the securities purchase agreement with TCP and RTW that Mr. Tang will serve as one of our directors upon completion of the spin-off transaction as described in the "Certain Relationships and Related Party Transactions" section of this prospectus. Mr. Tang is the Managing Director of Tang Capital Management, LLC, a life sciences-focused investment company he founded in August 2002. From September 1993 to July 2001, Mr. Tang held various positions at Deutsche Banc Alex Brown, Inc., an investment banking firm, most recently serving as Managing Director and head of the firm's life sciences research group. Mr. Tang currently serves as a director of A.P. Pharma, Inc. and Ardea Biosciences, Inc. He was previously a director of Trimeris, Inc. until 2009 and Penwest Pharmaceuticals Co. until 2010. Mr. Tang received a B.S. degree from Duke University. Mr. Tang's investment and leadership experience in the healthcare industry provides relevant expertise in strategic areas, as well as in-depth knowledge of the healthcare industry and valuable insight and guidance on matters such as corporate strategy and financial and risk management. Accordingly, we believe Mr. Tang has the appropriate skills to serve on our board of directors.

Roderick T. Wong, M.D. (34). We have agreed in the securities purchase agreement with TCP and RTW that Dr. Wong will serve as one of our directors upon completion of the spin-off transaction as described in the "Certain Relationships and Related Party Transactions" section of this prospectus. Dr. Wong founded RTW Investments, LLC in 2010 and serves as its Chief Investment Officer and Managing Partner. From March 2005 to January 2009, Dr. Wong worked for Davidson Kempner Capital Management LLC, where he served as Managing Director and Portfolio Manager for the Davidson Kempner Healthcare Funds from inception. Dr. Wong graduated from the University of Pennsylvania Medical School, received his M.B.A. from Harvard Business School, and graduated Phi Beta Kappa with a B.S. in Economics from Duke University. Dr. Wong also serves as an Adjunct Assistant Professor at the New York University Stern Business School. Dr. Wong previously served as a director of Penwest Pharmaceuticals Co.

until 2010. Dr. Wong's medical training and experience in the healthcare industry provide relevant expertise and in-depth knowledge that will be beneficial to our board of directors with respect to corporate strategy and other operational matters. Accordingly, we believe Dr. Wong has the appropriate skills to serve on our board of directors.

Director Independence

Our securities are not listed on a national securities exchange or in an inter-dealer quotation system that requires that a majority of our board of directors be independent. Our board of directors has determined that Dr. Ahn is not an "independent director" as defined by The NASDAQ Capital Market.

Committees of the Board of Directors

Following the completion of the spin-off transaction, our board of directors may establish an Audit Committee, a Compensation Committee and a Nominating and Governance Committee. In the meantime, our board of directors as a whole performs the functions normally associated with such Committees.

Executive Officers

Set forth below is information regarding our current executive officers (other than information relating to Dr. Ahn, our President and Chief Financial Officer, which information is set forth above under "Board of Directors"). Each officer's age is indicated in parentheses after her name.

Anastasia Khvorova, Ph.D. (42). Dr. Khvorova has been our Senior Vice President and Chief Scientific Officer since September 24, 2011. From October 2008 until that time, she served as the Chief Scientific Officer of Galena. From September 2002 until November 2007, she served as the Director of Research and Development and then as Vice President of Research and Development and Chief Scientific Officer of Dharmacon (a subsidiary of ThermoFisher Scientific). From November 2007 until joining Galena, Dr. Khvorova served as an independent consultant. During her career, Dr. Khvorova has made major technology advances in the fields of RNAi and microRNA. Dr. Khvorova was also responsible for establishing and managing several drug discovery/development collaborations with major pharmaceutical companies, including Abbott Laboratories and Alcon Laboratories, Inc. Her groundbreaking work has enabled her to author more than 200 patents and patent applications, several book chapters and over 40 peer-reviewed publications. Dr. Khvorova received her Ph.D. in Biochemistry from the Russian Academia of Sciences in Moscow in 1994. Dr. Khvorova is a board member of the Oligonucleotide Therapeutic Society and a member of other distinguished professional organizations.

Pamela Pavco, Ph.D. (55). Dr. Pavco has been our Senior Vice President of Pharmaceutical Development since September 24, 2011. From March 2007 until that time, she served as the Vice President of Pharmaceutical Development of Galena. Dr. Pavco has over 20 years of research and development experience in oligonucleotides. Dr. Pavco was Senior Director, Research and Development Project Management at Sirna Therapeutics, Inc., from 2002 until 2006, when it was acquired by Merck & Co., Inc. for $1.1 billion. While at Sirna, she was responsible for the discovery research and development of Sirna-027, the first chemically modified siRNA to enter clinical trials. Dr. Pavco also managed Sirna's alliance with Allergan, Inc. that was initiated to continue discovery research in the area of ophthalmology and take Sirna-027 forward into Phase 2 clinical studies. While at Sirna, Dr. Pavco served in various additional capacities, including Director of Biology Research and Director of Pharmacology and she also managed numerous corporate collaborations and internal programs focusing on the development of therapeutic oligonucleotides in the fields of oncology, anti-angiogenesis, hepatitis, respiratory disease and Huntington's disease. Dr. Pavco has authored numerous scientific articles and

contributed to approximately 58 patents and patent applications in the oligonucleotide therapeutics field. Dr. Pavco received a Ph.D. in Biochemistry from Virginia Commonwealth University in 1983 and did her post-doctoral work at Duke University. She is a member of the American Association of Cancer Research and the Association for Research and Vision in Ophthalmology.

We may establish a Scientific Advisory Board prior to or following the completion of the spin-off transaction.

EXECUTIVE COMPENSATION

Summary Compensation Table

Dr. Ahn is not compensated by us for his service as our President and Chief Financial Officer. Our other executive officers, Drs. Khvorova and Pavco, have been employed by us only since September 24, 2011. The principal terms of our employment agreements with Drs. Khvorova and Pavco are described below in the "Executive Compensation — Employment Agreements" section of this prospectus.

The following table sets forth the compensation paid or accrued by us during the fiscal year ended December 31, 2011 and by Galena, our predecessor, during the fiscal year ended December 31, 2010 to Noah D. Beerman, the former President and Chief Executive Officer of Galena, and to Drs. Khvorova and Pavco:

Executive Compensation

Name and Principle Position	Year	Salary ($)(1)	Bonus ($)(1)	Stock Awards ($)(2)	Option Awards ($)(3)	All Other Compensation ($)(4)	Total ($)
Noah D. Beerman(5)	2010	376,731	90,000	—	29,455	300	496,486
Former President and Chief Executive Officer of Galena							
Anastasia Khvorova, Ph.D.	2011	331,667	7,326	50,000	—	300	389,293
Chief Scientific Officer	2010	283,752	49,941	—	198,572	300	532,565
Pamela Pavco, Ph.D.	2011	292,500	7,255	—	90,304	300	390,359
Vice President of Pharmaceutical Development	2010	281,197	38,933	—	203,006	300	523,436

(1) The salary and bonus attributable to the period prior to September 24,2011 were paid by Galena. Drs. Khvorova and Pavco served in the capacities indicated with Galena during that period.

(2) Represents shares of common stock of Galena, our predecessor. The amounts shown reflect the grant date fair value computed in accordance with FASB ASC 718 for the indicated year.

(3) Represents options to purchase common stock of Galena, our predecessor. 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 footnotes to our financial statements for the year ended December 31, 2011.

(4) Consists of life insurance premiums.

(5) Mr. Beerman became President and Chief Executive Officer of Galena on November 5, 2009. He resigned effective March 31, 2011. The salary, bonus, option awards and other compensation paid to Mr. Beerman by Galena may not be indicative of what we may pay to the person or persons who may serve in the same capacities following the spin-off of RXi.

RXi Pharmaceuticals Corporation 2012 Long Term Incentive Plan

On January 23, 2012, our board of directors and our sole stockholder adopted the RXi Pharmaceuticals Corporation 2012 Long Term Incentive Plan (the "**2012 Incentive Plan**"). Under the 2012 Incentive Plan, we may grant incentive stock options, nonqualified stock options, cash awards, stock appreciation rights, restricted and unrestricted stock and stock unit awards and other stock-based awards. A

maximum of 90,000,000 shares of common stock are authorized for issuance and available for future grants under our 2012 Incentive Plan, including the grants of stock options to be made to Drs. Khvorova and Pavco as provided in our employment agreements with them. Our board of directors or a committee of our board acts as the administrator of our 2012 Incentive Plan.

The administrator has the power to select participants from among the key employees, directors and consultants of and advisors to the Company, establish the terms, conditions and vesting schedule, if applicable, of each award and to accelerate vesting or exercisability of any award. The administrator may at any time modify or amend the 2012 Incentive Plan or any award made thereunder in any respect, except where a participant's approval is required by law or where such termination or modification or amendment affects materially and adversely the rights of a participant under a previously granted award and such participant's consent has not been obtained.

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

Upon termination of employment of an employee, the unvested portion of any stock option generally, and with exceptions, will terminate and the balance, to the extent exercisable, will remain exercisable for the lesser of (i) a period of three months or (ii) the period ending on the latest date on which such stock option could have been exercised.

Outstanding Equity Awards

We have no outstanding stock options or other stock awards. In our employment agreements with Drs. Khvorova and Pavco described below, we have agreed to grant them future options under the 2012 Incentive Plan.

Nonqualified Deferred Compensation

We do not have any nonqualified deferred compensation plans.

Termination-Based Compensation; Employment Agreements

We have employment agreements in place with two of our named executive officers as described below that provide for acceleration of option vesting and severance payments upon termination of such officer's employment or a change of control.

On September 24, 2011, we entered into an employment agreement with each of Dr. Khvorova and Dr. Pavco. The employment agreements each provide that, upon termination of Dr. Khvorova's or Dr. Pavco's employment without "cause" (as defined) by RXi, or by Dr. Khvorova or Dr. Pavco for "good reason" (as defined), Dr. Khvorova or Dr. Pavco, as the case may be, will be entitled to payment of: (a) any accrued but unpaid salary and unused vacation as of the date of her termination; (b) twelve months (in the event of such termination within twelve months of the effective date of her employment) or six months (in the event of such termination after twelve months from the effective date of her employment), as the case may be, of salary from the date of termination; and (c) continued participation, at RXi's expense, during the applicable severance period in RXi's sponsored group medical and dental plans. In the event her employment is terminated within twelve months following a "change of control" of RXi, Dr. Khvorova or Dr. Pavco, as the case may be, 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 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 RXi's expense, during the severance period in RXi's sponsored group medical and dental plans.

Director Compensation

Dr. Ahn receives no compensation from us for his service as our sole director. Following the completion of the spin-off of RXi, we anticipate that, in the discretion of our board of directors, each non-employee director may be paid such fees for his services as a director and be reimbursed for his reasonable expenses incurred in the performance of his duties as director as our board of directors determines from time to time.

Employment Agreements

Anastasia Khvorova, Ph.D.

Dr. Khvorova serves as our Senior Vice President and Chief Scientific Officer. Under her employment agreement dated September 24, 2011, Dr. Khvorova receives an annual salary of $310,000. She also is entitled to a grant by us, after the completion of the spin-off transaction, of stock options to purchase 2% of the fully diluted common stock of RXi at an exercise price per share to be determined based on the fair value of our common stock at the date of grant. The options will be subject to vesting in equal monthly installments over the four-year period following the effective date of her employment, subject to accelerated vesting in some events.

Dr. Khvorova's employment agreement provides that, upon termination of Dr. Khvorova's employment without "cause" (as defined) by us or by Dr. Khvorova for "good reason" (as defined), she will be entitled to payment of: (1) any accrued but unpaid salary and unused vacation as of the date of her termination; (2) twelve months (in the event of such termination within twelve months of the effective date of her employment) or six months (in the event of such termination after twelve months from the effective date of her employment), as the case may be, of salary from the date of termination; and (3) continued participation, at our expense, during the applicable severance period in our sponsored group medical and dental plans. In the event her employment is terminated within twelve months following a "change of control" of RXi, she 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 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 severance period in our sponsored group medical and dental plans.

Pamela Pavco, Ph.D.

Dr. Pavco services as our Senior Vice President of Pharmaceutical Development. Under her employment agreement dated September 24, 2011, Dr. Pavco receives an annual salary of $300,000. She also is entitled to a grant by us, after the completion of the spin-off transaction, of stock options to purchase 2% of the fully diluted common stock of RXi at an exercise price per share to be determined based on the fair value of our common stock at the date of grant. The options will be subject to vesting in equal monthly installments over the four-year period following the effective date of her employment, subject to accelerated vesting in some events.

Dr. Pavco's employment agreement provides that, upon termination of Dr. Pavco's employment without "cause" (as defined) by us or by Dr. Pavco for "good reason" (as defined), she will be entitled to payment of: (1) any accrued but unpaid salary and unused vacation as of the date of her termination; (2) twelve months (in the event of such termination within twelve months of the effective date of her employment) or six months (in the event of such termination after twelve months from the effective date of her employment), as the case may be, of salary from the date of termination; and (3) continued participation, at our expense, during the applicable severance period in our sponsored group medical and dental plans. In the event her employment is terminated within twelve months following a "change of control" of RXi, she 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 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 severance period in our sponsored group medical and dental plans.

CERTAIN RELATIONSHIPS AND RELATED PARTY TRANSACTIONS

Agreements with Galena Biopharma, Inc.

Prior to the completion of the transactions described in this prospectus, Galena will continue to be the owner of all of our outstanding capital stock. On September 24, 2011, we entered into a contribution agreement with Galena pursuant to which:

- Galena assigned and contributed to us substantially all of its RNAi-related technologies and assets, which consist primarily of novel RNAi compounds and licenses from Dharmacon, Inc., Northwestern University, the Carnegie Institute of Washington, and the University of Massachusetts Medical School relating to its RNAi technologies, as well as the lease of its Worcester, Massachusetts laboratory facility, fixed assets and other equipment located at the facility and its employment arrangements with certain scientific, corporate and administrative personnel who have become our employees, as well as research grants from the National Institute of Neurological Disorders and Stroke, National Institute of Allergy and Infectious Diseases, and the National Institute of General Medical Sciences of approximately $800,000 that are subject to the approval of the granting institutions; and
- We agreed to assume certain recent accrued expenses of the RXi-109 development program and all future obligations under the contributed licenses, employment arrangements and other agreements, and we agreed to make future milestone payments to Galena of up to $45 million, consisting of two one-time payments of $15 million and $30 million, respectively, if we achieve annual net sales equal to or greater than $500 million and $1 billion, respectively, of any covered products that may be developed with the contributed RNAi technologies.

Agreements with TCP and RTW

On September 24, 2011, we entered into a securities purchase agreement with Galena, TCP and RTW pursuant to which:

- TCP and RTW agreed to purchase a total of $9,500,000 of our Series A Preferred Stock at the closing of the spin-off transaction and to lend to us up to $1,500,000 to fund our operations prior to the closing, with the outstanding principal and accrued interest from the loan to be converted into Series A Preferred Stock at the closing, at a conversion price of $1,000 per share, and such conversion will be applied to the $9,500,000 total investment by TCP and RTW;
- We agreed that the Series A Preferred Stock will be convertible by TCP or RTW at any time into shares of our common stock, except to the extent that the holder would own more than 9.999% of the shares of our common stock outstanding immediately after giving effect to such conversion; without regard to this conversion limitation, the shares of the Series A Preferred Stock to be held by TCP and RTW would be convertible into shares of our common stock representing

approximately 83% of the shares of our common stock that would be outstanding upon the completion of the spin-off transaction and after such Series A Preferred Stock conversion;

- We agreed that the Series A Preferred Stock will have the rights, preferences, privileges and restrictions summarized below in the "Description of Capital Stock—Preferred Stock" section of this prospectus;
- Galena agreed to contribute $1.5 million of cash to us;
- Galena agreed to distribute to its stockholders the shares of RXi common stock that are the subject of this prospectus;
- We and Galena agreed to take all necessary actions to constitute our initial board of directors as described in the "Management" section of this prospectus; and
- We agreed, upon completion of the spin-off transaction, to reimburse Galena for up to a total of $300,000, and TCP and RTW for a total of up to $100,000, of transaction costs relating to the contribution agreement with Galena, the securities purchase agreement summarized below and the transactions contemplated by those agreements.

The securities purchase agreement may be terminated by mutual consent of the investors and us, or by either the investors or us if the partial spin-off of RXi has not occurred by March 5, 2012 or in the event of a breach by the other of the agreement.

Advirna Agreement

As part of the transactions contemplated by the contribution and securities purchase agreements, on September 24, 2011, we entered into agreements with 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 pay Advirna an annual $100,000 maintenance fee and a one-time $350,000 milestone payment upon the future issuance of the first patent with valid claims covering the assigned patent and technology rights;
- We will be required to pay a 1% royalty to Advirna for any licensing revenue received by us with respect to future licensing of the assigned Advirna patent and technology rights;
- We have granted back to Advirna a license under the assigned patent and technology for fields of use outside the fields of human therapeutics and diagnostics; and
- We have agreed to issue to Advirna, upon the completion of the spin-off transaction, shares of our common stock equal to approximately 5% of the fully diluted shares of RXi common stock assuming the conversion in full of all outstanding Series A Preferred Stock.

See "Business — Intellectual property — Other Technology Agreements; Advirna" on page 55 of this prospectus for more information about our license from Advirna.

Anastasia Khvorova, Ph.D., our Senior Vice President and Chief Scientific Officer, is a director and 50% owner of Advirna. Dr. Khvorova's husband is the other director and 50% owner of Advirna.

Relationships with Employees

Our President, Chief Financial Officer and sole director, Mark J. Ahn, Ph.D., also serves as the President and Chief Executive Officer and as a director of Galena.

For a summary of the employment agreements that we have entered into with Dr. Khvorova and Dr. Pamela Pavco, our Senior Vice President of Pharmaceutical Development, see the "Executive Compensation—Employment Agreements" section in this prospectus.

Review and Approval of Related Party Transactions

Upon the completion of the partial spin-off of RXi, we anticipate that our board of directors will adopt appropriate policies regarding the review and approval of all transactions with directors, officers and holders of more than 5% of our voting securities and their affiliates. The policies are expected to provide 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 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.

BENEFICIAL OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT

The following table sets forth information with respect to the beneficial ownership of our common stock as of January 20, 2012 and after giving effect to the distribution of our common stock to Galena's stockholders and the other transactions referred to in this prospectus, by:

- Each person known by us to be the beneficial owner of 5% or more of our common stock, including any "group" as that term is defined in the Exchange Act;
- Each director, director nominee and current named executive officer identified in the "Management" and "Executive Compensation" sections of this prospectus; and
- All of our directors, director nominees and executive officers as a group.

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

The information below is based on the number of shares of our common stock beneficially owned by each person or entity on January 20, 2012 and the number of shares subject to any options and warrants granted to these individuals that are exercisable within 60 days after January 20, 2012. Any such options are indicated by footnote. The information is based upon a distribution ratio of one share of our common stock for each share of Galena common stock. Except as otherwise noted in the footnotes below, the individual directors or executive officers or their family members had sole voting and investment power with respect to such securities. Upon completion of the distribution of our common stock to Galena's stockholders and the other transactions referred to in this prospectus, we will have outstanding an aggregate of approximately 100,600,887 shares of our common stock, assuming no conversion of our Series A Preferred Stock or exercise of stock options.

	Amount and Nature of Beneficial Ownership			
	Before the Spin-Off Transaction		After the Spin-Off Transaction	
Name and Address of Beneficial Owner	Number of Shares of Common Stock	Percentage	Number of Shares of Common Stock	Percentage
Directors, Director Nominees and Named Executive Officers				
Mark J. Ahn, Ph.D.	-0-	-0-	-0-	-0-
Kevin C. Tang(1)	-0-	-0-	11,176,634(2)	9.999% (2)
Roderick T. Wong(3)	-0-	-0-	11,176,634(4)	9.999% (4)
Anastasia Khvorova, Ph.D(5)	—	—	29,588,496(5)	29.4%
Pamela J. Pavco, Ph.D.	—	—	-0-	-0-
Greater than 5% Holders				
Galena Biopharma, Inc.	100%	100%	23,670,797	23.5%
Tang Capital Partners, LP(1)	-0-	-0-	11,176,634(2)	9.999% (2)
RTW Investments, LLC(3)	-0-	-0-	11,176,634(4)	9.999% (4)
Advirna, LLC(6)	-0-	-0-	29,588,496	29.4%
All directors and executive officers as a group (five persons before, and seven persons after, the spin-off transaction)	-0-	-0-	51,941,764(7)	42.2%

(1) The address for Kevin C. Tang and Tang Capital Partners, LP ("**TCP**") is 4747 Executive Drive, Suite 510, San Diego, California 92121. Tang Capital Management, LLC is the general partner of TCP. Kevin C. Tang is the Managing Director of Tang Capital Management, LLC and, following the spin-off transaction, will be a member of our board of directors. Mr. Tang shares voting and investment power over the shares shown with TCP and Tang Capital Management, LLC and, as such, may be deemed to be a beneficial owner of such shares. Mr. Tang disclaims beneficial ownership of such shares, except to the extent of his pecuniary interest therein.

(2) Represents shares of common stock issuable upon the conversion of Series A Preferred Stock that will be owned of record by TCP after the spin-off transaction. In accordance with the conversion limitation contained within the Certificate of Designations, in no event may TCP convert shares of Series A Preferred Stock into shares of our common stock if such conversion would result in beneficial ownership of more than 9.999% of the then issued and outstanding shares of our common stock. This conversion limitation may not be waived and any purported conversion that is inconsistent with this conversion limitation is null and void. But for the conversion limitation, TCP would have the right to acquire up to approximately 465,318,036 shares, or 78.6%, of our common stock following the spin-off transaction and TCP and RTW, collectively, would have the right to acquire up to approximately 491,169,038 shares, or 83%, of our common stock. See "Certain Relationships and Related Party Transactions—Agreements with TCP and RTW."

(3) The address for RTW Investments, LLC ("**RTW**") is 1350 Avenue of the Americas, 28th Floor, New York, New York 10019. Roderick T. Wong is the Managing Member of RTW and, following the spin-off transaction, will be a member of our board of directors. Mr. Wong has sole voting and investment power over the shares shown and, as such, may be deemed to be a beneficial owner of such shares.

(4) Represents shares of common stock issuable upon the conversion of Series A Preferred Stock that will be owned of record by RTW after the spin-off transaction. In accordance with the conversion limitation contained within the Certificate of Designations, in no event may RTW convert shares of Series A Preferred Stock into shares of our common stock if such conversion would result in beneficial ownership of more than 9.999% of the then issued and outstanding shares of our common stock. This conversion limitation may not be waived and any purported conversion that is inconsistent with this conversion limitation is null and void. But for the conversion limitation, RTW would have the right to acquire up to approximately 25,851,002 shares, or 4.4%, of our common stock following the spin-off transaction and TCP and RTW, collectively, would have the right to acquire up to approximately 491,169,038 shares, or 83%, of our common stock. See "Certain Relationships and Related Party Transactions—Agreements with TCP and RTW."

(5) The address for Dr. Khvorova is c/o RXi Pharmaceuticals Corporation, at 60 Prescott Street, Worcester, Massachusetts 01605. The shares shown will be owned by Advirna, LLC. Dr. Khvorova is a director and 50% member of Advirna, LLC and, as such, may be deemed to be a beneficial owner of the shares shown. Dr. Khvorova disclaims beneficial ownership of such shares, except to the extent of her pecuniary interest therein.

(6) The address of Advirna, LLC is 10 Rocklawn Road, Westborough, Massachusetts 01581.

(7) Includes 22,129,780 shares issuable upon the conversion of Series A Preferred Stock. Also includes the shares to be owned by Advirna, LLC that may be deemed to be beneficially owned by Dr. Khorova as described in note 5, above.

DESCRIPTION OF CAPITAL STOCK

The following information reflects our certificate of incorporation and bylaws as these documents will be in effect at the time of the distribution.

Authorized Capital Stock

Immediately following the distribution, our authorized capital stock will consist of 1,500,000,000 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 15,000 shares will be designated as Series A Convertible Preferred Stock, or "**Series A Preferred Stock.**" Immediately following the distribution and the other transactions referred to in this prospectus, 100,600,887 shares of our common stock will be outstanding, assuming no exercise of stock options, and 9,500 shares of our Series A Preferred Stock will be outstanding. The number of outstanding shares of our common stock gives effect to a 236,708-for-1 stock split effected immediately following the record date for the distribution.

Common Stock

The holders of our common stock will be 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 will be entitled to such dividends as may be declared from time to time by our board from funds available therefor and upon liquidation will be entitled to receive pro rata all assets available for distribution to such holders. Our common stock is not redeemable. For a more complete discussion of our dividend policy, please see "Dividend Policy."

The holders of our common stock, other than Galena, will have no preemptive rights. For any offering and sale of RXi securities that are sold in a capital raising transaction within one year following the completion of the spin-off transaction, Galena is entitled to preemptive rights to participate (to the extent permitted under the Securities Act) in each such subsequent offering. Pursuant to this preemptive right, Galena is entitled to purchase a portion of the securities offered in each subsequent offering equal to Galena's percentage ownership in our common stock, determined on an as-converted, fully diluted basis, immediately prior to the consummation of such subsequent offering.

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 which we may designate and issue in the future.

Our amended and restated certificate of incorporation to be in effect upon consummation of the spin-off will include a provision permitting our board of directors to effect one or more reverse stock splits. If we implement a reverse stock split, the number of shares of our common stock held by each stockholder would be reduced by multiplying the number of shares held immediately before the reverse stock split by the appropriate ratio and then rounding down to the nearest whole share. We would then pay cash to each stockholder in lieu of any fractional interest in a share to which each stockholder would otherwise be entitled as a result of the reverse stock split. The reverse stock split would not affect any stockholder's percentage ownership interest or proportionate voting power, except to the extent that interests in fractional shares are paid in cash, and the rights pertaining to the outstanding shares of our common stock would be unchanged after the reverse stock split. Moreover, because the number of shares of authorized common stock would not be affected, a reverse stock split would result in an increase in the authorized, but unissued, shares of common stock as a percentage of total authorized shares. Each share of our common stock issued following a reverse stock split would be fully paid and non-assessable.

In addition to adjusting the number of shares of our common stock, in the event of a reverse stock split, we would adjust any options, warrants and preferred stock in accordance with the terms of these securities.

Preferred Stock

We are authorized to issue up to 10,000,000 shares of preferred stock, par value $0.0001 per share. 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 RXi 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 issuance of preferred stock and our board has no present intention to issue any shares of preferred stock; provided, however, that we have agreed to issue our Series A Preferred Stock to TCP and RTW as described below.

Series A Preferred Stock

We are presently authorized to issue Series A Convertible Preferred Stock ("**Series A Preferred Stock**"), and it is anticipated that, upon the completion of the spin-off transaction, TCP and RTW will receive 9,000 shares and 500 shares, respectively, of Series A Preferred Stock.

The Series A Preferred Stock has a face value of $1,000 per share and will accrue dividends at a rate of 7% per annum from the date of issuance through the date of conversion or redemption, payable quarterly in shares of Series A Preferred Stock.

The holders of Series A Preferred Stock do not have any right to elect directors and have only limited voting rights, which consist primarily of the right to vote under certain protective provisions set forth in the Series A Preferred Stock Certificate of Designations (the "Certificate of Designations"), regarding: (i) any proposed amendment to the Series A Preferred Stock or its right and preferences; and (ii) any proposed "Deemed Liquidation Event" as defined in the Certificate of Designations.

The Series A Preferred Stock will be convertible by a holder at any time into shares of RXi common stock. The rate at which the Series A Preferred Stock will convert into RXi common stock will be established prior to the closing of the spin-off transactions, as set forth in the securities purchase agreement among RXi, Galena, TCP and RTW. The conversion rate will be adjusted for certain events, such as stock splits, stock dividends, reclassifications and recapitalizations, and is subject to full-ratchet anti-dilution protection such that any subsequent issuance of common stock at a price, or in the case of common stock equivalents, at an effective conversion price, below the effective conversion price of the Series A Preferred Stock at the time of such issuance automatically adjusts the conversion price of the Series A Preferred Stock to such lower price. A holder of Series A Preferred Stock may not convert its preferred stock to common stock if such conversion would result in the holder beneficially owning more than 9.999% of our then-issued and outstanding shares of common stock. This limitation on conversion may not be waived.

Upon a Liquidation Event (as defined in the Certificate of Designations), no other class or series of capital stock can receive any payment unless the Series A Preferred Stock has first received a payment in an amount equal to $1,000 per share, plus all accrued and unpaid dividends, if applicable.

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

Certificate of Incorporation and Bylaw Provisions

Our amended and restated certificate of incorporation and bylaws to be in effect upon the consummation of the spin-off will 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 our 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 amended and restated certificate of incorporation will provide 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 amended and restated certificate of incorporation will provide 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 amended and restated bylaws will 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 amended and restated bylaws will establish 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, or 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 will provide for 10,000,000 authorized shares of preferred stock, of which 15,000 shares will be designated as Series A 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 which resulted in the stockholder becoming an interested stockholder;
- Upon consummation of the transaction which 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.

The restrictions contained in Section 203 are not applicable to any of our existing stockholders that will own 15% or more of our outstanding common stock upon the completion of the spin-off of RXi.

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.

Transfer Agent and Registrar

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

Trading Market

There is no current trading market for our common stock. We will apply for trading of our common stock in the OTC Markets Group under the symbol "RXII" in conjunction with the effectiveness of the registration statement of which this prospectus is a part. We expect that our common stock will begin trading in the OTC Markets Group following the distribution.

SHARES ELIGIBLE FOR FUTURE SALE

Upon completion of the distribution of RXi common stock under this prospectus and the other transactions that constitute the spin-off transaction, we will have outstanding an aggregate of 100,600,887 shares of our common stock. Of these shares, 47,341,594 shares, which constitute the shares to be distributed pursuant to this prospectus, will be freely tradable without restriction or further registration under the Securities Act unless the shares are owned by our "affiliates" as that term is defined in Rule 144 under the Securities Act. Under the Securities Act, an "affiliate" of a company is a person who directly or indirectly controls, is controlled by or is under common control with that company. Such affiliates may include our directors, executive officers and principal stockholders.

Immediately following the distribution of RXi common stock under this prospectus: (1) Galena will own 23,670,797 shares of our common stock; and (2) Advirna will own 29,588,496 shares of our common stock. In addition, TCP and RTW will own shares of our Series A Preferred Stock that are convertible by either or both stockholders at any time into shares of RXi common stock, except to the extent that the holder would own more than 9.999% of the shares of our common stock outstanding immediately after giving effect to such conversion.

The shares of common stock described in the preceding paragraph will be "restricted shares" within the meaning of Rule 144 under the Securities Act. Any shares of RXi common stock held by "affiliates" and any "restricted shares" may be sold in the public market only if registered or if they qualify for an exemption from registration under Rule 144, which is summarized below. Galena has agreed not to sell or otherwise transfer its shares for a one-year period following the completion of the spin-off transaction.

Rule 144

In general, under Rule 144 of the Securities Act as currently in effect, once we have been subject to public company reporting requirements for at least 90 days, a person who is not deemed to have been one of our affiliates for purposes of the Securities Act at any time during 90 days preceding a sale and who has beneficially owned the restricted shares proposed to be sold for at least six months, including the holding period of any prior owner other than our affiliates, is entitled to sell such shares without complying with the manner of sale, volume limitation or notice provisions of Rule 144, subject to our compliance with the public information requirements of Rule 144. If such a person has beneficially owned the shares proposed to be sold for at least one year, including the holding period of any prior owner other than our affiliates, then such person is entitled to sell such shares without complying with any of the requirements of Rule 144.

In general, under Rule 144, as currently in effect, our affiliates or persons selling shares on behalf of our affiliates are entitled to sell within any three-month period (after satisfying the six-month holding period described above with respect to restricted shares) a number of shares of common stock that does not exceed the greater of:

- 1% of the number of shares of common stock then outstanding; or
- the average weekly trading volume of our common stock during the four calendar weeks preceding the filing of a notice on Form 144 with respect to such sale.

Registration Rights

We have agreed with TCP and RTW to file a registration statement with the SEC covering the resale of 20% of the shares of our common stock underlying their Series A Preferred Stock and

to keep the registration statement effective at all times until the earlier of: (1) the date as of which TCP and RTW may sell all of their common stock covered by such registration statement without restriction pursuant to Rule 144; or (2) the date on which TCP and RTW have sold all of the common stock covered by such registration statement.

We also have granted to TCP and RTW what are commonly known as "piggyback" registration rights to include our shares currently owned by TCP and RTW in other registration statements that we may file with the SEC on behalf of our company or our security holders, provided such offering is underwritten or placed by a placement agent.

Employee Stock Plans

We currently expect to file a registration statement on Form S-8 under the Securities Act to register up to 90,000,000 shares of common stock that are issuable under our 2012 Incentive Plan. Shares issued upon the exercise of options after the effective date of such registration statement, other than shares issued to affiliates, generally will be freely tradable without further registration under the Securities Act.

MATERIAL UNITED STATES FEDERAL INCOME TAX CONSEQUENCES

The following discussion describes certain United States federal income tax consequences of the distribution of RXi common stock to Galena's stockholders. The discussion is for general information only and does not purport to consider all aspects of federal income taxation that may be relevant to Galena, RXi or Galena's stockholders. The discussion applies only to United States persons, not to foreign stockholders (as defined below), except as specifically set forth. The consequences to any particular stockholder may differ depending upon that stockholder's own circumstances and tax position.

The discussion deals only with shares held as capital assets within the meaning of Section 1221 of the Internal Revenue Code of 1986, as amended (the "**Code**"), and does not address matters that may be relevant to stockholders in light of their particular circumstances. It also does not address matters that may be relevant to certain stockholders subject to special treatment under the Code, such as financial institutions, insurance companies, S corporations, partnerships and other pass-through entities, trusts, stockholders liable for the alternative minimum tax, dealers in securities or currencies, traders who elect to apply a mark-to-market method of accounting, tax-exempt organizations, U.S. expatriates, directors, employees, former employees or other persons who acquired their shares as compensation, including upon the exercise of employee stock options, and persons who are holding shares as part of a straddle, conversion, constructive sale, hedge or hedging or other integrated transaction. The discussion does not consider the effect of any applicable estate tax, gift tax, state, local or foreign tax laws. In addition, this discussion is based upon the Code, applicable U.S. Treasury regulations, administrative pronouncements and judicial decisions in effect on the date of this document, all of which are subject to change, possibly with retroactive effect. Each stockholder is urged to consult his or her tax advisor as to the particular tax consequences to such stockholder of the distribution, including the application of state, local and foreign tax laws and possible tax law changes.

IT IS THE OPINION OF TROYGOULD PC, COUNSEL TO GALENA AND RXi, THAT THE TAX CONSEQUENCES TO GALENA AND ITS STOCKHOLDERS OF THE DISTRIBUTION WILL BE AS SET FORTH BELOW.

Consequences to Galena

Pursuant to Section 311 of the Code, Galena will recognize a gain on the distribution of shares of RXi common stock in an amount equal to the excess of the fair market value of the stock distributed over the basis to Galena of such stock. This gain will be included in determining whether Galena has current year "earnings and profits." If the gain results in Galena having current year earnings and profits, it will affect the tax treatment of the distribution to Galena's stockholders, as described below.

Consequences to Galena's Stockholders

Each Galena stockholder will be treated as having received a distribution in an amount equal to the fair market value on the distribution date of RXi shares distributed to such stockholder. Because Galena has no accumulated earnings and profits, the distribution will be taxable under Sections 301 and 316 of the Code as a dividend to the extent of Galena's current year earnings and profits, if any, allocable to such stockholder's Galena shares. For certain U.S. non-corporate taxpayers, dividend income is currently taxed for federal income tax purposes at the same rate as net long-term capital gain. In accordance with Section 301(c) of the Code, the excess of the fair market value of RXi shares over the allocable portion of Galena's current year earnings and profits, if any, will be treated first as a non-taxable return of capital causing a reduction (but not below zero) in the adjusted tax basis in the

stockholder's Galena shares, with any remaining excess taxable as capital gain. Galena is presently unable to make a determination as to whether the gain to Galena from the distribution will result in Galena having current year earnings and profits such that all or a portion of the amounts treated as a distribution will be taxed as a dividend.

The stockholder's basis in RXi shares received in the distribution will generally equal the fair market value of such shares as of the distribution date. The stockholder's holding period with respect to RXi shares received will begin on the distribution date.

The actual tax impact of the distribution will be affected by a number of factors that are unknown at this time, including Galena's final taxable loss for the year in which the distribution occurs, the gain Galena recognizes upon the distribution and the fair market value on the distribution date of the RXi shares distributed to you. Thus, a definitive calculation of the U.S. federal income tax impact on you from the distribution will not be possible until after the close of the year in which the distribution occurs. Galena will notify you after the end the year in which the distribution occurs of the tax attributes and amount of the distribution to you on IRS Form 1099-DIV.

Special Rules Applicable to Corporate Stockholders

To the extent that the distribution to a corporate stockholder is treated as a dividend under the rules described above, such stockholder may be eligible for the dividends received deduction. The dividends received deduction is subject to certain limitations. Corporate stockholders should consult their own tax advisors as to the tax consequences of dividend treatment in their particular circumstances.

Federal Income Tax Withholding

To prevent backup federal income tax withholding equal to 28% of the distribution, each non-corporate stockholder who is not a foreign stockholder (as defined below) and who does not otherwise establish an exemption from backup withholding must notify the distribution agent of the stockholder's correct taxpayer identification number (employer identification number or social security number), or certify that the taxpayer is awaiting a taxpayer identification number, and provide certain other information by completing, under penalties of perjury, Internal Revenue Service ("**IRS**") Form W-9. Failure to timely provide the correct taxpayer identification number on Form W-9 may subject such stockholder to a $50 penalty imposed by the IRS. A stockholder that is a foreign stockholder should generally complete and sign an appropriate IRS Form W-8 in order to avoid backup withholding. For this purpose, a "foreign stockholder" is any stockholder that is not:

- an individual citizen or resident of the United States;
- a corporation (including any entity treated as a corporation for U.S. federal income tax purposes), partnership or other entity created or organized in or under the laws of the United States, any state or any political subdivision thereof;
- an estate, the income of which is subject to U.S. federal income taxation regardless of the source of the income; or
- a trust whose administration is subject to the primary supervision of a U.S. court and which has one or more United States persons who have the authority to control all of its substantial decisions or which has elected to be treated as a United States person.

Consequences for Foreign Stockholders

The treatment, for U.S. federal income tax purposes, of the distribution as a dividend, a tax-free return of capital or as capital gain for foreign stockholders will be determined in the manner described above under the caption "Consequences to Galena's Stockholders." To the extent that amounts received by a foreign stockholder are treated as dividends, such dividends will generally be subject to withholding of United States federal income tax at the rate of 30%, or such lower rate as may be specified by an applicable income tax treaty or other exemption, provided Galena has received proper certification of the application of such income tax treaty. A foreign stockholder that is eligible for a reduced rate of U.S. federal withholding tax under an income tax treaty may obtain a refund or credit of any excess amounts withheld by filing an appropriate claim for a refund with the IRS. Amounts treated as dividends that are effectively connected with a foreign stockholder's conduct of a trade or business in the United States and, if provided in an applicable income tax treaty, are attributable to a permanent establishment in the United States, are not subject to U.S. federal withholding tax, but generally are instead taxed in the manner applicable to U.S. persons, as described above. In that case, we will not have to withhold U.S. federal withholding tax if the foreign stockholder complies with the applicable certification and disclosure requirements. In addition, dividends received by a foreign corporation that are effectively connected with the conduct of a trade or business in the United States may be subject to a branch profits tax at a 30% rate, or a lower rate specified in an applicable income tax treaty.

In order to obtain a reduced rate of withholding pursuant to a tax treaty, a foreign stockholder must deliver to the distribution agent before any payment is made to the stockholder a properly completed and executed IRS Form W-8BEN with respect to the foreign stockholder and, in the case of a foreign stockholder that is neither an individual nor a corporation, the foreign stockholder may be required to deliver both a Form W-8IMY and an appropriate Form W-8BEN or Form W-9 with respect to the partners, members, beneficiaries or owners (and their beneficial owners) of the foreign stockholder. In order to obtain an exemption from withholding on the grounds that the gross proceeds paid pursuant to the offer are effectively connected with the conduct of a trade or business within the United States or otherwise exempt, a foreign stockholder must deliver to the distribution agent before any payment is made to the stockholder a properly completed and executed IRS Form W-8ECI or IRS Form W-8EXP, as applicable. Galena and the distribution agent will determine a stockholder's status as a foreign stockholder and eligibility for a reduced rate of, or exemption from, withholding by reference to any outstanding certificates or statements concerning eligibility for a reduced rate of, or exemption from, withholding *(e.g.*, IRS Form W-8BEN, IRS Form W-8ECI or IRS Form W-8EXP) unless the facts and circumstances indicate that reliance is not warranted.

Because the distribution agent cannot determine whether payments to any particular stockholder will qualify for sale or exchange treatment, the distribution agent will withhold 30% of any gross payments made to a foreign stockholder pursuant to the offer (as if such payments were a dividend) unless a reduced rate of withholding or an exemption from withholding is applicable. Foreign stockholders should consult their own tax advisors regarding their entitlement to benefits under an applicable income tax treaty or other exemption and the manner of claiming the benefits of such treaty or other exemption.

Information Reporting

A copy of this prospectus will be provided to Galena's stockholders and to the IRS, reporting the payment of the total purchase price (except with respect to stockholders that are exempt from the information reporting rules, such as corporations).

LEGAL MATTERS

TroyGould PC, Los Angeles, California, has rendered opinions with respect to the validity of the shares of common stock to be distributed in the spin-off transaction and with respect to certain tax matters

regarding the spin-off transaction. Immediately after the distribution, TroyGould PC will own approximately 23,491 shares of our common stock, and certain members, employees and counsel of TroyGould PC will own in the aggregate approximately 532,000 shares of our common stock.

EXPERTS

The financial statements of the Predecessor (RNAi) (the carve-out entity) as of December 31, 2010 and 2009 and for the years then ended included in this prospectus and in the Registration Statement have been so included in reliance on the report of BDO USA, LLP, an independent registered public accounting firm.

The balance sheet of RXi Pharmaceuticals Corporation (Registrant) as of September 8, 2011 included in this Prospectus and in the Registration Statement have been so included in reliance on the report of BDO USA, LLP, an independent registered public accounting firm.

WHERE YOU CAN FIND MORE INFORMATION

We have filed a registration statement on Form S-1 under the Securities Act with the SEC to register the shares of RXi common stock covered by this prospectus. This prospectus does not contain all of the information set forth in the registration statement and the exhibits and schedules thereto, as some items are omitted in accordance with the rules and regulations of the SEC. For further information about us and the RXi common stock, we refer you to the registration statement on Form S-1. Statements contained in this prospectus as to the contents of any contract, agreement or other document referred to are not necessarily complete, and in each instance reference is made to the copy of each contract, agreement or other document filed as an exhibit to the registration statement, each statement being qualified by this reference.

Following the distribution of the RXi common stock, we will be required to comply with the reporting requirements of the Exchange Act and will file annual, quarterly and other reports with the SEC. We will also be subject to the proxy solicitation requirements of the Exchange Act. We will make available free of charge on our website our annual reports on Form 10-K, quarterly reports on Form 10-Q and current reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act, as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC. We also intend to deliver to our holders of common stock annual reports containing consolidated financial statements prepared in accordance with United States generally accepted accounting principles and audited and reported on, with an opinion expressed thereto, by an independent registered public accounting firm.

You may read and copy all or any portion of the registration statement or any reports, statements or other information we file with the SEC at the SEC's public reference room at 100 F Street, NE, Washington, DE 20549. You can request copies of these documents upon payment of a duplicating fee, by writing to the SEC. Please call the SEC at 1-800-SEC-0330 for further information on the operation of the public reference rooms. Our SEC filings, including the registration statement, will also be available to you on the SEC's website at www.sec.gov. In addition, you may request a copy of these filings (excluding exhibits) at no cost by writing or telephoning us at the following address or telephone number:

RXi Pharmaceuticals Corporation
Investor Relations
60 Prescott Street
Worcester, Massachusetts 01605
Telephone: (508) 767-3861

We maintain a website at 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.

No person is authorized to give any information or to make any representations other than those contained in this prospectus, and, if given or made, such information or representations must not be relied upon as having been authorized. Neither the delivery of this prospectus nor any distribution of securities made hereunder shall imply that there has been no change in the information set forth herein or in our affairs since the date of this prospectus.

INDEX TO
RXi PHARMACEUTICALS CORPORATION (REGISTRANT) AND PREDECESSOR (RNAi) CARVE-OUT FINANCIAL STATEMENTS

(A Development-Stage Company)

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Board of Directors
RXi Pharmaceuticals Corporation
Worcester, Massachusetts

We have audited the accompanying balance sheets of the Predecessor (RNAi) (the carve-out entity) (the "Company"), a development stage company, as of December 31, 2010 and 2009 and the related statements of expenses, divisional equity (deficit), and cash flows for the years then ended. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. Our audits included consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion. An audit also includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the Predecessor (RNAi) (the carve-out entity) at December 31, 2010 and 2009 and the results of its operations and its cash flows for the years then ended, in conformity with accounting principles generally accepted in the United States of America.

/s/ BDO USA, LLP

Boston, Massachusetts
October 25, 2011

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Board of Directors
RXi Pharmaceuticals Corporation
Worcester, Massachusetts

We have audited the accompanying balance sheet of RXi Pharmaceuticals Corporation, (Registrant) (a subsidiary of Galena Biopharma, Inc.) (the "Company"), a development stage company, as of September 8, 2011. This financial statement is the responsibility of the Company's management. Our responsibility is to express an opinion on this financial statement based on our audit.

We conducted our audit in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. Our audit included consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion. An audit also includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statement. We believe that our audit provides a reasonable basis for our opinion.

In our opinion, the financial statement referred to above present fairly, in all material respects, the financial position of RXi Pharmaceuticals Corporation (Registrant) at September 8, 2011, in conformity with accounting principles generally accepted in the United States of America.

/s/ BDO USA, LLP

Boston, Massachusetts
February 10, 2012

RXi PHARMACEUTICALS CORPORATION (REGISTRANT) AND PREDECESSOR (RNAi)
(A Development Stage Company)
BALANCE SHEETS
(Amounts in thousands, except share data)

	RXi (Registrant)		Predecessor (RNAi)	
	Registrant September 30, 2011 (unaudited)	Registrant September 8, 2011	December 31, 2010	2009
ASSETS				
Current assets:				
Cash and cash equivalents	$ 422	$ —	$ 6,891	$5,684
Prepaid expenses	298	—	150	120
Total current assets	720	—	7,041	5,804
Equipment and furnishings, net of accumulated depreciation and amortization of $615, $491 and $320 in 2011, 2010 and 2009, respectively	428	—	419	432
Deposits	—	—	16	16
Total assets	$ 1,148	$ —	$ 7,476	$6,252
LIABILITIES, STOCKHOLDER'S EQUITY (DEFICIT) AND DIVISIONAL EQUITY				
Current liabilities:				
Accounts payable	$ 936	$ —	$ 724	$ 625
Accrued expense and other current liabilities	604	—	1,113	1,077
Convertible notes payable	500	—	—	—
Deferred revenue	877	—	—	—
Current maturities of capital lease obligations	40	—	51	52
Derivatives potentially settleable in cash	—	—	3,138	3,721
Total current liabilities	2,957	—	5,026	5,475
Capital lease obligations, net of current maturities	5	—	20	36
Total liabilities	2,962	—	5,046	5,511
Commitments and contingencies (Notes 7, 11, and 12)				
Stockholder's equity (deficit):				
Common stock, $0.0001 par value; 1,000 shares authorized and 100 issued and outstanding at September 30, 2011 and September 8, 2011	—	—	—	—
Additional paid-in capital	—	—	—	—
Deficit accumulated during developmental stage	(1,814)	—	—	—
Total stockholder's equity (deficit)	(1,814)	—	—	—
Total divisional equity	—	—	2,430	741
Total liabilities, stockholder's equity (deficit) and divisional equity	$ 1,148	$ —	$ 7,476	$6,252

See accompanying notes to financial statements.

RXi PHARMACEUTICALS CORPORATION (REGISTRANT) AND PREDECESSOR (RNAi)
(A Development Stage Company)
STATEMENTS OF EXPENSES
(Amounts in thousands)

	Predecessor (RNAi) and RXi (Registrant)(1)			Predecessor (RNAi)	
	Period from January 1, 2003 (Date of Inception) to September 30, 2011	Nine Months Ended September 30,		Years Ended December 31,	
		2011	2010	2010	2009
	(unaudited)	(unaudited)	(unaudited)		
Expenses:					
Research and development expense	$ 31,335	$ 4,652	$ 4,589	$ 6,046	$ 6,728
Research and development employee stock-based compensation expense	2,878	471	814	1,084	867
Research and development non-employee stock-based compensation expense	6,014	(49)	723	743	1,297
Fair value of Parent Company common stock issued in exchange for licensing rights	3,954	—	—	—	—
Total research and development expense	44,181	5,074	6,126	7,873	8,892
General and administrative expense	24,637	3,527	4,228	5,493	5,483
Fair value of Parent Company common stock warrants issued for general and administrative expense	2,385	91	654	718	826
Fair value of Parent Company common stock issued in exchange for general and administrative expenses	304	23	—	—	281
General and administrative employee stock-based compensation expense	8,950	1,565	1,921	2,541	2,038
Total general and administrative expense	36,276	5,206	6,803	8,752	8,628
Total operating expenses	(80,457)	(10,280)	(12,929)	(16,625)	(17,520)
Interest income (expense)	629	1	5	5	(5)
Other income (expense)	6,278	2,513	2,762	4,627	(862)
Loss before provision for income taxes	(73,550)	(7,766)	(10,162)	(11,993)	(18,387)
Provision for income taxes	—	—	—	—	—
Net loss	$ (73,550)	$ (7,766)	$ (10,162)	$(11,993)	$(18,387)

(1) The statements of expenses for the nine months ended September 30, 2011 and for the period from January 1, 2003 (date of inception) to September 30, 2011 include the results of operations of the carved-out Predecessor (RNAi) entity from the beginning of the periods presented to September 23, 2011 combined with the results of operations of RXi (Registrant) for the period September 24, 2011 to September 30, 2011.

See accompanying notes to financial statements.

RXi PHARMACEUTICALS CORPORATION (REGISTRANT) AND PREDECESSOR (RNAi)
(A Development Stage Company)
STATEMENTS OF STOCKHOLDER'S EQUITY (DEFICIT) FOR THE PERIOD FROM SEPTEMBER 24, 2011 TO SEPTEMBER 30, 2011, DIVISIONAL EQUITY FOR THE PERIOD FROM APRIL 3, 2006 TO SEPTEMBER 23, 2011 AND PARENT COMPANY'S NET DEFICIT FOR THE PERIOD FROM JANUARY 1, 2003 (DATE OF INCEPTION) TO DECEMBER 31, 2006
(Amounts in thousands, except share data)

	RXi (Registrant)			Predecessor (RNAi)	Predecessor (CytRx)	
	Common Stock		Deficit Accumulated During Development Stage	Divisional Equity	Parent Company's Net Deficit	Total
	Shares Issued	Amount				
Inception, January 1, 2003				$ —	$ —	$ —
Net loss				—	(89)	(89)
Balance at December 31, 2003				—	(89)	(89)
Net loss				—	(3,272)	(3,272)
Net transactions with Parent Company				—	2,393	2,393
Balance at December 31, 2004				—	(968)	(968)
Net loss				—	(2,209)	(2,209)
Net transactions with Parent Company				—	2,727	2,727
Balance at December 31, 2005				—	(450)	(450)
Net loss				—	(2,405)	(2,405)
Net transactions with Parent Company				—	2,587	2,587
Balance at December 31, 2006				$ —	$ (268)	$ (268)
Balance at April 3, 2006				$ —	$ —	$ —
Cash contributions from Parent Company				2	—	2
Balance at December 31, 2006				2	—	2
Non-cash equity adjustments from Parent Company				4,318	—	4,318
Cash contributions from Parent Company				15,679	—	15,679
Stock-based compensation expense				1,814	—	1,814
Net loss				(10,990)	—	(10,990)
Balance at December 31, 2007				10,823	—	10,823
Non-cash equity adjustments from Parent Company				750	—	750
Cash contributions from Parent Company				7,944	—	7,944
Stock based compensation				3,824	—	3,824
Net loss				(14,373)	—	(14,373)
Balance at December 31, 2008				8,968	—	8,968
Non-cash equity adjustments from Parent Company, net				(1,756)	—	(1,756)
Cash contributions from Parent Company				7,714	—	7,714
Stock based compensation expense				4,202	—	4,202
Net loss				(18,387)	—	(18,387)
Balance at December 31, 2009				741	—	741
Non-cash equity adjustments from Parent Company, net				(2,326)	—	(2,326)
Cash contributions from Parent Company, net				11,640	—	11,640
Stock-based compensation expense				4,368	—	4,368
Net loss				(11,993)	—	(11,993)
Balance at December 31, 2010				2,430	—	2,430
Non-cash equity adjustments from Parent Company, net (unaudited)				(8,083)	—	(8,083)
Cash contributions to Parent Company, net (unaudited)				369	—	369
Stock-based compensation expense (unaudited)				1,987	—	1,987
Reclassification of derivative liability upon elimination of obligation (unaudited)				9,249	—	9,249
Net loss - Predecessor (RNAi) (unaudited)				(7,682)	—	(7,682)
Recapitalization of divisional deficit (unaudited)	100	—	(1,730)	1,730	—	—
Net loss - RXi (Registrant) (unaudited)			(84)	—	—	(84)
Balance at September 30, 2011 (unaudited)	100	$ —	$ (1,814)	$ —	$ —	$ (1,814)

See accompanying notes to financial statements.

RXi PHARMACEUTICALS CORPORATION (REGISTRANT) AND PREDECESSOR (RNAi)
(A Development Stage Company)

STATEMENTS OF CASH FLOWS
(Amounts in thousands)

	Predecessor (RNAi) and RXi (Registrant)(1)		Predecessor (RNAi)		
	Period from January 1, 2003 (Date of Inception) through September 30, 2011	Nine Months Ended September 30,		Years Ended December 31,	
		2011	2010	2010	2009
	(unaudited)	(unaudited)	(unaudited)		
Cash flows from operating activities :					
Net loss	$ (73,550)	$ (7,766)	$ (10,162)	$ (11,993)	$ (18,387)
Adjustment to reconcile net loss to net cash used in operating activities:					
Depreciation and amortization expense	625	124	127	172	162
Loss on disposal of equipment	12	—	—	—	4
Non-cash rent expense	29	—	—	—	—
Accretion and receipt of bond discount	35	—	(6)	—	—
Non-cash stock-based compensation	17,844	1,987	3,458	4,368	4,202
Loss on exchange of derivatives	900	900			
Fair value of Parent Company's shares mandatorily redeemable for cash upon exercise of warrants	(785)	—	—	(785)	—
Fair value of Parent Company derivatives issued in exchange for services	2,385	91	654	718	826
Fair value of Parent Company's common stock issued in exchange for services	304	23	—	—	281
Change in fair value of derivatives of Parent Company issued in connection with various equity financings	(5,604)	(3,413)	(2,762)	(3,049)	858
Fair value of Parent Company's common stock issued in exchange for licensing rights	3,954	—	—	—	—
Changes in operating assets and liabilities:					
Prepaid expenses and other assets	(282)	(132)	(214)	(30)	(47)
Accounts payable	936	212	211	99	231
Due to former Parent Company	(207)	—	—	—	—
Accrued expenses and other current liabilities	1,238	(82)	306	243	101
Deferred revenue	877	877	—	—	—
Net cash used in operating activities	(51,289)	(7,179)	(8,388)	(10,257)	(11,769)
Cash flows from investing activities:					
Purchase of short-term investments	(37,532)	—	(5,990)	(5,990)	—
Maturities of short-term investments	37,497	—	—	5,990	—
Cash paid for purchase of equipment and furnishings	(739)	(53)	(65)	(106)	(82)
Disposal of equipment and furnishings	(1)	—	—	—	(1)
Cash refunded (paid) for lease deposit	(45)	—	—	—	—
Net cash used in investing activities	(820)	(53)	(6,055)	(106)	(83)
Cash flows from financing activities:					
Cash contributions from Parent Company, net	43,497	369	11,641	11,640	7,714
Proceeds from convertible note	500	500			
Repayments of capital lease obligations	(232)	(106)	(46)	(70)	(34)
Cash advances from former Parent Company, net	8,766	—	—	—	—
Net cash provided by financing activities	52,531	763	11,595	11,570	7,680
Net (decrease) increase in cash and cash equivalents	422	(6,469)	(2,848)	1,207	(4,172)
Cash and cash equivalents at the beginning of period	—	6,891	5,684	5,684	9,856
Cash and cash equivalents at end of period	$ 422	$ 422	$ 2,836	$ 6,891	$ 5,684
Supplemental disclosure of cash flow information:					
Cash received during the period for interest	$ 724	$ —	$ 1	$ —	$ 1
Cash paid during the period for interest	$ 8	$ 1	$ —	$ —	$ —

(1) The statements of cash flows for the nine months ended September 30, 2011 and for the period from January 1, 2003 (date of inception) to September 30, 2011 include the cash flows of the carved-out Predecessor (RNAi) entity from the beginning of the periods presented to September 23, 2011 combined with the cash flows of RXi (Registrant) for the period September 24, 2011 to September 30, 2011.

See accompanying notes to financial statements.

	Predecessor (RNAi) and RXi (Registrant)(1)		Predecessor (RNAi)		
	Period From January 1, 2003 (Date of Inception) through September 30, 2011	Nine Months Ended September 30, 2011	2010	Years Ended December 31, 2010	2009
	(unaudited)	(unaudited)	(Amounts in thousands) (unaudited)		
Supplemental disclosure of non-cash investing and financing activities:					
Settlement of corporate formation expenses in exchange for Parent Company common stock	$ 978	$ —	$ —	$ —	$ —
Fair value of derivatives issued in connection with Parent Company common stock	$ 14,072	$ 8,743	$ 2,466	$ 2,466	$ 2,863
Fair value of Parent Company shares mandatorily redeemable for cash upon exercise of warrants	$ 785	$ —	$ 785	$ 785	$ —
Allocation of management expenses	$ 551	$ —	$ —	$ —	$ —
Equipment and furnishings exchanged for Parent Company common stock	$ 48	$ —	$ —	$ —	$ —
Equipment and furnishings acquired through capital lease	$ 277	$ 80	$ 53	$ 53	$ 101
Non-cash lease deposit	$ 50	$ —	$ —	$ —	$ —
Value of Parent Company restricted stock units and common stock issued in lieu of bonuses included in accrued expenses	$ 474	$ 427	$ 47	$ 47	$ —
Value of Parent Company restricted stock units issued in lieu of cash bonuses	$ 207	$ —	$ 207	$ 207	$ —
Reclass of derivative liability upon elimination of obligation	$ 9,249	$ 9,249	$ —	$ —	$ —

(1) The statements of cash flows for the nine months ended September 30, 2011 and for the period from January 1, 2003 (date of inception) to September 30, 2011 include the cash flows of the carved-out Predecessor (RNAi) entity from the beginning of the periods presented to September 23, 2011 combined with cash the flows of RXi (Registrant) for the period September 24, 2011 to September 30, 2011.

See accompanying notes to financial statements.

RXi PHARMACEUTICALS CORPORATION (REGISTRANT) AND PREDECESSOR (RNAi)
(A Development Stage Company)

NOTES TO FINANCIAL STATEMENTS
(Information as of September 30, 2011 and for the nine months ended September 30, 2011 and 2010 is unaudited)

1. Nature of Business

Prior to December 31, 2010, Galena Biopharma, Inc. ("Galena" or the "Parent Company") (formerly known as RXi Pharmaceuticals Corporation) engaged primarily in conducting discovery research and preclinical development activities based on RNAi, and Galena's financial statements for periods through December 31, 2010 primarily reflected assets, liabilities and results of operations attributable to Galena's RNAi-based assets, liabilities and results of operations. Subsequent to December 31, 2010 but prior to September 30, 2011, Galena broadened its strategic direction by adding the development and commercialization of cancer therapies that utilize peptide-based immunotherapy products, including a main product candidate, NeuVax, for the treatment of various cancers. On September 24, 2011, Galena contributed to RXi Pharmaceuticals Corporation ("RXi," "Registrant," or the "Company"), a newly formed subsidiary of Galena, substantially all of Galena's RNAi-related technologies and assets. The newly formed RXi was incorporated on September 8, 2011 with the issuance of 100 initial shares at a price of $0.01 per share for total consideration of $1.00.

Accordingly, the historical financial information for the nine-month periods ended September 30, 2011 and 2010, the fiscal years ended December 31, 2010 and 2009, as well as the cumulative period from inception (January 1, 2003) through September 30, 2011, has been "carved out" of the financial statements of Galena, as our "Predecessor," for such periods, and includes activities through September 23, 2011. Such financial information is limited to Galena's RNAi-related activities, assets and liabilities only, and excludes activities, assets and liabilities that are attributable to Galena's cancer therapy activities. The financial information for the periods ended September 30, 2011 also includes the results of RXi for the period from September 24, 2011 to September 30, 2011. RXi was formed on September 8, 2011 and was not engaged in any activities other than its initial incorporation from September 8, 2011 to September 23, 2011. The Company has also included the balance sheet of RXi (Registrant) as of September 8, 2011, the date of incorporation. There was no other activity on that date. Accordingly, no statement of expenses or cash flows has been presented for the period ended September 8, 2011.

The carved-out financial information includes both direct and indirect expenses. The historical direct expenses consist primarily of the various costs for technology license agreements, sponsored research agreements and fees paid to scientific advisors, and employees directly involved in RNAi-related activities. Indirect expenses represent expenses incurred by Galena on behalf of the RNAi business that have been allocated to the RNAi business. The indirect expenses are based upon (1) estimates of the percentage of time spent by individual Galena employees working on RNAi business matters and (2) allocations of various expenses associated with each employee including salary, benefits, rent associated with an employee's office space, accounting and other general and administrative expenses. The percentage of time spent by individual Galena employees was then multiplied by the allocation of various expenses associated with those employees to develop an allocation of expense per employee and the sum of such allocations for these employees equals the total expense allocable to the RNAi business and reflected in the carved-out financial statements.

Management believes the assumptions underlying the allocations of indirect expenses in the carve-out financial information are reasonable; however, the financial position, results of operations, and cash flows may have been materially different if the RNAi business had operated as a stand-alone entity as of and for nine months ended September 30, 2011.

The financial statements included in this filing reflect the recapitalization of our Predecessor's divisional deficit as of September 24, 2011, the date Galena contributed assets to RXi. This information was not separately disclosed in previous filings. The recapitalization on September 24, 2011 reflects the elimination of the Predecessor's divisional deficit of $1,730,000 and the issuance of 100 shares of RXi common stock, par value $0.0001, with a corresponding charge of $(1,730,000) to deficit accumulated during development stage. No amounts were reflected in additional paid-in capital due to the divisional deficit at the date of the recapitalizaton.

To date, RXi's principal activities including that of its Predecessor have consisted of conducting discovery research and preclinical development activities utilizing the RNAi therapeutic platform, acquiring RNAi technologies and patent rights through exclusive, co-exclusive and non-exclusive licenses, recruiting an RNAi-focused management and scientific/clinical advisory team, capital raising activities and conducting business development activities aimed at establishing research and development partnerships with pharmaceutical and larger biotechnology companies.

The Company and its Predecessor have not generated any revenues since inception nor are any revenues expected for the foreseeable future and as such the Company is considered a development stage company for accounting purposes. The Company expects to incur significant operating losses for the foreseeable future while the Company advances its future product

RXi PHARMACEUTICALS CORPORATION (REGISTRANT) AND PREDECESSOR (RNAi)
(A Development Stage Company)

NOTES TO FINANCIAL STATEMENTS
(Information as of September 30, 2011 and for the nine months ended September 30, 2011 and 2010 is unaudited)

candidates from discovery through preclinical studies and clinical trials and seek regulatory approval and potential commercialization, even if the Company is collaborating with pharmaceutical and larger biotechnology companies. The Company will need to generate significant revenues to achieve profitability and may never do so.

On September 24, 2011, RXi entered into a contribution agreement with Galena pursuant to which:

- Galena assigned and contributed to us substantially all of its RNAi-related technologies and assets, which consist primarily of novel RNAi compounds and licenses from Dharmacon, Inc., Northwestern University, the Carnegie Institute of Washington, and the University of Massachusetts Medical School relating to its RNAi technologies, as well as the lease of its Worcester, Massachusetts laboratory facility, fixed assets and other equipment located at the facility and its employment arrangements with certain scientific, corporate and administrative personnel who have become our employees, as well as research grants from the National Institute of Neurological Disorders and Stroke, National Institute of Allergy and Infectious Diseases, and the National Institute of General Medical Sciences of approximately $800,000 that are subject to the approval of the granting institutions; and
- RXi agreed to assume certain recent accrued expenses of the RXi-109 development program and all future obligations under the contributed licenses, employment arrangements and other agreements, and RXi agreed to make future milestone payments to Galena of up to $45 million, consisting of two one-time payments of $15 million and $30 million, respectively, if RXi achieves annual net sales equal to or greater than $500 million and $1 billion, respectively, of any covered products that may be developed with the contributed RNAi technologies.

On September 24, 2011, RXi entered into a securities purchase agreement with Galena, Tang Capital Partners, LP ("TCP") and RTW Investments, LLC ("RTW") pursuant to which:

- TCP and RTW agreed to purchase a total of $9,500,000 of RXi's Series A Convertible Preferred Stock (the "Series A Preferred Stock") at the closing of the spin-off transaction and to lend to RXi up to $1,500,000 to fund RXi's operations prior to the closing, with the outstanding principal and accrued interest on the loan to be converted into Series A Preferred Stock at the closing, at a conversion price of $1,000 per share, and such conversion will be applied to the $9,500,000 total investment by TCP and RTW;
- RXi agreed that the Series A Preferred Stock will be convertible by TCP or RTW at any time into shares of RXi common stock, except to the extent that the holder would own more than 9.999% of the shares of RXi common stock outstanding immediately after giving effect to such conversion. Without regard to this conversion limitation, the shares of the Series A Preferred Stock to be held by TCP and RTW would be convertible into shares of RXi common stock representing approximately 83% of the fully diluted shares of RXi common stock upon the completion of the spin-off transaction;
- Galena agreed to contribute $1.5 million of cash to RXi;
- Galena agreed to distribute to its stockholders 8% of the fully diluted shares of common stock of RXi that will be outstanding immediately upon the completion of the spin-off transaction; and
- RXi agreed to reimburse, upon completion of the spin-off transaction, Galena for up to a total of $300,000, and TCP and RTW for a total of up to $100,000, of transaction costs relating to the contribution agreement with Galena, the securities purchase agreement summarized above and the transactions contemplated by those agreements.

As of November 28, 2011, TCP and RTW have advanced $500,000 to RXi under this bridge loan arrangement. The Company believes that the cash received from the securities purchase agreement should be sufficient to fund RXi's operations through December 31, 2012. In the future, RXi will be dependent on obtaining funding from third parties, such as proceeds from the sale of equity, funded research and development programs and payments under partnership and collaborative agreements, in order to maintain RXi's operations and meet RXi's obligations to licensors. There is no guarantee that debt, additional equity or other funding will be available to the Company on acceptable terms, or at all. If the Company fails to obtain additional funding when needed, RXi would be forced to scale back, or terminate the Company operations or to seek to merge with or to be acquired by another company.

As part of the transactions contemplated by the contribution and securities purchase agreements, on September 24, 2011, RXi entered into an agreement with Advirna, LLC ("**Advirna**"), a company affiliated with Anastasia Khvorova, Ph.D., RXi's Senior Vice President and Chief Scientific Officer, pursuant to which:

- Advirna assigned to RXi its existing patent and technology rights related to sd-rxRNA technology in exchange for RXi's agreement to pay Advirna an annual $100,000 maintenance fee and a one-time $350,000 milestone payment upon the future issuance of the first patent with valid claims covering the assigned patent and technology rights;
- RXi will be required to pay a 1% royalty to Advirna for any licensing revenue received by RXi with respect to future licensing of the assigned Advirna patent and technology rights;
- RXi has granted back to Advirna a license under the assigned patent and technology for fields of use outside the fields of human therapeutics and diagnostics; and
- RXi has agreed to issue to Advirna, upon the completion of the spin-off transaction, shares of RXi's common stock equal to approximately 5% of the fully diluted shares of RXi common stock assuming the conversion in full of all outstanding Series A Preferred Stock.

On September 24, 2011, RXi entered into employment agreements with Anastasia Khvorova, Ph.D., and Pamela Pavco, Ph.D., pursuant to which:

- Dr. Khvorova serves as RXi's Senior Vice President and Chief Scientific Officer at an annual salary of $310,000 and is entitled to a grant of stock options to purchase 2% of RXi's fully diluted shares of common stock after the spin-off transaction at an exercise price per share to be determined based on the fair value of RXi common stock at the date of grant; and

- Dr. Pavco serves as RXi's Senior Vice President of Pharmaceutical Development at an annual salary of $300,000 and also is entitled to a grant of stock options to purchase 2% of RXi's fully diluted shares of common stock after the spin-off transaction at an exercise price per share to be determined based on the fair value of RXi common stock at the date of grant.

Immediately following the record date for the distribution, the Company intends to declare and pay a 236,708-for-1 stock dividend with respect to the outstanding common stock.

2. Summary of Significant Accounting Policies

Basis of Presentation — For the period from January 1, 2003 (date of inception) to December 31, 2006, the Predecessor financial information consists of various transactions of CytRx Corporation ("CytRx") which were identified as direct expenses related to RNAi therapeutics and disaggregated ("carved out") from CytRx's financial statements. In addition, various indirect costs related to RNAi therapeutics (mainly senior management and accounting) were estimated and included as part of the Predecessor carved-out financial information. For the period from April 3, 2006 (date of incorporation of Galena) through December 31, 2007, Galena was operating as a subsidiary of CytRx. CytRx is the former parent of Galena. Galena was formed by CytRx and four prominent RNAi researchers to pursue the development of proprietary therapeutics based on RNAi for the treatment of human diseases. The financial information for the period from April 3, 2006 (date of incorporation of Galena) to September 30, 2011 was compiled from Galena's books and records through September 23, 2011, as well as an allocation in 2007 of indirect costs from CytRx for overhead and general administrative costs provided through December 31, 2007 (that have been allocated based upon estimates developed by CytRx's management and include corporate salaries, benefits, accounting, rent and other general and administrative expenses). There are no Predecessor financial statements for the period from April 3, 2006 (date of incorporation of Galena) to December 31, 2006 as there was no activity. In addition, the financial information for the periods ended September 30, 2011 also includes the results of RXi, the registrant, for the period from September 24, 2011 to September 30, 2011. RXi was formed on September 8, 2011 and was not engaged in any activities other than its initial incorporation from September 8, 2011 to September 23, 2011. RXi's net loss for the period September 24, 2011 to September 30, 2011, included in the financial information for the periods ended September 30, 2011, was $84,000.

Unaudited Financial Information —The information presented as of and for the periods ended September 30, 2011 and 2010, as well as the cumulative financial information for the period from January 1, 2003 (date of inception) through September 30, 2011, is unaudited and has been prepared on the same basis as the audited financial statements and includes all adjustments, consisting of only normal recurring adjustments, necessary for the fair presentation of this information in all material respects. The results of any interim period are not necessarily indicative of the results of operations to be expected for a full year.

Uses of estimates in preparation of financial statements — The preparation of financial statements in accordance with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ materially from those estimates.

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

Fair Value of Financial Instruments — The carrying amounts reported in the balance sheet for cash equivalents, accounts payable and capital leases approximate their fair values due to their short-term nature and market rates of interest.

RXi PHARMACEUTICALS CORPORATION (REGISTRANT) AND PREDECESSOR (RNAi)
(A Development Stage Company)

NOTES TO FINANCIAL STATEMENTS
(Information as of September 30, 2011 and for the nine months ended September 30, 2011 and 2010 is unaudited)

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

Depreciation and amortization expense for the nine months ended September 30, 2011 and 2010 was approximately $124,000 and $127,000, respectively and for the years ended December 31, 2010 and 2009 was approximately $172,000 and $162,000, respectively.

Impairment of Long-Lived Assets — The Company reviews long-lived assets, including finite lived intangible assets, for impairment on an annual basis, as of December 31, or on an interim basis if an event occurs that might reduce the fair value of such assets below their carrying values. An impairment loss would be recognized based on the difference between the carrying value of the asset and its estimated fair value, which would be determined based on either discounted future cash flows or other appropriate fair value methods. The Company believes no impairment existed as of December 31, 2009 and 2010 or September 30, 2011.

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

Stock-based Compensation — Stock-based compensation was allocated to the RXi Pharmaceuticals Corporation and Predecessor carved-out financial statements in a similar manner as other indirect expenses.

RXi follows the provisions of the Financial Accounting Standards Board ("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 and non-employee directors, including employee 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.

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 ("ASC 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 vesting period of the underlying stock options. At the end of each financial reporting period prior to vesting, the value of these options, as calculated using the Black-Scholes option-pricing model, will be re-measured using the fair value of the Company's common stock and the non-cash compensation recognized during the period will be adjusted accordingly. Since the fair market value of options granted to non-employees is subject to change in the future, the amount of the future compensation expense will include fair value re-measurements until the stock options are fully vested.

RXi recognized $743,000 and $1,297,000 of stock based compensation expense related to non-employee stock options for the years ended December 31, 2010 and 2009, respectively. Additionally, stock compensation expense (credit) related to non-employee stock options reflected in the nine month periods ended September 30, 2011 and 2010 amounted to ($49,000) and $723,000, respectively.

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Derivative Financial Instruments — During the normal course of business, from time to time, Galena issues warrants and options to vendors as consideration to perform services. It may also issue warrants as part of a debt or equity financing. The Company does not enter into any derivative contracts for speculative purposes.

The Company recognizes all derivatives as assets or liabilities measured at fair value with changes in fair value of derivatives reflected as current period income or loss unless the derivatives qualify for hedge accounting and are accounted for as such. In accordance with FASB ASC Topic 815-40, "*Derivatives and Hedging — Contracts in Entity's Own Stock,*" the value of these derivatives is required to be recorded as a liability, as the holders have an option to put the derivatives back to the Company for cash upon the occurrence of certain events set forth in the agreement.

Obligations to Repurchase Shares of Galena's Equity Securities — In accordance with FASB ASC Topic 480-10, *"Distinguishing Liabilities from Equity,"* the Company recognizes all obligations to repurchase shares of Galena's equity securities allocated to the Company that require or may require settlement of the obligation by transferring assets, as liabilities or assets in some circumstances measured at fair value with changes in fair value reflected as current period income or loss and are accounted for as such.

Deferred Revenue — Deferred revenue consists of advance payments received under government grants. The Company will recognize revenue when the obligations under the grants are fulfilled.

Research and Development Expenses — Research and development costs are expensed as incurred. Included in research and development costs are wages, benefits and other operating costs, facilities, supplies, external services and overhead directly related to the Company's research and development departments, as well as costs to acquire technology licenses.

Income Taxes — The Company recognizes liabilities or assets for the deferred tax consequences of temporary differences between the tax basis of assets or liabilities and their reported amounts in the financial statements in accordance with FASB ASC 740-10, *"Accounting for Income Taxes" ("ASC 740-10").* These temporary differences will result in taxable or deductible amounts in future years when the reported amounts of the assets or liabilities are recovered or settled. *ASC 740-10* requires that a valuation allowance be established when management determines that it is more likely than not that all or a portion of a deferred asset will not be realized. RXi evaluates the realizability of its net deferred income tax assets and valuation allowances as necessary, at least on an annual basis. During this evaluation, the Company reviews its forecasts of income in conjunction with other positive and negative evidence surrounding the realizability of its deferred income tax assets to determine if a valuation allowance is required. Adjustments to the valuation allowance will increase or decrease the Company's income tax provision or benefit. The recognition and measurement of benefits related to the Company's tax positions requires significant judgment, as uncertainties often exist with respect to new laws, new interpretations of existing laws, and rulings by taxing authorities. Differences between actual results and RXi's assumptions or changes in the Company's assumptions in future periods are recorded in the period they become known.

For the periods presented, RXi was not a separate taxable entity for federal, state, and local income tax purposes and its operating results were included in Galena's tax returns. RXi calculated its income taxes under the separate return method and accounted for deferred tax assets and liabilities under the asset and liability method described above.

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Concentrations of Credit Risk — Financial instruments that potentially subject the Company to significant concentrations of credit risk consist principally of cash and cash equivalents. The Company maintains cash balances in several accounts with one bank, which at times are in excess of federally insured limits. The Company's investment policy disallows investment in any debt securities rated less than "investment grade" by national ratings services.

Comprehensive Loss — The Company's comprehensive loss is equal to its net loss for all periods presented.

Parent Company's Net Deficit — The Parent Company's Net Deficit of the Predecessor consists of CytRx's initial investment in Galena and subsequent changes in Galena's net investment resulting from Galena being an integrated part of CytRx. All disbursements for the Predecessor were made by CytRx.

Non-cash equity adjustments from Parent Company — Non-cash equity adjustments from Parent Company consist of credits for employee and non-employee stock-based awards of Galena stock options, common stock and warrants issued to individuals engaged in RNAi activities, net of charges for the fair value of Galena warrants that were allocated to the RNAi business and accounted for as a cost of equity at the time of issuance.

3. Recent Accounting Pronouncements

Effective January 1, 2010, the Company adopted Accounting Standards Update (ASU) No. 2010-06, *Fair Value Measurements and Disclosures (Topic 820): Improving Disclosures about Fair Value Measurements*, or ASU 2010-06. A reporting entity should provide additional disclosures about the different classes of assets and liabilities measured at fair value, the valuation techniques and inputs used, the activity in Level 3 fair value measurements, and the transfers between Levels 1, 2 and 3 fair value measurements. The adoption of the additional disclosures for Level 1 and Level 2 fair value measurements did not have an impact on the Company's financial position, results of operations or cash flows. The disclosures regarding Level 3 fair value measurements were adopted by the Company January 1, 2011 and did not have an impact on the Company's financial position, results of operations or cash flows or require additional disclosures.

Effective January 1, 2010, the Company adopted ASU No. 2009-17, *Consolidations (Topic 810): Improvements to Financial Reporting by Enterprises Involved with Variable Interest Entities,* or ASU 2009-17. The amendments in this update replace the quantitative-based risks and rewards calculation for determining which reporting entity, if any, has a controlling financial interest in a variable interest entity with an approach focused on identifying which reporting entity has the power to direct the activities of a variable interest entity that most significantly impact the entity's economic performance and (1) the obligation to absorb losses of the entity or (2) the right to receive benefits from the entity. An approach that is expected to be primarily qualitative will be more effective for identifying which reporting entity has a controlling financial interest in a variable interest entity. The amendments in this update also require additional disclosures about a reporting entity's involvement in variable interest entities, which will enhance the information provided to users of financial statements. The Company evaluated its business relationships to identify potential variable interest entities and has concluded that consolidation of such entities is not required for the periods presented. On a quarterly basis, the Company will continue to reassess its involvement with variable interest entities.

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In December 2010, the FASB issued ASU No. 2010-29, *Business Combinations (Topic 805) - Disclosure of Supplementary Pro Forma Information for Business Combinations* (Update No. 2010-29). This update requires a public entity to disclose pro forma information for business combinations that occurred in the current reporting period. The disclosures include pro forma revenue and earnings of the combined entity for the current reporting period as though the acquisition date for all business combinations that occurred during the year had been as of the beginning of the annual reporting period. If comparative financial statements are presented, the pro forma revenue and earnings of the combined entity for the comparable prior reporting period should be reported as though the acquisition date for all business combinations that occurred during the current year had been as of the beginning of the comparable prior annual reporting period. This Update affects any public entity that enters into business combinations that are material on an individual or aggregate basis and is effective prospectively for business combinations for which the acquisition date is on or after the beginning of the first annual reporting period beginning on or after December 15, 2010. The Company adopted updated No. 2010-29 beginning January 1, 2011 and it did not have a material impact on its financial statements.

In May 2011, the FASB issued a new accounting standard that clarifies the application of certain existing fair value measurement guidance and expands the disclosures for fair value measurements that are estimated using significant unobservable (Level 3) inputs. This new standard is effective on a prospective basis for annual and interim reporting periods beginning on or after December 15, 2011. The Company does not expect that adoption of this new standard will have a material impact on its financial statements.

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4. Fair Value Measurements

In January 2010, the FASB issued ASU 2010-06, "*Improving Disclosures about Fair Value Measurements*" ("ASU 2010-06"). The standard amends FASB ASC Topic 820, "*Fair Value Measurements and Disclosures*" ("ASC 820"), to require additional disclosures related to transfers in and out of Levels 1 and 2 and for activity in Level 3 and clarifies other existing disclosure requirements. The Company adopted ASU 2010-06 beginning January 1, 2010. This update had no impact on the Company's financial statements.

The Company's financial assets and liabilities that are re-measured and reported at fair value at each reporting period, and are re-measured and reported at fair value at least annually using a fair value hierarchy that is broken down into three levels. Level inputs are as defined as follows:

Level 1 — quoted prices in active markets for identical assets or liabilities.

Level 2 — other significant observable inputs for the assets or liabilities through corroboration with market data at the measurement date.

Level 3 — significant unobservable inputs that reflect management's best estimate of what market participants would use to price the assets or liabilities at the measurement date.

The Company categorized its cash equivalents as Level 1 hierarchy. The valuation for Level 1 was determined based on a "market approach" using quoted prices in active markets for identical assets. Valuations of these assets do not require a significant degree of judgment. The Company categorized its derivatives potentially settleable in cash, which were issued by Galena and allocated to the Company, as a Level 2 hierarchy. The derivatives are measured at market value of Galena's stock on a recurring basis using the fixed monetary amount of each derivative that would be received by Galena under the conditions specified in the stock redemption agreement and are being marked to market each quarter-end until they are completely settled. The derivatives are valued using the Black-Scholes method, using assumptions consistent with our application of ASC 718.

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Description	September 30, 2011	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Unobservable Inputs (Level 3)
Assets:				
Cash equivalents	$ 422	$ 422	$ —	$ —
Total assets	$ 422	$ 422	$ —	$ —

Description	December 31, 2010	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Unobservable Inputs (Level 3)
Assets:				
Cash equivalents	$ 6,891	$ 6,891	$ —	$ —
Total assets	$ 6,891	$ 6,891	$ —	$ —
Allocated derivative liabilities to Company for:				
Parent Company derivatives potentially settleable in cash	$ 3,138	$ —	$ 3,138	$ —
Total liabilities	$ 3,138	$ —	$ 3,138	$ —

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Description	December 31, 2009	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Unobservable Inputs (Level 3)
Assets:				
Cash equivalents	$ 5,684	$ 5,684	$ —	$ —
Total assets	$ 5,684	$ 5,684	$ —	$ —
Allocated derivatives liabilities to Company for:				
Parent Company derivatives potentially settleable in cash	$ 3,721	$ —	$ 3,721	$ —
Total liabilities	$ 3,721	$ —	$ 3,721	$ —

5. Capital Lease Obligations

The Company acquires equipment under capital leases that is included in equipment and furnishings in the balance sheet. The cost and accumulated amortization of capitalized leased equipment was approximately $240,000 and $94,000 at September 30, 2011, respectively, $196,000 and $56,000 at December 31, 2010, respectively, and $143,000 and $17,000 at December 31, 2009, respectively. Amortization expense for capitalized leased equipment was approximately $38,000 and $30,000 for the nine months ended September 30, 2011, and September 30, 2010, respectively, and $39,000 and $10,000 for the years ended December 31, 2010 and 2009, respectively. Future minimum lease payments under the capital leases including interest are $12,000 for the three months ended December 31, 2011 and $27,000 and $7,000 for the years ending December 31, 2012 and 2013, respectively.

6. Accrued Expenses and Other Current Liabilities

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

	September 30, 2011	December 31, 2010	December 31, 2009
Professional fees	$ 73	$ 313	$ 390
Research and development costs	210	60	28
Payroll related costs	321	740	659
Total accrued expenses and other current liabilities	$ 604	$ 1,113	$ 1,077

7. Commitments and Contingencies

The Company acquires assets still in development and enters into research and development arrangements with third parties that often require milestone and royalty payments based on the progress of the asset through development stages. Milestone payments may be required, for example, upon approval of the product for marketing by a regulatory agency. In certain agreements, the Company is required to make royalty payments based upon a percentage

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of the sales. Because of the contingent nature of these payments, they are not included in the table of contractual obligations shown below (see also Note 11).

These arrangements may be material individually, and in the unlikely event that milestones for multiple products covered by these arrangements were reached in the same period, the aggregate charge to expense could be material to the results of operations. In addition, these arrangements often give the Company the discretion to unilaterally terminate development of the product, which would allow the Company to avoid making the contingent payments; however, the Company is unlikely to cease development if the compound successfully achieves clinical testing objectives. The Company's contractual obligations that will require future cash payments as of September 30, 2011 are as follows (in thousands):

	Operating Leases(1)	Non-Cancelable Employment Agreements(2)	Subtotal	Cancelable License Agreements(3)	Total
			(In thousands)		
Three months ended December 31, 2011	$ 48	$ 298	$ 346	$ 110	$ 456
Years Ended December 31:					
2012	98	802	900	228	1,128
2013	—	—	—	228	228
2014	—	—	—	213	213
2015	—	—	—	213	213
2016 and Thereafter	—	—	—	1,561	1,561
Total	$ 146	$ 1,100	$ 1,246	$ 2,553	$ 3,799

(1) Operating leases are primarily facility and equipment related obligations with third party vendors. Operating lease expenses during the nine months ended September 30, 2011 and 2010 were approximately $170,000 and $156,000, respectively. Operating lease expenses during the years ended December 31, 2010 and 2009 were approximately $274,000 and $260,000, respectively.

(2) Employment agreement obligations include management contracts, as well as scientific advisory board member compensation agreements. Certain agreements, which have been revised from time to time, provide for minimum salary levels, adjusted annually at the discretion of the Board of Directors, as well as for minimum bonuses that are payable.

(3) License agreements generally relate to the Company's obligations associated with RNAi. The Company continually assesses the progress of its licensed technology and the progress of its research and development efforts as it relates to its licensed technology and may terminate with notice to the licensor at any time. In the event these licenses are terminated, no amounts will be due.

On September 24, 2011, RXi entered into employment agreements with Anastasia Khvorova, Ph.D., and Pamela Pavco, Ph.D., pursuant to which:

- Dr. Khvorova serves as RXi's Senior Vice President and Chief Scientific Officer at an annual salary of $310,000 and is entitled to a grant of stock options to purchase 2% of RXi's fully diluted shares of common stock after the spin-off transaction at an exercise price per share to be determined based on the fair value of RXi common stock at the date of grant; and
- Dr. Pavco serves as RXi's Senior Vice President of Pharmaceutical Development at an annual salary of $300,000 and also is entitled to a grant of stock options to purchase 2% of RXi's fully diluted shares of common stock after the spin-off transaction at an exercise price per share to be determined based on the fair value of RXi common stock at the date of grant.

The Company applies the disclosure provisions FASB ASC Topic 460 ("ASC 460"), "*Guarantor's Accounting and Disclosure Requirements for Guarantees, Including Indirect Guarantees of Indebtedness of Others*", to its agreements that contain guarantee or indemnification clauses. The Company provides (i) indemnifications of varying scope and size to certain investors and other parties for certain losses suffered or incurred by the indemnified

party in connection with various types of third-party claims and (ii) indemnifications of varying scope and size to officers and directors against third party claims arising from the services they provide to us. These indemnifications give rise only to the disclosure provisions of ASC 460. To date, the Company has not incurred costs as a result of these obligations and does not expect to incur material costs in the future. Accordingly, the Company has not accrued any liabilities in its financial statements related to these indemnifications.

8. Stock-Based Compensation

The following stock based compensation information relates to stock options issued by Galena. Stock based compensation expense is allocated to the carved out financial statements based on an estimate of time spent by Galena employees, board members, scientific advisory board members, and outside consultants on RXi related matters. Galena follows the provisions of the FASB 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 and non-employee directors including employee 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.

For stock options granted as consideration for services rendered by non-employees, Galena 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 vesting period of the underlying stock options. At the end of each financial reporting period prior to vesting, the value of these options, as calculated using the Black-Scholes option-pricing model, will be re-measured using the fair value of Galena'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.

Galena is currently using the Black-Scholes option-pricing model to determine the fair value of all its option grants. For option grants issued in the nine months ended September 30, 2011 and 2010 and the years ended December 31, 2010 and 2009, the following assumptions were used:

	For the Nine Months ended September 30,	
	2011	2010
Weighted average risk-free interest rate	1.59%	3.02%
Weighted average expected volatility	103.27%	121.19%
Weighted average expected lives (years)	5.49	7.37
Weighted average expected dividend yield	0.00%	0.00%

	Year Ended December 31,	
	2010	2009
Weighted average risk free interest rate	1.88% - 3.28%	1.55% - 3.91%
Weighted average volatility	118.3% - 133.62%	116.72% - 122.93%
Expected lives (years)	6-10	6-10
Expected dividend yield	0%	0%

The weighted average fair value of options granted during the nine months ended September 30, 2011 and 2010 was $0.91 and $4.34 per share, respectively. The weighted average fair value of options granted during the years ended December 31, 2010 and 2009 was $4.31 and $4.11 per share, respectively.

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Galena's expected common stock price volatility assumption is based upon the volatility of a basket of comparable companies. The expected life assumptions for employee grants were based upon the simplified method provided for under ASC 718-10. The expected life assumptions for non-employees were based upon the contractual term of the option. The dividend yield assumption of zero is based upon the fact that Galena has never paid cash dividends and presently has no intention of paying cash dividends in the future. The risk-free interest rate used for each grant was also based upon prevailing short-term interest rates. Galena has estimated an annualized forfeiture rate of 15% for options granted to its employees, 8% for options granted to senior management and no forfeiture rate for the directors. The Company will record additional expense if the actual forfeitures are lower than estimated and will record a recovery of prior expense if the actual forfeiture rates are higher than estimated.

The following table summarizes the activity of Galena's stock option plan for options allocated to the Company for the period January 1, 2009 to September 30, 2011:

	Stock Options	Weighted Average Exercise Price
Outstanding — January 1, 2009	2,223,452	$ 6.11
Granted	1,622,546	3.84
Exercised	(281)	4.19
Forfeited	(263,378)	5.05
Outstanding — December 31, 2009	3,582,339	5.16
Granted	926,768	4.81
Exercised	(53,500)	4.75
Forfeited	(122,471)	4.85
Outstanding — December 31, 2010	4,333,136	5.10
Granted	3,262,500	0.87
Exercised	—	—
Forfeited	(1,144,067)	4.22
Outstanding — September 30, 2011	6,451,569	$ 3.29
Exercisable — December 31, 2009	2,131,298	$ 5.42
Exercisable — December 31, 2010	3,155,900	$ 5.22
Exercisable — September 30, 2011	4,652,517	$ 3.71

The weighted average remaining contractual life of options outstanding and exercisable at September 30, 2011 was 8.05 years and 7.69 years, respectively. The weighted average remaining contractual life of options outstanding and exercisable at December 31, 2010 was 7.35 years and 7.09 years, respectively. The weighted average remaining contractual life of options outstanding and exercisable at December 31, 2009 was 8.47 years and 8.14 years, respectively.

The aggregate intrinsic value of outstanding options as of September 30, 2011 and December 31, 2010 and 2009 is $167,250, $137,000 and $1,262,000, respectively. The aggregate intrinsic value of exercisable options as of September 30, 2011 and December 31, 2010 and 2009 is $94,500, $34,000 and $139,000, respectively. The aggregate intrinsic value is calculated based on the positive difference between the closing fair market value of the Parent Company's common stock and the exercise price of the underlying options.

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The aggregate intrinsic value of options exercised during 2010 and 2009 was approximately $164,000 and $1,000, respectively. No options were exercised during the period ended September 30, 2011.

RXi recorded approximately $1,987,000 and $3,458,000 of stock-based compensation for the nine months ended September 30, 2011 and 2010, respectively. RXi recorded approximately $4,368,000 and $4,202,000 of stock-based compensation for the years ended December 31, 2010 and 2009, respectively.

On November 4, 2009, as part of a planned succession in leadership, Tod Woolf, Ph.D., resigned as Galena's President, Chief Executive Officer and a member of Galena's Board of Directors. According to the Separation Agreement between Dr. Woolf and Galena, Dr. Woolf received in one lump sum payment his full severance equivalent to a six (6) month salary ($187,500), six (6) months acceleration of vesting of all of his outstanding unvested stock options of Galena as of November 4, 2009, and an offer to join the Company's Scientific Advisory Board (SAB) for 3 years (the "New Position"). In addition, and as part of the Separation Agreement, Galena agreed to extend the exercise period for all of Dr. Woolf's vested Stock Options as of November 4, 2009, to the later of: (i) a period of two (2) years from his resignation (until November 4, 2011), or (ii) ninety (90) days following the end of the term of the SAB Agreement (February 4, 2013) or such earlier date as the SAB Agreement may be terminated pursuant to the terms of the SAB Agreement provided Dr. Woolf has not violated the non-competition provisions of the SAB Agreement prior to the date of exercise (whether or not the SAB Agreement is still in effect at that time). Notwithstanding any provision of Galena's 2007 Incentive Plan, the Company also agreed that Dr. Woolf's previously awarded stock options shall continue to vest during his continuing role in Galena in the New Position. The option modification resulted in an incremental value of the options of approximately $153,000 of which $37,000 was expensed during 2009. The total expense for 2010 was $193,000. As of September 30, 2011, there were 28,335 shares subject to future vesting. Total expense for the nine months ended September 30, 2011 and 2010 was $64,000 and $171,000, respectively.

As of September 30, 2011, an aggregate of 8,750,000 shares of common stock were reserved for issuance under the Galena Biopharma, Inc. 2007 Incentive Plan, including 6,451,569 shares subject to outstanding common stock options granted under this plan and 1,348,785 shares available for future grants. The administrator of the plan determines the times when an option may become exercisable. Vesting periods of options granted to date include vesting upon grant to vesting at the end of a four year period. The options will expire, unless previously exercised, no later than ten years from the grant date.

As of December 31, 2010, an aggregate 6,750,000 shares of common stock were reserved for issuance under the Galena Biopharma Inc. 2007 Incentive Plan, including 4,333,136 shares subject to outstanding common stock options granted under this plan and 2,199,497 shares available for future grants.

Restricted Stock Units — In addition to options to purchase shares of common stock, Galena may grant restricted stock units ("RSUs") as part of its compensation package. Each RSU is granted at the fair market value based on the date of grant. Vesting is determined on a grant by grant basis.

In March 2011, Galena granted a total of 220,729 RSUs. The RSUs had an aggregate intrinsic value of $256,046. In 2010 and 2009, Galena granted a total of 43,541 and 48,500 RSUs, respectively. The RSUs granted in 2010 and 2009 had an aggregate intrinsic value of $112,000 and $222,000. As of September 30, 2011, all of the RSUs had vested in full.

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Derivatives Potentially Settleable in Cash— On August 7, 2008, Galena issued 190,000 warrants to an investment bank as consideration for investment and business advisory services. The warrants have an exercise price of $7.036 per share and expire five years from the date of issuance, on August 7, 2013. The warrants vested as to 94,000 shares upon issuance, and vested at a rate of 32,000 shares per month starting on the 90 day anniversary of issuance, and are exercisable for a period of five years. All shares were vested at December 31, 2009. Galena also agreed to give the holder of the warrants unlimited "piggy back" registration rights with respect to the shares of Galena's common stock underlying the warrants in any registration statement Galena files in connection with an underwritten offering of its common stock. The fair value of these warrants has been estimated based on the Black-Scholes options pricing model and changes in the fair value are recorded in the statement of expenses in accordance with the requirements of ASC 718 and ASC 505-50. There was no expense recorded for these warrants for the year ended December 31, 2010. Total expense related to these warrants was approximately $318,000 during the year ended December 31, 2009 and has been allocated entirely to the Company.

On October 3, 2008, Galena acquired the rights to license exclusive worldwide technology for the oral delivery of RNAi therapeutics. As consideration for this license, Galena agreed to pay a total license fee of $2,500,000 over a 12 month period, which can be paid in cash, in equity or a combination thereof, provided that a specified amount of the license fee must be made in cash. Payments made in equity may only be made if, at the time of such payment, the shares of common stock issuable upon conversion of the warrant have been registered for resale under the Securities Act of 1933. No warrants have been issued under this agreement thru the date of this report. The Company continually assesses the progress of its research and development efforts as it relates to its licensed technology and may terminate with notice to the Licensor at any time. Accordingly, the amounts are being expensed, as payments are made. There was no expense for this license for the nine months ended September 30, 2011 and 2010 and for the year ended December 31, 2010. Total expense for the year ended December 31, 2009 was $250,000 and has been allocated entirely to the Company.

On January 29, 2009, Galena issued 142,500 warrants to an investment bank as consideration for investment and business advisory services. The warrants have an exercise price of $4.273 per share and expire five years from the date of issuance on January 29, 2014. The warrants vested as to 71,250 shares upon issuance, and vested at a rate of 23,750 shares per month starting on the 90 day anniversary of issuance, and are exercisable for a period of five years. All shares were vested at December 31, 2009. Galena has also agreed to give the holder of the warrants unlimited "piggy back" registration rights with respect to the shares of Common Stock underlying the warrants in any registration statement the Galena files in connection with an underwritten offering of the common stock. The fair value of these warrants has been estimated based on the Black-Scholes options pricing model and changes in the fair value until fully vested are recorded in the statement of expenses in accordance with the requirements of ASC Topic 718 and ASC Topic 505-50. Total expense related to these warrants was approximately $509,000 during the year ended December 31, 2009 and has been allocated entirely to the Company.

In connection with the 2009 Offering, Galena issued warrants to purchase 978,142 shares of Galena's common stock. Details of the transaction can be found under the heading "2009 Registered Direct Offering" below.

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In connection with the 2010 Offering, Galena issued warrants to purchase 540,000 shares of Galena's common stock. Details of the transaction can be found under the heading 2010 Registered Direct Offering below.

In connection with the 2011 Offerings, Galena issued warrants to purchase 17,950,000 shares of Galena's common stock. Details of the transaction can be found under the heading 2011 Offering below.

2009 Registered Direct Offering — On March 17, 2009, Galena entered into a placement agency agreement, which was subsequently amended on May 26, 2009 and July 22, 2009, with Rodman & Renshaw, LLC ("Rodman") as the exclusive placement agent, relating to a proposed offering by Galena of new securities to potential investors. On July 30, 2009, Galena entered into definitive agreements for the sale and issuance by Galena to certain investors of 2,385,715 units, with each unit consisting of one share of Galena's common stock and a warrant to purchase 0.40 of a share of common stock, at a purchase price of $3.50 per unit (the "2009 Offering"). The 2009 Offering closed on August 4, 2009. The warrants have an exercise price of $4.50 per share and are exercisable for a period beginning on February 3, 2010 until their expiration on August 3, 2014. Galena raised gross proceeds of approximately $8,350,000 in the 2009 Offering and net cash proceeds, after deducting the placement agents' fees and other offering expenses payable by Galena, of approximately $7.7 million. Total warrants issued in connection with the transaction were 954,285.

As part of the placement agency agreement, Galena issued a warrant to purchase 23,857 shares of Galena's common stock to Rodman. The warrant has an exercise price of $4.38 per share. The warrant is immediately vested and is exercisable until its expiration on August 3, 2014.

The Company follows the guidance of ASC Topic 815-40, as certain warrants issued in connection with the stock offering on August 4, 2009 were determined not to be indexed to Galena's common stock as they are potentially settleable in cash. The fair value of the warrants at the dates of issuance totaling $2,863,000 was recorded as a derivative liability and was determined by the Black-Scholes option pricing model. Due to the fact that Galena has limited trading history, Galena's expected stock volatility assumption is based on a combination of implied volatilities of similar entities whose share or option prices are publically traded. Galena used a weighted average expected stock volatility of 122.69%. The expected life assumption is based on the contract term of five years. The dividend yield of zero is based on the fact that Galena has no present intention to pay cash dividends in the future. The risk free rate of 1.72% used for the warrant is equal to the zero coupon rate in effect at the time of the grant.

The decrease in the fair value of the warrants from the date of issuance to September 24, 2011 is $2,586,000, of which $1,666,000 has been included in other income(expense) in the accompanying statements of expenses for the nine months ended September 30, 2011. The fair value of these warrants at September 24, 2011 of $277,000 was reclassified to divisional deficit immediately prior to the recapitalization of the Company, as the Company was effectively released of any liability or obligation to settle the warrants pursuant to the contribution agreement with Galena entered into on this date. The fair value of the warrants was determined by the Black-Scholes option pricing model. Due to the fact that Galena has limited trading history, Galena's expected stock volatility assumption is based on a combination of implied volatilities of similar entities whose shares or options are publicly traded. Galena used a weighted average expected stock volatility of 98.87%. The expected life assumption is based on the remaining contract term of 2.8 years. The dividend yield of zero is based on the fact that Galena has no present intention to pay cash dividends. The risk free rate of 0.37% used for the warrants is equal to the zero coupon rate in effect on the date of the re-measurement. All changes related to the value of these warrants have been allocated entirely to the Company.

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2010 Registered Direct Offering — On March 22, 2010, Galena entered into a placement agency agreement relating to a proposed offering by Galena of new securities to potential investors. On March 23, 2010, Galena entered into definitive agreements for the sale and issuance by Galena to certain investors of 2,700,000 units, with each unit consisting of one share of Galena's common stock and a warrant to purchase 0.20 of a share of Galena's common stock, at a purchase price of $6.00 per unit (the "2010 Offering"). The 2010 Offering closed on March 26, 2010. Galena issued warrants to purchase 540,000 shares of Galena's common stock at an exercise price of $6.00 per share and that are exercisable beginning on September 26, 2010 until their expiration on March 26, 2016. Galena raised gross proceeds of approximately $16.2 million in the 2010 Offering and net cash proceeds, after deducting the placement agent fees and other offering expenses payable by Galena, of approximately $15.2 million.

As part of the 2010 Offering, Galena entered in a stock redemption agreement whereby Galena was required to use 25% of the net proceeds from the 2010 Offering to repurchase from CytRx 675,000 shares of Galena's common stock held by CytRx Shares of common stock that are mandatorily redeemable under the stock redemption agreement upon the exercise of warrants issued in the 2010 Offering, were determined to embody an obligation that may require Galena to settle the obligation by transferring assets, and as such, shall be classified as a liability. The fair value of the common stock potentially redeemable under the stock redemption agreement totaling $785,000 was recorded as a derivative liability was determined using the fixed monetary amount of each warrant multiplied by assumptions regarding the number and timing of warrants to be exercised. On December 29, 2010, CytRx sold all of their shares held in Galena, thus reducing the potential redemption liability to zero as December 31, 2010. The Company recorded a gain of $785,000 as other income as a result of this settlement.

Certain warrants issued in connection with the 2010 Offering were determined not to be indexed to Galena's common stock as they are potentially settleable in cash. The fair value of the warrants at the dates of issuance totaling $2,466,000 was recorded as a derivative liability and a cost of equity and was determined by the Black-Scholes option pricing model. Due to the fact that Galena has limited trading history, Galena's expected stock volatility assumption is based on a combination of implied volatilities of similar entities whose share or option prices are publicly traded. Galena used a weighted average expected stock volatility of 119.49%. The expected life assumption is based on the contract term of 6.5 years. The dividend yield of zero is based on the fact that Galena has no present intention to pay cash dividends. The risk free rate of 3.22% used for the warrant is equal to the zero coupon rate in effect at the time of the grant.

The decrease in the fair value of the warrants from date of issuance to September 24, 2011 is $2,152,000, of which $881,000 has been included in other income (expense) in the accompanying statements of expenses for the nine months ended September 30, 2011. The fair value of these warrants at September 24, 2011 of $314,000 was reclassified to divisional deficit immediately prior to the recapitalization of the Company, as the Company was effectively released of any liability or obligation to settle the warrants pursuant to the contribution agreement with Galena entered into on this date. The fair value of the warrants was determined by the Black-Scholes option pricing model. Due to the fact that Galena has limited trading history, Galena's expected stock volatility assumption is based on a combination of implied volatilities of

similar entities whose shares or options are publicly traded. Galena used a weighted average expected stock volatility of 98.87%. The expected life assumption is based on the remaining contract term of 5.0 years. The dividend yield of zero is based on the fact that Galena has no present intention to pay cash dividends. The risk free rate of 0.89% used for the warrants is equal to the zero coupon rate in effect on the date of the re-measurement. All changes related to the value of these warrants have been allocated entirely to the Company.

2011 Offerings — On March 4, 2011, Galena closed an underwritten public offering of 6,000,000 units at a price to the public of $1.35 per unit for gross proceeds of $8.1 million (the "March 2011 Offering"). The offering provided approximately $7.3 million to Galena after deducting the underwriting discounts and commissions and offering expenses. Each unit consists of (i) one share of common stock, (ii) a thirteen-month warrant to purchase 0.50 of a share of common stock at an exercise price of $1.70 per share (subject to anti-dilution adjustment) and (iii) a five-year warrant to purchase 0.50 of a share of common stock at an exercise price of $1.87 per share (subject to anti-dilution adjustment). On April 15, 2011, the holders of outstanding warrants issued in the March 2011 Offering to purchase an aggregate of 3,450,000 shares of common stock agreed to exchange such warrants for warrants exercisable for the same number of shares as those being exchanged, but otherwise on the same terms of the warrants sold in Galena's April 2011 financing. Prior to the exchange, the Company recorded a decrease in fair value of $1,000,000 related to the exchanged warrants. Upon the exchange, the Company recorded a loss of $900,000, which represented the difference between the adjusted fair value of the March 2011 warrants as compared to the fair value of the April 2011 warrants received in the exchange. As a result of a subsequent offering that was completed on April 15, 2011, the exercise price of the remaining 2,550,000 outstanding warrants sold in the March 2011 Offering was reduced to $1.00 per share as a result of the anti-dilution adjustment.

The thirteen-month and five-year warrants issued in connection with the March 2011 Offering were determined not to be indexed to Galena's common stock as they are potentially settleable in cash. The fair value of the remaining 2,550,000 warrants at the date of issuance totaling $1,790,000 was recorded as a derivative liability and was determined using the Black-Scholes option pricing model. Due to the fact that Galena has limited trading history, Galena's expected stock volatility assumption is based on a combination of implied volatilities of similar entities whose shares or options are publicly traded. Galena used a weighted average expected stock volatility of 113.25%. The expected life assumption is based on the contract term of 1.08 years used for the thirteen-month warrants and 5 years used for the five-year warrants. The dividend yield of zero is based on the fact that we have no present intention to pay cash dividends. The risk free rate of 0.26% used for the thirteen-month warrants and 2.17% used for the five-year warrants is equal to the zero coupon rate in effect at the time of the grant. In July 2011, 75,000 of the thirteen-month warrants were exercised at $1.00 per common share which resulted in a $34,000 reduction of the derivative liability. In July 2011, 75,000 of the five-year warrants were exercised at $1.00 per common share which resulted in a $68,000 reduction in the derivative liability. The decrease in the fair value of the warrants from date of issuance to September 24, 2011 of $625,000 has been included in other income (expense) in the accompanying statements of expenses for the nine months ended September 30, 2011. The fair value of these warrants at September 24, 2011 of $1,165,000 was reclassified to divisional deficit immediately prior to the recapitalization of the Company, as the Company was effectively released of any liability or obligation to settle the warrants pursuant to the contribution agreement with Galena entered into on this date. The fair value of the warrants was determined using the Black-Scholes option pricing model. Due to the fact that Galena has limited trading history, Galena's expected stock volatility assumption is based on a combination of implied volatilities of similar entities whose shares or options are publicly traded. Galena used a weighted average expected stock volatility of 98.87%. The expected life assumption is based on the remaining contract term of 0.5 years used for the thirteen-month warrants and 4.4 years used for the five- year warrants. The dividend yield of zero is based on the fact that Galena has no present intention to pay cash dividends. The risk free rate of 0.02% used for the thirteen-month warrants and 0.63% used for the five-year warrants is equal to the zero coupon rate in effect on the date of the re-measurement. All changes related to the value of these warrants has been allocated entirely to the Company.

On April 20, 2011, Galena completed an underwritten public offering of 11,950,000 units at a price to the public of $1.00 per unit for gross proceeds of approximately $12 million (the "April 2011 Offering"). Each unit consisted of one share of common stock and a warrant to purchase one share of

common stock at an exercise price of $1.00 per share. The shares of common stock and warrants were immediately separable and no separate units were issued. The warrants are exercisable beginning one year and one day from the date of issuance, but only if Galena's stockholders approve an increase in the number of authorized shares of common stock of Galena, and expire on the sixth anniversary of the date of issuance. Net proceeds, after underwriting discounts and commissions and other offering expenses, were approximately $10.9 million. In connection with the April financing, Galena agreed to hold a stockholders meeting no later than July 31, 2011 in order to seek stockholder approval for an amendment to Galena's Amended and Restated Certificate of Incorporation to increase the authorized number of shares or our common stock. The Board of Directors of Galena subsequently adopted an amendment to increase the authorized shares of common stock to 125,000,000, which was presented to and approved by the stockholders of Galena at the 2011 Annual Meeting of Stockholders held on July 15, 2011.

The warrants issued in connection with the April 2011 Offering, including the warrants issued in exchanged for the March 2011 warrants, were determined not to be indexed to Galena's common stock as they are potentially settleable in cash. A portion of the liability was allocated to the Company based on the expected use of proceeds at the time the Offering was completed. The fair value of the warrants at the dates of issuance allocated to the Company totaling $6,932,000 was recorded as a derivative liability and was determined using the Black-Scholes option pricing model. Due to the fact that the Company has limited trading history, Galena's expected stock volatility assumption is based on a combination of implied volatilities of similar entities whose shares or options are publicly traded. Galena used a weighted average expected stock volatility of 99.04%. The expected life assumption is based on the contract term of 7.0 years. The dividend yield of zero is based on the fact that we have no present intention to pay cash dividends. The risk free rate of 2.81% used for the warrants is equal to the zero coupon rate in effect at the time of the grant. The increase in the fair value of the warrants allocated to the Company from date of issuance to September 24, 2011 is $339,000, which has been included in other income (expense) in the accompanying statements of expenses for the nine months ended September 30, 2011. The fair value of the warrants at September 24, 2011 of $7,493,000 was reclassified to divisional deficit immediately prior to the recapitalization of the Company, as the Company was effectively released of any liability or obligation to settle the warrants pursuant to the contribution agreement with Galena entered into on this date. The fair value of the warrants was determined by the Black-Scholes option pricing model. Due to the fact that Galena has limited trading history, Galena's expected stock volatility assumption is based on a combination of implied volatilities of similar entities whose shares or options are publicly traded. Galena used a weighted average expected stock volatility of 98.87%. The expected life assumption is based on the remaining contract term of 6.56 years. The dividend yield of zero is based on the fact that Galena has no present intention to pay cash dividends. The risk free rate of 1.35% used for the warrants is equal to the zero coupon rate in effect on the date of the re-measurement. Additionally, in connection with the previously discussed exchange, the Company recorded a loss of approximately $900,000 which accounts for the remaining change in value during the period.

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9. Income Taxes

The components of federal and state income tax expense are as follows (in thousands):

	As of December 31,	
	2010	2009
Current		
Federal	$ —	$ —
State	—	—
Deferred		
Federal	(4,853)	(5,533)
State	(1,283)	(2,257)
Total deferred	(6,136)	(7,790)
Valuation allowance	6,136	7,790
Total income tax expense	$ —	$ —

The components of net deferred tax assets are as follows (in thousands):

	As of December 31,	
	2010	2009
Net operating loss carryforwards	$ 13,328	$ 10,348
Tax credit carryforwards	1,061	753
Stock based compensation	5,864	4,222
Other	104	74
Licensing deduction deferral	3,264	2,089
Gross deferred tax assets	23,621	17,486
Valuation allowance	(23,621)	(17,486)
Net deferred tax asset	$ —	$ —

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The Company has incurred net operating losses from inception. At December 31, 2010, Galena had domestic federal and state net operating loss carry forwards of approximately $34.0 million available to reduce future taxable income, which expire at various dates beginning in 2012 through 2030. Galena also had federal and state research and development tax credit carry forwards of approximately $705,000 and $536,000, respectively, available to reduce future tax liabilities and which expire at various dates beginning in 2022 through 2030.

Under the provisions of the Internal Revenue Code, certain substantial changes in Galena's ownership may result in a limitation on the amount of net operating loss carry forwards and research and development credit carry forwards which could be utilized annually to offset future taxable income and taxes payable.

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

The Company adopted certain provisions of the *ASC 740,* effective January 1, 2007 which clarifies the accounting for uncertainty in income taxes recognized in financial statements and requires the impact of a tax position to be recognized in the financial statements if that position is more likely than not of being sustained by the taxing authority. The adoption of *ASC 740-10* did not have any effect on the Company's financial position or results of operations.

Galena files income tax returns in the U.S. federal and Massachusetts jurisdictions. Galena is subject to tax examinations for the 2007 tax year and beyond. Galena does not believe there will be any material changes in its unrecognized tax positions over the next 12 months. Galena has not incurred any interest or penalties. In the event that Galena is assessed interest or penalties at some point in the future, they will be classified in the financial statements as general and administrative expense.

The operating results of the RXi for the nine months ended September 30, 2011 will be included in Galena's tax return for the year ended December 31, 2011. No tax provision has been recorded for RXi for the nine months ended September 30, 2011 due to both Galena's and RXi's projected loss for the year.

10. License Agreements

As part of its business, Galena enters into numerous licensing agreements. These license agreements with third parties often require milestone and royalty payments based on the progress of the asset through development stages. Milestone payments may be required, for example, upon approval of the product for marketing by a regulatory agency. In certain agreements, Galena is required to make royalty payments based upon a percentage of net sales.

The expenditures required under these arrangements may be material individually in the event that Galena develops product candidates covered by the intellectual property licensed under any such arrangement, and in the unlikely event that milestones for multiple products covered by these arrangements were reached in the same period, the aggregate charge to expense could be material to the results of operations. In addition, these arrangements often give Galena the discretion to unilaterally terminate development of the product, which would allow Galena to avoid making the contingent payments; however, Galena is unlikely to cease development if the compound successfully achieves clinical testing objectives.

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During the year ended December 31, 2007, Galena entered into a license agreement with Cold Spring Harbor Laboratory ("CSHL") for small hairpin RNA, or "shRNA", for which Galena paid $50,000 and agreed to make future milestone and royalty payments upon successful development and commercialization of products. Galena also entered into four exclusive license agreements and an invention disclosure agreement with the University of Massachusetts Medical School ("UMMS") for which the Company paid cash of $453,000 and issued 462,112 shares of its common stock valued at $2.3 million, or $5.00 per share. For each RNAi product developed in connection with the license granted by CSHL, the possible aggregate milestone payments equal $2,650,000. The invention disclosure agreement has an initial term of three years and provides the option to negotiate licenses to certain RNAi technologies discovered at UMMS. During the nine months ended September 30, 2011, the Company cancelled several of its licenses with UMMS.

On August 29, 2007, Galena entered into a license agreement with TriLink Biotechnologies, Inc. for three RNAi chemistry technologies for all therapeutic RNAi applications, for which Galena paid $100,000 and agreed to pay yearly maintenance fees of $30,000, as well as future clinical milestone payments and royalty payments based on sales of therapeutic products developed from the licensed technologies. There was no expense recorded in 2010 and 2011. The Company expensed $30,000 in 2009.

In October 2007, Galena entered into a license agreement with Dharmacon, Inc. (now part of Thermo Fisher Scientific Inc.), pursuant to which Galena obtained an exclusive license to certain RNAi sequences to a number of target genes for the development of Galena's rxRNA compounds. Further, Galena has obtained the right to license additional RNAi sequences, under the same terms, disclosed by Thermo Fisher Scientific Inc. in its pending patent applications against target genes and has received an option for exclusivity for other siRNA configurations. As consideration for this license, Galena paid an up-front fee of $150,000 and agreed to pay future clinical milestone payments and royalty payments based on sales of siRNA compositions developed in connection with the licensed technology. No amounts were expensed in 2009, 2010, and 2011 related to this license.

In November 2007, Galena entered into a license agreement with Life Technologies, Inc., pursuant to which the Company was granted rights under four patents relating to RNA target sequences, RNA chemical modifications, RNA configurations and/or RNA delivery to cells. As consideration for this license, Galena paid an up-front fee of $250,000 and agreed to pay yearly maintenance fees of the same amount beginning in 2008. Further, Galena is obligated to pay a fee for each additional gene target added to the license as well as a fee on the first and second anniversaries on the date of which consent to add the gene target to the list of those covered by the license was granted. Galena has also been granted, for each gene target, an option to secure preclinical rights and/or the clinical rights, for which RXi would be required to pay additional fees. Further, Galena is required to make future clinical milestone payments and royalty payments based on sales of therapeutic products developed from the licensed technologies. The Company expensed $187,500, $62,500 and $250,000 for the nine months ended September 30, 2011, and the years ended December 31, 2010 and 2009 related to this license.

On October 3, 2008, Galena acquired co-exclusive rights to technology for the oral delivery of RNAi therapeutics from UMMS. As consideration for this license, Galena agreed to pay a total license fee of $2,500,000 over a 12 month period, which can be paid in cash, in equity or a combination thereof, provided that a specified amount of the license fee must be made in cash. This Agreement was amended on July 1, 2009, allowing Galena to extend the periods for which certain milestone payments are due to UMMS. Payments made in equity may only be made if, at the time of such payment, the shares of common stock issuable upon conversion of the warrant have been registered for resale under the Securities Act of 1933. No

warrants have been issued under this agreement through the date of this report. Galena continually assesses the progress of its research and development efforts as it relates to its licensed technology and may terminate with notice to the licensor at any time. Accordingly, the amounts are being expensed, as payments are made. There were no expenses recorded for the nine months ended September 30, 2011 and the year ended December 31, 2010. The Company expensed $250,000 for the year ended December 31, 2009.

In September, 2009, Galena entered into a Patent and Technology Assignment Agreement with Advirna, LLC ("Advirna"), a Colorado limited liability company co-founded by Galena's former Chief Scientific Officer. Pursuant to the terms of the agreement, Advirna assigned to Galena certain patent and technology rights related to chemically modified polynucleotides (the "Rights") and Galena granted to Advirna a fully paid-up license to the Rights in a specified field. During the period ended September 30, 2011 and the year ended December 31, 2009, the Company paid and expensed $100,000 and $75,000, respectively, for the initial and annual maintenance fees under this agreement. There was no expense recorded for the year ended December 31, 2010.

As part of the transactions contemplated by the contribution and securities purchase agreements, on September 24, 2011, RXi entered into an agreement with Advirna pursuant to which:

- Advirna assigned to RXi its existing patent and technology rights related to *sd*-rxRNA technology in exchange for RXi's agreement to pay Advirna an annual $100,000 maintenance fee and a one-time $350,000 milestone payment upon the future issuance of the first patent with valid claims covering the assigned patent and technology rights;

- RXi will be required to pay a 1% royalty to Advirna for any licensing revenue received by RXi with respect to future licensing of the assigned Advirna patent and technology rights;

- RXi has granted back to Advirna a license under the assigned patent and technology for fields of use outside the fields of human therapeutics and diagnostics; and

- RXi has agreed to issue to Advirna, upon the completion of the spin-off transaction, shares of RXi's common stock equal to approximately 5% of the fully diluted shares of RXi common stock assuming the conversion in full of all outstanding Series A Preferred Stock.

11. Related Party Transactions

Galena's former Senior Vice President and Chief Scientific Officer was a consultant to Galena from January 2008 until the date of her employment. This consulting contract resulted in payments to Advirna, the former Chief Scientific Officer's consulting firm, of approximately $13,400, which was recorded in the year ended December 31, 2008, in consulting fees and $5,000 recorded as license expense as discussed below. The approximate dollar value of the former Chief Scientific Officer's interest in this consulting contract was approximately $9,250.

In addition, Galena and Advirna were parties to an option agreement whereby Galena paid $5,000 in 2008 for consideration to be granted the exclusive worldwide rights to license certain technology and $75,000 for the initial maintenance in 2009 under a Patent and Technology Assignment Agreement with Advirna entered into in September 2009. As part of the transactions contemplated by the contribution and securities purchase agreements, on September 24, 2011, RXi entered into an agreement with Advirna pursuant to which

Advirna assigned to RXi its existing patent and technology rights related to *sd*-rxRNA technology in exchange for RXi's agreement to pay Advirna an annual maintenance fee and other consideration upon the achievement of certain milestones(see also Note 10).

On February 26, 2007, Galena entered into Scientific Advisory Board Agreements (the "SAB Agreements"), with four of its founders. At the time of the execution of the SAB Agreements, each of the founders were beneficial owners of more than five percent of Galena's outstanding stock. Pursuant to the SAB Agreements, on May 23, 2007, Galena granted to each of the founders a stock option under the 2007 Plan to purchase 52,832 shares of its common stock. In addition, under the SAB Agreements, Galena will grant each of the founders a stock option under the 2007 Plan to purchase 52,832 shares of its common stock on February 26, 2008, June 5, 2009 and June 4, 2010 with a per share exercise price equal to the closing price of such stock on the public market on the date of grant unless a founder terminates a SAB Agreement without good reason (as defined) or Galena terminates a SAB Agreement with cause (as defined therein) in which case no further option grants will be made to the founder.

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(Information as of September 30, 2011 and for the nine months ended September 30, 2011 and 2010 is unaudited)

All options granted pursuant to the SAB Agreements are fully vested on the date of grant and have a term of ten years. The fair value of stock options granted during 2010 and 2009 under the SAB Agreement for each founder is approximately $142,000 and $245,000 which was estimated using the Black-Scholes option-pricing model as more fully discussed above under significant accounting policies and the stock based compensation footnote. Included in the Company's financial statements for the years ended December 31, 2010 and 2009 is approximately $566,000 and $978,000, respectively, of expense related to the granting of these stock options. Included in the Company's financial statements for the nine months ended September 30, 2010 is approximately $566,000, of expense related to the granting of these stock options. No options under the SAB agreements were issued during the nine months ended September 30, 2011.

Additionally, pursuant to a letter agreement between Galena and each founder dated as of April 30, 2007, the "SAB Letters", in further consideration of the services to be rendered by the founders under the SAB Agreements, Galena granted additional stock options on May 23, 2007 under the 2007 Plan to each of the founders to purchase 26,416 shares of its common stock. Unless a founder terminates a SAB Agreement without good reason (as defined) or the Company terminates a SAB Agreement with cause (as defined therein), the options granted pursuant to the SAB Letters will fully vest from and after April 29, 2012 and will have a term of ten years from the date of grant. At September 30, 2011 and December 31, 2010, the fair market value of stock options under the SAB Agreement for each founder is approximately $52,400 and $20,500, respectively, which was estimated using the Black-Scholes option-pricing model as more fully discussed above under the summary of significant accounting policies and the stock based compensation footnote. Included in the Company's financial statements for the nine months ended September 30, 2011 and the years ended December 31, 2010 and 2009 is approximately $125,000 and $38,000 of income and $73,000, of expense, respectively, related to these stock options.

12. Subsequent Events

In accordance with ASC 855-10, Subsequent Events, management has evaluated subsequent events through to the date these financial statements are filed. The Company did not have any material recognizable or unrecognizable subsequent events except as otherwise disclosed in Note 1.

Shares of Common Stock

PROSPECTUS

Until , 2012 (90 days after the date of this prospectus), all dealers that effect transactions in these securities may be required to deliver this prospectus.

_____ , 2012

PART II

INFORMATION NOT REQUIRED IN PROSPECTUS

Item 13. Other Expenses of Issuance and Distribution

The following table sets forth the expenses that are payable by us in connection with the distribution of the common stock registered under this registration statement. All of the amounts shown are estimates, except for the SEC registration fee.

Description	Amount
SEC registration fee	$ 14
Printing expenses	$125,000
Legal fees and expenses	$350,000
Accounting fees and expenses	$100,000
Transfer agent and registrar fees and expenses	$ 10,000
Miscellaneous fees and expenses	$ 10,000
Total	$595,014

Item 14. Indemnification of Directors and Officers

Section 145 of the Delaware General Corporation Law ("**DGCL**") provides that a corporation may indemnify any current or former director, officer or employee or other individual against expenses, judgments, fines and amounts paid in settlement in connection with civil, criminal, administrative or investigative actions or proceedings, other than a derivative action by or in the right of the corporation, if the director, officer, employee or other individual acted in good faith and in a manner he or she reasonably believed to be in or not opposed to the best interests of the corporation, and, with respect to any criminal action or proceeding, if he or she had no reasonable cause to believe his or her conduct was unlawful. A similar standard is applicable in the case of derivative actions, except that indemnification extends only to expenses incurred in connection with the defense or settlement of such actions, and the statute requires court approval before there can be any indemnification where the person seeking indemnification has been found liable to the corporation. The statute provides that it is not exclusive of other indemnification that may be granted by a corporation's by-laws, disinterested director vote, stockholder vote, agreement or otherwise.

Our certificate of incorporation provides that we will indemnify to the fullest extent authorized or permitted by the DGCL or any other applicable law as now or hereafter in effect any person made, or threatened to be made, a defendant or witness to any action, suit or proceeding (whether civil, criminal or otherwise) by reason of the fact that he is or was a director of our corporation or by reason of the fact that such director, at our request, is or was serving any other corporation, partnership, joint venture, trust, employee benefit plan or other enterprise in any capacity. Our certificate of incorporation also provides that no amendment or repeal of the certificate of incorporation will apply to or have any effect on any right to indemnification provided in the certificate of incorporation with respect to any acts or omissions occurring prior to such amendment or repeal.

As permitted by the DGCL, our bylaws, as amended, provide that we will indemnify to the fullest extent authorized or permitted by applicable law as now or hereafter in effect any person who was or is made, or is threatened to be made, a party or is otherwise involved in any action, suit or proceeding (whether civil, criminal, administrative or investigative), by reason of the fact that he (or a person for whom he is the legal representative) is or was a director or officer of our corporation, is or was serving at our request as a director, officer, employee, member, trustee or agent of another corporation or of a partnership, joint venture, trust, nonprofit entity or other enterprise.

Consequently, no director of the corporation will be personally liable to the corporation or its stockholders for monetary damages for any breach of fiduciary duty by such a director as a director. However, notwithstanding the preceding sentence, a director will be liable to the extent provided by Delaware law (1) for any breach of the director's duty of loyalty to the corporation or its stockholders, (2) for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, (3) for payments of unlawful dividends or for unlawful stock repurchases or redemption, or (4) for any transaction from which the director derived an improper personal benefit.

Effective upon the consummation of the spin-off, we will 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.

We also intend to maintain insurance on behalf of any person who is or was our director, officer, trustee, employee or agent or serving at our request as a director, officer, trustee, employee or agent of another corporation, partnership, joint venture, trust, non-profit entity or other enterprise against any liability asserted against the person and incurred by the person in any such capacity, or arising out of his or her status as such.

Insofar as indemnification for liabilities arising under the Securities Act may be permitted for directors, officers, or persons who control us, we have been informed that, in the opinion of the SEC, such indemnification is against public policy as expressed in the Securities Act and is therefore unenforceable.

Item 15. Recent Sales of Unregistered Securities

On September 19, 2011, in connection with our formation, we issued 100 shares of our common stock to Galena in exchange for an aggregate cash purchase price of $1.00.

On September 24, 2011, Tang Capital Partners, LP and RTW Investment, LLC purchased from us secured convertible promissory notes, with an aggregate principal amount of $1,500,000, that are convertible into our shares of our Series A Preferred Stock at a conversion price of $1,000 per share.

All of the transactions described in this Item 15 were exempt from registration under the Securities Act pursuant to Section 4(2) of the Securities Act, which exempts private issuances of securities in which the securities are not offered or advertised to the general public.

Item 16. Exhibits and Financial Statement Schedules

(a) Exhibits

Exhibit Number	Description
2.1	Contribution Agreement, dated as of September 24, 2011, between RXi Pharmaceuticals Corporation (formerly RNCS, Inc.) and Galena Biopharma, Inc. (formerly RXi Pharmaceuticals Corporation).***
2.2	Securities Purchase Agreement, dated as of September 24, 2011, among RXi Pharmaceuticals Corporation (formerly RNCS, Inc.), Galena Biopharma, Inc. (formerly RXi Pharmaceuticals Corporation), Tang Capital Partners, LP and RTW Investments, LLC.***
2.3	Omnibus Amendment to Securities Purchase Agreement, dated as of February 6, 2012, among RXi Pharmaceuticals Corporation, Galena Biopharma, Inc., Tang Capital Partners, LP and RTW Investments, LLC.***
3.1	Amended and Restated Certificate of Incorporation of RXi Pharmaceuticals Corporation.***
3.2	Certificate of Designations, Preferences and Rights of Series A Convertible Preferred Stock of RXi Pharmaceuticals Corporation.***
3.3	Bylaws of RXi Pharmaceuticals Corporation, as amended.***
4.1	Secured Convertible Promissory Note, dated September 24, 2011 of RXi Pharmaceuticals Corporation (formerly RNCS, Inc.), issued to Tang Capital Partners, LP.***
4.2	Secured Convertible Promissory Note, dated September 24, 2011 of RXi Pharmaceuticals Corporation (formerly RNCS, Inc.), issued to RTW Investments, LLC.***
5.1	Opinion of TroyGould PC regarding the securities being registered.***
8.1	Opinion of TroyGould PC regarding tax matters.***
10.1	Employment Agreement, dated September 24, 2011, between RXi Pharmaceuticals Corporation (formerly, RNCS, Inc.) and Anastasia Khvorova, Ph.D.(1)*
10.2	Employment Agreement, dated September 24, 2011, between RXi Pharmaceuticals Corporation (formerly, RNCS, Inc.) and Pamela Pavco, Ph.D.(1)*
10.3	License Agreement between RXi Pharmaceuticals Corporation and Dharmacon, Inc. (now part of Thermo Fisher Scientific Inc.), dated October 29, 2007.(+)***
10.4	Non-Exclusive License Agreement, between CytRx Corporation and the University of Massachusetts Medical School, related to UMMS disclosure number 01-36, dated April 15, 2003, as amended February 1, 2004.(+)***
10.5	Patent and Technology Assignment Agreement between RXi Pharmaceuticals Corporation (formerly RNCS, Inc.) and Advirna, LLC, effective as of September 24, 2011.***
10.6	Lease between RXi Pharmaceuticals Corporation and Newgate Properties, LLC for One Gateway Place, Worcester, Massachusetts 01605, dated September 25, 2007.(2)
10.7	Amendment to Lease between RXi Pharmaceuticals Corporation and Newgate Properties, LLC for One Gateway Place, Worcester, Massachusetts 01605, dated January 23, 2009.(3)

Exhibit Number	Description
10.8	Amendment to Lease between RXi Pharmaceuticals Corporation and Newgate Properties, LLC for One Gateway Place, Worcester, Massachusetts 01605, dated March 5, 2009.(4)
10.9	Amendment to Lease between RXi Pharmaceuticals Corporation and Newgate Properties, LLC for One Gateway Place, Worcester, Massachusetts 01605, dated August 28, 2008.***
10.10	Amendment to Lease between RXi Pharmaceuticals Corporation and Newgate Properties, LLC for One Gateway Place, Worcester, Massachusetts 01605, dated November 4, 2008.***
10.11	Amendment to Lease between RXi Pharmaceuticals Corporation and Newgate Properties, LLC for One Gateway Place, Worcester, Massachusetts 01605, dated June 9, 2011.***
10.12	RXi Pharmaceuticals Corporation 2012 Long Term Incentive Plan.* ***
10.13	Form of Incentive Stock Option Award.* ***
10.14	Form of Non-qualified Stock Option Award.* ***
10.15	Form of Restricted Stock Unit Award.* ***
10.16	Form of Indemnification Agreement.* ***
23.1	Consent of BDO USA, LLP.****
23.2	Consents of TroyGould PC (included in Exhibits 5.1 and 8.1).
99.1	Consent of Kevin C. Tang.***
99.2	Consent of Roderick T. Wong.***

(1) Incorporated by reference to the Current Report on Form 8-K of Galena Biopharma, Inc. filed with the SEC on September 26, 2011 (File No. 001-33958).

(2) Incorporated by reference to the Amendment No. 1 to the Registration Statement on Form S-1 of Galena Biopharma, Inc. filed with the SEC on November 19, 2007 (File No. 333-147009).

(3) Incorporated by reference to the Current Report on Form 8-K of Galena Biopharma, Inc. filed with the SEC on January 29, 2009 (File No. 001-33958).

(4) Incorporated by reference to the Quarterly Report on Form 10-Q of Galena Biopharma, Inc. filed with the SEC on May 15, 2009 (File No. 001-33958).

* Indicates a management contract or compensatory plan or arrangement.

*** Previously filed.

**** Filed herewith.

\+ Confidential treatment has been requested or granted for certain portions which have been blanked out in the copy of the exhibit filed with the Securities and Exchange Commission. The omitted information has been filed separately with the Securities and Exchange Commission.

(b) Financial Statement Schedules

All financial statement schedules are omitted because they are not applicable or required or because the required information is included elsewhere in the financial statements or the notes to the financial statements.

Item 17. Undertakings

The undersigned registrant hereby undertakes that:

(1) For purposes of determining any liability under the Securities Act of 1933, the information omitted from the form of prospectus filed as part of this registration statement in reliance upon Rule 430A and contained in a form of prospectus filed by the registrant pursuant to Rule 424(b)(1) or (4) or 497(h) under the Securities Act shall be deemed to be part of this registration statement as of the time it was declared effective.

(2) For the purpose of determining any liability under the Securities Act of 1933, each post-effective amendment that contains a form of prospectus shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant has duly caused this amendment to registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Worcester, Commonwealth of Massachusetts, on February 13, 2012.

RXi PHARMACEUTICALS CORPORATION

By: /s/ Mark J. Ahn, Ph.D.
Mark J. Ahn, Ph.D.
President and Chief Financial Officer

Pursuant to the requirements of the Securities Act of 1933, this amendment to registration statement has been signed below by the following person in the capacities and on the date indicated.

Signatures	Title	Date
/s/ Mark J. Ahn, Ph.D.	President and Chief Financial Officer (Principal Executive Officer and Principal Accounting and Financial Officer) and Sole Director	February 13, 2012

Exhibit Number	Description
2.1	Contribution Agreement, dated as of September 24, 2011, between RXi Pharmaceuticals Corporation (formerly RNCS, Inc.) and Galena Biopharma, Inc. (formerly RXi Pharmaceuticals Corporation).***
2.2	Securities Purchase Agreement, dated as of September 24, 2011, among RXi Pharmaceuticals Corporation (formerly RNCS, Inc.), Galena Biopharma, Inc. (formerly RXi Pharmaceuticals Corporation), Tang Capital Partners, LP and RTW Investments, LLC.***
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23.1	Consent of BDO USA, LLP.****
23.2	Consents of TroyGould PC (included in Exhibits 5.1 and 8.1).
99.1	Consent of Kevin C. Tang.***
99.2	Consent of Roderick T. Wong.***

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* Indicates a management contract or compensatory plan or arrangement.

*** Previously filed.

**** Filed herewith.

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Exhibit 23.1

Consent of Independent Registered Public Accounting Firm

RXi Pharmaceuticals Corporation
Worcester, MA

We hereby consent to the use in the Prospectus constituting a part of this Registration Statement on Amendment No. 5 of Form S-1 of our report dated October 25, 2011, relating to the financial statements of the Predecessor (RNAi) (the carve-out entity), which is contained in that Prospectus.

We also hereby consent to the use in the Prospectus constituting a part of this Registration Statement on Amendment No. 5 of Form S-1 of our report dated February 10, 2012, relating to the financial statement of RXi Pharmaceuticals Corporation (Registrant) which is contained in that Prospectus.

We also consent to the references to us under the caption "Experts" in the Prospectus.

/s/ BDO USA, LLP

Boston, MA
February 10, 2012