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Filed Pursuant to Rule 424(b)(3)
Registration No. 333-181534

PROSPECTUS SUPPLEMENT NO. 5
(To Prospectus dated July 6, 2012)

138,941,780 Shares

RXi Pharmaceuticals Corporation

This Prospectus Supplement No. 5 supplements the prospectus dated July 6, 2012 (as supplemented to date, the "Prospectus"), which forms a part of our Registration Statement on Form S-1 (Registration Statement No. 333-181534). The Prospectus and this prospectus supplement relate to the disposition from time to time of up to 138,941,780 shares of our common stock, which are held or may be held by the selling stockholders named in the Prospectus. We are not selling any common stock under this prospectus and will not receive any of the proceeds from the sale of shares by the selling stockholders.

This prospectus supplement should be read in conjunction with the Prospectus, which is to be delivered with this prospectus supplement. This prospectus supplement updates, amends and supplements the information included or incorporated by reference in the Prospectus. If there is any inconsistency between the information in the Prospectus and this prospectus supplement, you should rely on the information in this prospectus supplement.

This prospectus supplement is not complete without, and may not be delivered or utilized except in connection with, the Prospectus, including any amendments or supplements to it.

Quarterly Report on Form 10-Q

On November 13, 2012, we filed a Quarterly Report on Form 10-Q with the Securities and Exchange Commission. The text of such Form 10-Q is attached hereto.

Investing in our common stock involves a high degree of risk. In reviewing the Prospectus and this prospectus supplement, you should carefully consider the matters described under the heading "Risk Factors" beginning on page 5 of the Prospectus.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities, or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

The date of this prospectus supplement is November 13, 2012.

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

FORM 10-Q

(Mark One)

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

For the quarterly period ended September 30, 2012

OR

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

For the transition period from to

Commission File Number: 333-177498

RXi Pharmaceuticals Corporation

(Exact name of registrant as specified in its charter)

Delaware	**45-3215903**
(State of incorporation)	**(I.R.S. Employer Identification No.)**

1500 West Park Drive, Suite 210, Westborough, MA 01581
(Address of principal executive office) (Zip code)

Registrant's telephone number: (508) 767-3861

Indicate by check mark whether the Registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the Registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter time that the registrant was required to submit and post such files). Yes ☒ No ☐

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

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

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

As of November 9, 2012, RXi Pharmaceuticals Corporation had 158,670,223 shares of common stock, $0.0001 par value, outstanding.

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RXi PHARMACEUTICALS CORPORATION
FORM 10-Q — QUARTER ENDED SEPTEMBER 30, 2012

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PART I

ITEM 1. FINANCIAL STATEMENTS

RXi PHARMACEUTICALS CORPORATION (REGISTRANT)
(A Development Stage Company)

CONDENSED BALANCE SHEETS
(Amounts in thousands, except share and per share data)
(Unaudited)

	RXi (Registrant) September 30, 2012	RXi (Registrant) December 31, 2011
ASSETS		
Current assets:		
Cash and cash equivalents	$ 6,278	$ 503
Restricted cash	53	53
Due from Parent	—	597
Prepaid expenses and other current assets	144	186
Total current assets	6,475	1,339
Equipment and furnishings, net	235	355
Other assets	2	—
Total assets	$ 6,712	$ 1,694
LIABILITIES, CONVERTIBLE PREFERRED STOCK AND STOCKHOLDERS' DEFICIT		
Current liabilities:		
Accounts payable	$ 155	$ 387
Accrued expenses and other current liabilities	877	544
Deferred revenue	370	816
Current maturities of capital lease obligations	9	29
Total current liabilities	1,411	1,776
Convertible notes payable	—	500
Capital lease obligations, net of current maturities	—	5
Total liabilities	1,411	2,281
Commitments and contingencies		
Series A convertible preferred stock, $0.0001 par value, 10,000,000 shares authorized; 9,575 and no shares issued and outstanding at September 30, 2012 and December 31, 2011, respectively (Liquidation preference of $9,575 at September 30, 2012)	9,575	—
Stockholders' deficit:		
Common stock, $0.0001 par value, 1,500,000,000 shares authorized; 157,500,191 and 100,439,841 shares issued and outstanding at September 30, 2012 and December 31, 2011, respectively	16	10
Additional paid-in capital	11,155	3,680
Deficit accumulated during the developmental stage	(15,445)	(4,277)
Total stockholders' deficit	(4,274)	(587)
Total liabilities, convertible preferred stock and stockholders' deficit	$ 6,712	$ 1,694

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

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

CONDENSED STATEMENTS OF OPERATIONS
(Amounts in thousands, except share and per share data)
(Unaudited)

	RXi (Registrant)	Predecessor (RNAi) and RXi (Registrant)(1)	RXi (Registrant)	Predecessor (RNAi) and RXi (Registrant)(1)	Predecessor (RNAi) and RXi (Registrant)(2)
	For the Three Months Ended September 30, 2012	For the Three Months Ended September 30, 2011	For the Nine Months Ended September 30, 2012	For the Nine Months Ended September 30, 2011	Period from January 1, 2003 (Date of Inception) to September 30, 2012
Revenue:					
Grant revenue	$ 57	$ —	$ 57	$ —	$ 57
Total revenue	57	—	57	—	57
Expenses:					
Research and development expense	1,069	1,021	2,752	4,652	35,625
Research and development employee stock based compensation expense	138	79	282	471	3,202
Research and development non-employee stock based compensation expense	7	26	107	(49)	6,091
Fair value of common stock issued in exchange for patent and technology rights	—	—	6,173	—	6,173
Fair value of common stock issued in exchange for licensing rights	—	—	—	—	3,954
Total research and development expenses	1,214	1,126	9,314	5,074	55,045
General and administrative expense	387	730	1,711	3,527	27,177
General and administrative employee stock based compensation	152	301	282	1,565	9,344
Common stock warrants issued for general and administrative expenses	—	10	13	91	2,398
Fair value of common stock issued in exchange for general and administrative expenses	—	—	—	23	304
Total general and administrative expenses	539	1,041	2,006	5,206	39,223
Operating loss	(1,696)	(2,167)	(11,263)	(10,280)	(94,211)
Interest income (expense)	(1)	1	(29)	1	600
Other income	53	123	124	2,513	6,440
Net loss	(1,644)	(2,043)	(11,168)	(7,766)	(87,171)
Accretion of Series A convertible preferred stock and dividends	(1,277)	—	(11,897)	—	(11,897)
Net loss applicable to common stockholders	$ (2,921)	$ (2,043)	$ (23,065)	$ (7,766)	$ (99,068)
Net loss per common share applicable to common stockholders (Note 1):					
Basic and diluted loss per share	$ (0.02)	$ (0.05)	$ (0.18)	$ (0.23)	
Weighted average common shares outstanding:					
Basic and diluted	157,155,222	41,970,481	130,032,178	33,697,704	

(1) The statements of expenses for the three and nine months ended 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 ($1,959 and $7,682, respectively) combined with the results of operations of RXi (Registrant) for the period September 24, 2011 to September 30, 2011 ($84).

(2) The statement of expenses for the period from January 1, 2003 (date of inception) to September 30, 2012 include the results of operations of the carved-out Predecessor (RNAi) entity from the beginning of the periods presented to September 23, 2011 ($73,466) combined with the results of operations of RXi (Registrant) for the period September 24, 2011 to September 30, 2012 ($25,602).

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

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

CONDENSED STATEMENTS OF CONVERTIBLE PREFERRED STOCK AND STOCKHOLDERS' DEFICIT FOR THE PERIOD FROM SEPTEMBER 24, 2011 TO SEPTEMBER 30, 2012, 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)
(Unaudited)

	RXi (Registrant)						Predecessor (RNAi)	Predecessor (CytRx)	
	Series A Convertible Preferred Stock		Common Stock		Additional Paid-in Capital	Deficit Accumulated Since Incorporation	Divisional Equity	Parent Company's Net Deficit	Total
	Shares Issued	Amount	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)

	RXi (Registrant)						Predecessor (RNAi)	Predecessor (CytRx)	
	Series A Convertible Preferred Stock		Common Stock		Additional Paid-in Capital	Deficit Accumulated Since Incorporation	Divisional Equity	Parent Company's Net Deficit	
	Shares Issued	Amount	Shares Issued	Amount					Total
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							(8,083)	—	(8,083)
Cash contributions to Parent Company, net							369	—	369
Stock-based compensation expense							1,987	—	1,987
Reclassification of derivative liability upon elimination of obligation							9,249	—	9,249
Net loss—Predecessor (RNAi)							(7,682)	—	(7,682)
Recapitalization of divisional deficit			100,439,841	$ 10		$ (1,740)	1,730	—	—
Stock-based compensation					122		—	—	122
Cash contribution from Parent Company					1,500		—	—	1,500
Expenses paid by Parent Company for RXi					2,058		—	—	2,058
Net loss—RXi (Registrant)						(2,537)	—	—	(2,537)
Balance at December 31, 2011	—	—	100,439,841	10	3,680	(4,277)	—	—	(587)

	RXi (Registrant)						Predecessor (RNAi)	Predecessor (CytRx)	
	Series A Convertible Preferred Stock		Common Stock		Additional Paid-in Capital	Deficit Accumulated Since Incorporation	Divisional Equity	Parent Company's Net Deficit	
	Shares Issued	Amount	Shares Issued	Amount					Total
Issuance of Series A convertible preferred stock	9,500	$ 9,500	—	—	—	—	—	—	—
Beneficial conversion feature related to Series A convertible preferred stock	—	(9,500)	—	—	9,500	—	—	—	9,500
Accretion of beneficial conversion feature related to Series A convertible preferred stock	—	9,500	—	—	(9,500)	—	—	—	(9,500)
Issuance of common stock in exchange for patent and technology rights	—	—	41,849,934	4	6,169	—	—	—	6,173
Stock-based compensation	—	—	—	—	671	—	—	—	671
Issuance of common stock warrants in exchange for services	—	—	—	—	13	—	—	—	13
Expenses paid by Parent Company for RXi	—	—	—	—	699	—	—	—	699
Conversion of Series A convertible preferred stock to common stock	(208)	(208)	15,210,416	2	206	—	—	—	208
Fair value of Series A convertible preferred stock dividends	—	—	—	—	(2,397)	—	—	—	(2,397)
Dividends paid on Series A convertible preferred stock	283	283	—	—	2,114	—	—	—	2,114
Net loss—RXi (Registrant)	—	—	—			(11,168)	—	—	(11,168)
Balance at September 30, 2012	9,575	$ 9,575	157,500,191	$ 16	$ 11,155	$ (15,445)	$ —	$ —	$ (4,274)

See accompanying notes to financial statements.

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

CONDENSED STATEMENTS OF CASH FLOWS
(Amounts in thousands)
(Unaudited)

	RXi (Registrant)	Predecessor (RNAi) and RXi (Registrant) (1)	Predecessor (RNAi) and RXi (Registrant)(2)
	For the Nine Months Ended September 30, 2012	For the Nine Months Ended September 30, 2011	Period from January 1, 2003 (Date of Inception) Through September 30, 2012
Cash flows from operating activities:			
Net loss	$ (11,168)	$ (7,766)	$ (87,171)
Adjustments to reconcile net loss to net cash used in operating activities:			
Depreciation and amortization expense	118	124	782
(Gain) Loss on disposal of equipment	(14)	—	38
Non-cash rent expense	—	—	29
Accretion and receipt of bond discount	—	—	35
Non-cash share-based compensation	671	1,987	18,637
Fair value of common stock warrants issued in exchange for services	13	—	13
Loss on exchange of equity instruments	—	900	900
Fair value of Parent Company's shares mandatorily redeemable for cash upon exercise of warrants	—	—	(785)
Fair value of Parent Company derivatives issued in exchange for services	—	91	2,385
Fair value of Parent Company's common stock issued in exchange for services	—	23	304
Change in fair value of derivatives of Parent Company issued in connection with various equity financings	—	(3,413)	(5,604)
Fair value of common stock issued in exchange for patent and technology rights	6,173	—	6,173
Fair value of Parent Company common stock issued in exchange for licensing rights	—	—	3,954
Changes in operating assets and liabilities:			
Prepaid expenses and other current assets	42	(132)	(128)
Accounts payable	(232)	212	155
Due to former parent	597	—	390
Deferred revenue	(147)	877	669
Accrued expenses and other current liabilities	35	(82)	1,213
Net cash used in operating activities	(3,912)	(7,179)	(58,011)
Cash flows from investing activities:			
Change in restricted cash	—	—	(53)
Purchase of short-term investments	—	—	(37,532)
Maturities of short-term investments	—	—	37,497
Cash paid for purchase of equipment and furnishings	(9)	(53)	(754)
Proceeds from disposal of equipment and furnishings	25	—	24
Cash paid for lease deposit	(2)	—	(47)
Net cash provided by (used in) investing activities	14	(53)	(865)

	RXi (Registrant)	Predecessor (RNAi) and RXi (Registrant)(1)	Predecessor (RNAi) and RXi (Registrant)(2)
	For the Nine Months Ended September 30, 2012	For the Nine Months Ended September 30, 2011	Period from January 1, 2003 (Date of Inception) Through September 30, 2012
Cash flows from financing activities:			
Cash contributions (adjustments) from (to) Parent Company, net	699	369	55,923
Proceeds from issuance of Series A convertible preferred stock	8,500	—	8,500
Proceeds from issuance of convertible notes payable	500	500	1,000
Repayments of capital lease obligations	(26)	(106)	(269)
Net cash provided by financing activities	9,673	763	65,154
Net increase (decrease) in cash and cash equivalents	5,775	(6,469)	6,278
Cash and cash equivalents at the beginning of period	503	6,891	—
Cash and cash equivalents at end of period	$ 6,278	$ 422	$ 6,278

	RXi (Registrant)	Predecessor (RNAi) and RXi (Registrant)(1)	Predecessor (RNAi) and RXi (Registrant)(2)
	For the Nine Months Ended September 30, 2012	For the Nine Months Ended September 30, 2011	Period From January 1, 2003 (Date of Inception) through September 30, 2012
Supplemental disclosure of cash flow information:			
Cash received during the period for interest	$ —	$ —	$ 724
Cash paid during the period for interest	$ 29	$ 1	$ 37
Supplemental disclosure of non-cash investing and financing activities:			
Settlement of corporate formation expenses in exchange for common stock	$ —	$ —	$ 978
Fair value of derivatives issued in connection with Parent Company common stock recorded as a cost of equity	$ —	$ 8,743	$ 14,051
Fair value of Parent Company shares mandatorily redeemable for cash upon the exercise of warrants	$ —	$ —	$ 785
Allocation of management expenses	$ —	$ —	$ 551
Equipment and furnishings exchanged for Parent Company common stock	$ —	$ —	$ 48
Equipment and furnishings acquired through capital lease	$ —	$ 80	$ 277
Value of Parent Company restricted stock units issued in lieu of bonuses included in accrued expenses	$ —	$ 427	$ 427
Reclassification of derivative liability upon elimination of obligation	$ —	$ 9,249	$ 9,249
Value of Parent Company restricted stock units and common stock issued in lieu of cash bonuses	$ —	$ —	$ 207
Non-cash lease deposit	$ —	$ —	$ 50
Fair value of Parent Company stock options modified	$ —	$ 960	$ 960
Conversion of Series A convertible preferred stock into common stock	$ 208	$ —	$ 208
Value of Series A convertible preferred stock beneficial conversion feature	$ 9,500	$ —	$ 9,500
Accretion of Series A convertible preferred stock	$ 9,500	$ —	$ 9,500
Series A convertible preferred stock dividend	$ 2,397	$ —	$ 2,397
Conversion of notes payable into preferred stock	$ 1,000	$ —	$ 1,000

(1) The statement of cash flow for the period from January 1, 2011 to September 30, 2011 include the cash flows of the carved-out Predecessor (RNAi) entity from the beginning of the period presented to September 23, 2011 combined with the cash flows of RXi (Registrant) for the period September 24, 2011 to September 30, 2011.

(2) The statement of cash flow for the period from January 1, 2003 (date of inception) to September 30, 2012 include the cash flows of the carved-out Predecessor (RNAi) entity from the beginning of the period presented to September 23, 2011 combined with the cash flows of RXi (Registrant) for the period September 24, 2011 to September 30, 2012.

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

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

NOTES TO CONDENSED FINANCIAL STATEMENTS

(Unaudited)

1. Description of Business and Basis of Presentation

Prior to April 13, 2011, Galena Biopharma, Inc. ("Galena" or the "Parent Company") (formerly known as RXi Pharmaceuticals Corporation) was engaged primarily in conducting discovery research and preclinical development activities based on RNAi, and Galena's financial statements for periods through April 13, 2011 primarily reflected assets, liabilities and results of operations attributable to Galena's RNAi-based assets, liabilities and results of operations. On April 13, 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 of common stock at a price of $0.01 per share for total consideration of $1.00.

As a result of these transactions, the historical financial information for the three and nine months ended September 30, 2011, as well as the cumulative period from inception (January 1, 2003) through April 27, 2012, has been "carved out" of the financial statements of Galena, as our "Predecessor". 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 cumulative period from inception through September 30, 2012 includes Galena's RNAi-related activities through September 23, 2011 and also includes the results of RXi for the period from September 24, 2011 to September 30, 2012. 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 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 employee expenses for the 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 for the entire three and nine months ended 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 RNAi business operated as a division of Galena prior to September 24, 2011, the date on which the RNAi-related assets were contributed from Galena to RXi, as described more fully below. The balance of $15,445,000 in deficit accumulated since incorporation at September 30, 2012 includes RXi's net loss of $13,705,000 for the period September 24, 2011 to September 30, 2012 and the Predecessor's cumulative net loss of $73,466,000 through September 23, 2011 offset by cash and non-cash equity transactions of $71,726,000.

To date, RXi's principal activities, including that of its Predecessor, have consisted of development activities including the manufacture of clinical drug supply, filing of an Investigational New Drug ("IND") application and the initiation of a Phase 1 clinical trial 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 significant revenues since inception nor are any significant 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 candidates from discovery through preclinical studies and clinical trials and seeks 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, which was received in 2012; 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 shares of RXi's Series A Convertible Preferred Stock (the "Series A Preferred Stock"), for an aggregate purchase price of $9,500,000, at the closing of the spin-off transaction (see below) and to lend RXi up to $1,500,000 to fund RXi's operations prior to the closing, which would be applied against the $9,500,000 total investment. The outstanding principal and accrued interest on the loan(s), along with the receipt of the remaining $9,500,000 investment, would be converted into Series A Preferred Stock at the closing at a conversion price of $1,000 per share,;
- 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, as of April 27, 2012 (the closing date of the transaction), be convertible into shares of RXi common stock representing approximately 83% of the fully-diluted shares of RXi common stock outstanding as of that date;
- Galena contributed $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 April 27, 2012, the date of completion of RXi's spin-off from Galena, the Company issued 9,500 of Series A Preferred Stock to TCP and RTW upon the conversion of the $1,026,736 principal and accrued interest under the bridge notes and the receipt of the remaining $8,473,624 from TCP and RTW, as provided for in the securities purchase agreement. At the closing of the spin-off transaction, RXi reimbursed Galena and TCP $300,000 and $100,000, respectively, for transaction related expenses. The Company believes that the cash received from the securities purchase agreement should be sufficient to fund RXi's operations into the third quarter of 2013. 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 financing, additional equity financing 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 the Company's former 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 also 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 issued 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.

Accordingly, at the date of the completion of the spin-off, the Company issued 41,849,934 shares of common stock to Advirna. The Company recorded research and development expense of $6,173,000 to recognize the fair value of the common shares issued in exchange for the sd-rxRNA patent and technology rights assigned to RXi by Advirna.

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, 2012 was compiled from Galena's books and records through September 23, 2011, and includes 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 cumulative period from inception (January 1, 2003) through September 30, 2012 includes the results of RXi, the registrant, for the period from September 24, 2011 to September 30, 2012. 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 applicable to common stockholders for the period September 24, 2011 to September 30, 2012, included in the financial information for the cumulative period ended September 30, 2012, was $25,602,000.

In January 2012, the Company amended its certificate of incorporation to increase its authorized common shares from 1,000 shares to 1,500,000,000 shares and to provide for the authorization of 10,000,000 shares of preferred stock. On April 26, 2012, the Board of Directors declared a 1,004,397.41 for 1 split in the form of a stock dividend of the Company's common stock resulting in the distribution on April 26, 2012 of 100,439,841 additional shares to Galena, the Company's sole stockholder on the record date for the distribution. Contemporaneously, Galena distributed 66,959,894 shares of RXi common stock to its shareholders. The share and per share amounts for the periods prior to the April 26, 2012 stock split give retroactive effect to the stock split.

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 from these estimates.

Revenue Recognition

Revenue consists of grant revenues. Revenues from government grants are recognized over the respective contract periods as the services are performed, provided there is persuasive evidence of an arrangement, the fee is fixed or determinable and collection of the related receivable is reasonably assured, and no contingencies remain outstanding. Monies received prior to the recognition of revenue are recorded as deferred revenue.

Net loss per share

The Company accounts for and discloses net loss per common share in accordance with the Financial Accounting Standards Board (FASB) Accounting Standards Codification (ASC) Topic 260, "*Earnings per Share."* Basic and diluted net loss per common share is computed by dividing net loss attributable to common stockholders by the weighted average number of common shares outstanding.

To determine the shares outstanding for the Company for the periods prior to the distribution of the RXi common shares to the Galena stockholders, Galena's weighted average number of shares is multiplied by the distribution ratio of one share of RXi common stock for every one share of Galena common stock. Basic loss per share is computed by dividing the Company's losses by the weighted average number of shares outstanding during the period. When the effects are not anti-dilutive, diluted earnings per share is computed by dividing the Company's net earnings by the weighted average number of shares outstanding and the impact of all dilutive potential common shares. There were no potential dilutive common shares for all periods presented.

The following table sets forth the potential common shares excluded from the calculation of net loss per common share because their inclusion would be anti-dilutive:

	September 30,	
	2012	2011
RXi options to purchase common stock	63,847,938	—
Common stock underlying Series A Preferred Stock	700,160,312	—
Warrants to purchase common stock	138,462	—
Total	764,146,712	—

Comprehensive Loss

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

Restricted Cash

Restricted cash consists of certificates of deposit on hand with the Company's financial institutions as collateral for its corporate credit cards.

Reclassifications

Certain prior period items have been reclassified to conform to the current year presentation.

2. Fair Value Measurements

The Company follows the provisions of FASB ASC Topic 820, "*Fair Value Measurements and Disclosures*".

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.

Description	September 30, 2012	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Unobservable Inputs (Level 3)
Assets:				
Restricted cash	$ 53	$ 53	$ —	$ —
Total assets	$ 53	$ 53	$ —	$ —

Description	December 31, 2011	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Unobservable Inputs (Level 3)
Assets:				
Restricted cash	$ 53	$ 53	$ —	$ —
Total assets	$ 53	$ 53	$ —	$ —

Fair Value of Financial Instruments

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

3. Preferred Stock

The Series A Preferred Stock has the rights and preferences set forth in the Certificate of Designations, Preferences and Rights of Series A Convertible Preferred Stock of the Company, or the Certificate of Designations, as summarized below.

Dividends

Holders of Series A Preferred Stock shall be entitled to receive cumulative mandatory dividends at the rate per share of seven percent (7%) of the face amount ($1,000 per share) per annum, payable quarterly on each March 31, June 30, September 30 and December 31. Dividends shall be payable in additional shares of Series A Preferred Stock valued for this purpose at the face amount. In the event there are not sufficient authorized

preferred shares available to pay such a dividend, the dividend shall instead accrete to and increase the value of the outstanding Series A Preferred Stock. The fair value of the Series A preferred dividend, which is included in the Company's net loss applicable to common shareholders, is calculated by multiplying the number of common shares that a preferred holder would receive upon conversion by the closing price of the Company's common stock on the dividend payable date. For the three and nine months ended September 30, 2012, the fair value of the Series A preferred dividends of $1,277,000 and $2,397,000 were included in the Company's net loss applicable to common shareholders, respectively.

Liquidation Preference

The "Liquidation Preference" with respect to a share of Series A Preferred Stock means an amount equal to the face amount of the shares plus all accrued and unpaid dividends on the Series A Preferred Stock (as adjusted for any stock dividends, combinations, splits, recapitalizations and the like with respect to such shares). In the event of a liquidation, dissolution, or winding up, whether voluntary or involuntary, no distribution shall be made to the holders of any shares of capital stock of the Corporation (other than Senior Securities pursuant to the rights, preferences and privileges thereof) unless prior the holders of shares of Series A Preferred Stock have received the Liquidation Preference with respect to each share then outstanding.

Conversion

Each holder of shares of Series A Preferred Stock may, at any time and from time to time, convert each of its shares into a number of fully paid and non-assessable shares of common stock at the defined conversion rate. Initially, each share of Series A Preferred Stock is convertible into 73,127 shares of common stock. In no event shall any holder of shares of Series A preferred stock have the right to convert shares of Series A Preferred Stock into shares of common stock to the extent that such issuance or sale or right to effect such conversion would result in the holder or any of its affiliates together beneficially owning more than 9.999% of the then issued and outstanding shares of common stock immediately prior to such purported issuance, sale, transfer or conversion.

If, at any time, the number of outstanding shares of common stock is increased by a stock split, stock dividend, combination, reclassification or other similar event (in each case, whether by merger or otherwise), then the conversion price shall be proportionately reduced. If the number of outstanding shares of common stock is decreased by a reverse stock split, combination or reclassification of shares, or other similar event (in each case, whether by merger or otherwise), then the conversion price shall be proportionately increased. Holders of Series A Preferred Stock are also entitled to adjustments to the conversion price and other rights in the event of a merger, change of control and other defined events.

Voting

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 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.

Upon the issuance of the Series A Preferred Stock, the preferred stock was first assessed under ASC 480, "*Distinguishing Liabilities from Equity* " and it was determined that it was not within the scope of ASC 480, therefore, the Series A Preferred Stock was not considered a liability under ASC 480. The Series A Preferred Stock was then assessed under ASC 815, "*Derivatives and Hedging*".

The Series A Preferred Stock is convertible into common stock at the holders' option, subject to the terms of the Certificate of Designations. This embedded feature meets the definition of a derivative. The Company believes that the Series A Preferred Stock is an equity host for the purposes of assessing the embedded conversion option for potential bifurcation. The Company concluded that the conversion option feature is clearly and closely related to the preferred stock host. As such, the conversion feature did not require bifurcation under ASC 815.

The Series A Preferred Stock was then assessed under ASC 470, "*Debt with Conversion Features and Other Options",* to determine if there was a beneficial conversion feature (BCF). The BCF compares the carrying value of the preferred stock after the value of any derivatives has been allocated from the proceeds to the transaction date value of number of shares that the holder would receive upon conversion. The calculation resulted in a BCF of $9,500,000. The BCF was recorded in additional paid-in capital.

The Company has recorded the Series A Preferred Stock in temporary equity as the Company may not be able to control the actions necessary to issue the maximum number of common shares needed to provide for a conversion in full of the then outstanding Series A Preferred Stock, at which time a holder of the Series A Preferred Stock may elect to redeem their preferred shares outstanding in the amount equal to the face value per share, plus unpaid accrued dividends. The initial carrying value of the Series A Preferred Stock was $9,500,000. Upon completion of the spin-off, the conversion option of the Series A Preferred Stock was immediately exercisable; therefore, the $9,500,000 discount related to the BCF was immediately accreted to preferred dividends, resulting in an increase in the carrying value of the Series A Preferred Stock to $9,500,000.

As of September 30, 2012, 208 shares of Series A Preferred Stock have been converted into 15,210,416 shares of common stock of the Company.

4. Stock Based Compensation

The Company 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, the Company recognizes compensation expense in accordance with the requirements of FASB ASC Topic 505-50, *"Equity Based Payments to Non-Employees"*.

Non-employee option grants that do not vest immediately upon grant are recorded as an expense over the 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 Stock Based Compensation

On January 23, 2012, the Company's board of directors and sole stockholder adopted the RXi Pharmaceuticals Corporation 2012 Long Term Incentive Plan (the "2012 Incentive Plan"). Under the 2012 Incentive Plan, the Company 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. As of September 30, 2012, a maximum of 90,000,000 shares of common stock are authorized for issuance and available for future grants under the Company's 2012 Incentive Plan. The Company's board of directors currently acts as the administrator of the Company's 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.

The Company 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 three and nine month periods ended September 30, 2012 and 2011, the following assumptions were used:

	For the Three Months Ended September 30,		For the Nine Months Ended September 30,	
	2012	2011	2012	2011
Weighted average risk-free interest rate	1.57%	N/A	0.94%	N/A
Weighted average expected volatility	115.20%	N/A	88.70%	N/A
Weighted average expected lives (years)	10.00	N/A	6.05	N/A
Weighted average expected dividend yield	0.00%	N/A	0.00%	N/A

The weighted average fair value of options granted during the three and nine month periods ended September 30, 2012 was $0.14 and $0.07, respectively.

RXi's expected common stock price volatility assumption is based upon the volatility of a composition 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 RXi has never paid cash dividends and presently has no intention of paying cash dividends. The risk-free interest rate used for each grant was also based upon prevailing short-term interest rates. RXi has estimated an annualized forfeiture rate of 5.0% for options granted to its employees and 0% forfeiture rate for the directors. RXi will record additional expense if the actual forfeitures are lower than estimated and will record a recovery of prior expense if the actual forfeiture rates are higher than estimated.

The following table summarizes stock option activity from January 1, 2012 through September 30, 2012:

	Total Number of Shares	Weighted Average Exercise Price	Aggregate Intrinsic Value
Outstanding at January 1, 2012	—	$ —	
Granted	63,847,938	0.10	
Exercised	—	—	
Cancelled	—	—	
Outstanding at September 30, 2012	63,847,938	$ 0.10	$988,559
Options exercisable at September 30, 2012	1,895,232	$ 0.12	$ 14,275

The aggregate intrinsic values of outstanding and exercisable options at September 30, 2012 were calculated based on the closing price of the Company's common stock on September 28, 2012 of $0.106 per share less the exercise price of those shares.

Predecessor (RNAi) Stock Based Compensation Expense

The following stock based compensation information relates to stock options issued by Galena. Stock based compensation expense prior to the completion of the spin-off was 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 options held by current RXi employees were cancelled at the date of the completion of the spin-off except for options to purchase an aggregate of 477,191 shares of Galena common stock. The Company will continue to recognize stock compensation expense on the non-cancelled options as they vest. Under the terms of the option awards, these options will continue to vest as long as the individuals are employed by RXi.

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 three and nine month periods ended September 30, 2012 and 2011, the following assumptions were used:

	For the Three Months Ended September 30,		For the Nine Months Ended September 30,	
	2012	2011	2012	2011
Weighted average risk-free interest rate	N/A	1.03%	1.01%	1.59%
Weighted average expected volatility	N/A	98.94%	75.96%	103.27%
Weighted average expected lives (years)	N/A	5.34	5.96	5.49
Weighted average expected dividend yield	N/A	0.00%	0.00%	0.00%

The weighted average fair value of options granted during the nine month period ended September 30, 2012 and 2011 was $0.47 and $0.91 per share, respectively.

The weighted average fair value of options granted during the three month period ended September 30, 2011 was $0.66 per share. There were no Galena options granted during the three month period ended September 30, 2012.

Galena's expected common stock price volatility assumption is based upon the volatility of a composition 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. 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 15.0% for options granted to its employees, 8.0% for options granted to senior management and no forfeiture rate for the directors. RXi will record additional expense if the actual forfeitures are lower than estimated and will record a recovery of prior expense if the actual forfeiture rates are higher than estimated.

The following table summarizes stock option activity from January 1, 2012 through September 30, 2012:

	Total Number of Shares	Weighted Average Exercise Price	Aggregate Intrinsic Value
Outstanding at January 1, 2012	5,153,387	$ 3.24	
Granted	325,000	0.72	
Exercised	—	—	
Cancelled	5,001,196	3.07	
Outstanding at September 30, 2012	477,191	$ 3.36	$216,000
Options exercisable at September 30, 2012	416,732	$ 3.50	$181,125

The aggregate intrinsic values of outstanding and exercisable options at September 30, 2012 were calculated based on the closing price of Galena's common stock on September 28, 2012 of $1.78 per share less the exercise price of those shares.

ITEM 2. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

In this document, "we," "our," "ours," "us," "RXi" and the "Company" refer to RXi Pharmaceuticals Corporation. All references to "Galena" refer to Galena Biopharma, Inc. and Apthera, Inc., Galena's wholly owned subsidiary.

This management's discussion and analysis of financial condition as of September 30, 2012 and results of operations for the three and nine months ended September 30, 2012 and 2011 should be read in conjunction with the financial statements included in our Special Financial Report on Form 10-K for the year ended December 31, 2011 which was filed with the SEC on May 7, 2012.

The discussion and analysis below includes certain forward-looking statements related to future operating losses and our potential for profitability, the sufficiency of our cash resources, our ability to obtain additional equity or debt financing, possible partnering or other strategic opportunities for the development of our products, as well as other statements related to the progress and timing of product development, present or future licensing, collaborative or financing arrangements or that otherwise relate to future periods, which are all forward-looking statements as defined by the Private Securities Litigation Reform Act of 1995. These statements represent, among other things, the expectations, beliefs, plans and objectives of management and/or assumptions underlying or judgments concerning the future financial performance and other matters discussed in this document. The words "may," "will," "should," "plan," "believe," "estimate," "intend," "anticipate," "project," and "expect" and similar expressions are intended to identify forward-looking statements. All forward-looking statements involve certain risks, uncertainties and other factors described elsewhere in this report and in our Special Financial Report on Form 10-K for the year ended December 31, 2011, that could cause our actual results of operations, performance, financial position and business prospects and opportunities for this quarter and the periods that follow to differ materially from those expressed in, or implied by, those forward-looking statements. We caution investors not to place significant reliance on the forward-looking statements contained in this report. These statements, like all statements in this report, speak only as of the date of this report (unless another date is indicated) and we undertake no obligation to update or revise forward-looking statements.

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 investigative therapy that targets connective tissue growth factor ("CTGF"). The Company received the FDA's clearance to enter clinical trials with RXI-109, and with this clearance the Company initiated a Phase 1 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 administration, as appropriate for diseases 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.

Critical Accounting Policies and Estimates

Our significant accounting policies are described in Note 2 of the notes to the financial statements of our Annual Report on Form 10-K for the year ended December 31, 2011, which we filed with the SEC on May 8, 2012. Not all of these significant policies, however, fit the definition of critical accounting policies and estimates. The Company believes that the accounting policies relating to the predecessor financial statements and carve-out financial statements, research and development expenses, stock-based compensation and the accounting for convertible preferred stock fit the description of critical accounting policies and estimates.

Predecessor's Financial Statements and Carve-Out Financial Statements

Prior to April 13, 2011, Galena was engaged primarily in conducting discovery research and preclinical development activities based on RNAi, and Galena's financial statements for periods prior to April 13, 2011 reflected solely the assets, liabilities and results of operations attributable to Galena's RNAi-based assets, liabilities and results of operations. On April 13, 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.

As a result of these transactions, the historical financial information for the three and nine months ended September 30, 2011, as well as the cumulative period from inception (January 1, 2003) through September 30, 2012, has been "carved out" of the financial statements of Galena, as our "Predecessor". 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 cumulative period from inception through September 30, 2012 includes Galena's RNAi-related activities through September 23, 2011 and also includes the results of RXi for the period from September 24, 2011 to September 30, 2012.

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 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.

Research and Development Expenses

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

Stock-based Compensation

The Company follows the provisions of 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, "*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.

Convertible Preferred Stock

On April 27, 2012, the Company received net proceeds of $8.1 million from the issuance of the convertible preferred stock ("Series A Preferred Stock"). The Company first assessed the preferred stock under ASC 480, "*Distinguishing Liabilities from Equity*", and it was determined it was not within the scope of ASC 480. The preferred stock was then assessed under ASC 815, "Derivatives and Hedging".

The preferred stock is convertible into common stock at the holders' option, subject to the terms of the Certificate of Designations. This embedded feature meets the definition of a derivative. The Company believes that the Series A Preferred Stock is an equity host for the purposes of assessing the embedded conversion option for potential bifurcation. The Company concluded that the conversion option feature is clearly and closely related to the preferred stock host. As such, the conversion feature did not require bifurcation under ASC 815.

The preferred stock was then assessed under ASC 470, "*Debt with Conversion Features and Other Options",* to determine if there was a beneficial conversion feature (BCF). The BCF compares the carrying value of the preferred stock after the value of any derivatives has been allocated from the proceeds to the transaction date value of number of shares that the holder would receive upon conversion. The calculation resulted in a BCF of $9,500,000 and was recorded in additional paid-in capital.

The Company has recorded the Series A Preferred Stock in temporary equity as, the Company may not be able to control the actions necessary to issue the maximum number of common shares needed to provide for a conversion in full of the then outstanding Series A Preferred Stock, at which time a holder of the Series A Preferred Stock may elect to redeem their preferred shares outstanding in the amount equal to the face value per share, plus unpaid accrued dividends. The initial carrying value of the preferred stock was $9,500,000. Upon completion of the spin-off, the conversion option of the Series A Preferred Stock was immediately exercisable, therefore the $9,500,000 discount related to the BCF was immediately accreted to preferred dividends, resulting in an increase in the carrying value of the Series A Preferred Stock to $9,500,000.

Holders of Series A Preferred Stock are entitled to receive cumulative mandatory dividends at the rate per share of seven percent (7%) of the face amount ($1,000 per share) per annum, payable quarterly on each March 31, June 30, September 30 and December 31. Dividends are payable in additional shares of Series A Preferred Stock valued for this purpose at the face amount. In the event there are not sufficient authorized preferred shares available to pay such a dividend, the dividend shall instead accrete to and increase the value of the outstanding Series A Preferred Stock. The fair value of the Series A preferred dividend, which is included in the Company's net loss applicable to common shareholders, is calculated by multiplying the number of common shares that a preferred holder would receive upon conversion by the closing price of the Company's common stock on the dividend payable date. The fair value of the Series A preferred dividend, which is included in the Company's net loss applicable to common shareholders, is calculated by multiplying the number of common shares that a preferred holder would receive upon conversion by the closing price of the Company's common stock on the dividend payable date.

Results of Operations

We have generated no significant revenues since our inception, and anticipate that no significant revenues will be generated for the foreseeable future. Accordingly, for accounting purposes we are considered a development stage company. The Company expects to incur significant operating losses for the foreseeable future while the Company advances its future product candidates from discovery through pre-clinical studies and clinical trials and seek regulatory approval and potential commercialization, even if the Company is collaborating with pharmaceutical and larger biotechnology companies. In addition to these increasing research and development expenses, the Company expects general and administrative costs to increase as the Company recruits additional management and administrative personnel. The Company will need to generate significant revenues to achieve profitability and may never do so.

For the Three and Nine Months Ended September 30, 2012 and 2011

For the three months ended September 30, 2012, our net loss was approximately $1,644,000 compared with a net loss of $2,043,000 for the three months ended September 30, 2011. The loss decreased by $399,000 or approximately 20%. Variations in the losses between the two periods are discussed below.

For the nine months ended September 30, 2012, our net loss was approximately $11,168,000 compared with a net loss of $7,766,000 for the nine months ended September 30, 2011. The loss increased by $3,402,000, or approximately 44%. Variations in the losses between the two periods are discussed below.

Revenue

Total revenues were approximately $57,000 for the three months ended September 30, 2012, compared with no revenues for the three months ended September 30, 2011. The increase of $57,000, or 100%, was due to the recognition of work completed on the Company's government grants during the quarter. During the same period in 2011, the Company was assigned the grants from Galena as per the contribution agreement. The assignment of the grants was subject to the approval from the granting institutions, which was not received until 2012.

Total revenues were approximately $57,000 for the nine months ended September 30, 2012, compared with no revenues for the nine months ended September 30, 2011. The increase of $57,000, or 100%, was due to the recognition of work completed on the Company's government grants during the year. During the same period in 2011, the Company was assigned the grants from Galena as per the contribution agreement. The assignment of the grants was subject to the approval from the granting institutions, which was not received until 2012.

Research and Development Expense

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 clinical trial costs, licensing fees, patent prosecution costs, and the cost of lab supplies used in our research and development programs. We expect research and development expenses to increase as we expand our discovery, development and clinical activities.

Total research and development expenses were approximately $1,214,000 for the three months ended September 30, 2012, compared with $1,126,000 for the three months ended September 30, 2011. The increase of $88,000, or 8%, was primarily due to an increase of $48,000 related to expenses to run the clinical trial for the Company's RXI-109 program as compared to the prior year period and an increase of $59,000 in employee stock based compensation expense offset by a decrease of $19,000 related to changes in fair value of stock options granted to non-employees.

Total research and development expenses were approximately $9,314,000 for the nine months ended September 30, 2012, compared with $5,074,000 for the nine months ended September 30, 2011. The increase of $4,240,000, or 84%, was primarily due to the fair value of common stock issued in exchange for patent and technology rights of $6,173,000 and an increase of $156,000 related to changes in fair value of stock options granted to non-employees offset by a decrease of $189,000 in employee stock based compensation expense and a decrease of $1,900,000 in research and development expenses due to lower personnel and lab supply costs.

General and Administrative Expense

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 $539,000 for the three months ended September 30, 2012, compared with $1,041,000 for the three months ended September 30, 2011. The decrease of $502,000, or 48%, was primarily due to a decrease of $343,000 in general and administrative expenses due to lower personnel related costs, board fees and expenses, and professional outside services, a decrease of $149,000 in employee stock based compensation, and a decrease of $10,000 related to the fair value of common stock warrants issued in exchange for services.

General and administrative expenses were approximately $2,006,000 for the nine months ended September 30, 2012, compared with $5,206,000 for the nine months ended September 30, 2011. The decrease of $3,200,000, or 61%, was primarily due to a decrease of $1,816,000 in general and administrative expenses due to lower personnel related costs, board fees and expenses, and professional outside services, a decrease of $1,283,000 in employee stock based compensation, a decrease of $23,000 related to the fair value of our Parent Company's common stock issued for services, and a decrease of $78,000 related to the fair value of common stock warrants issued in exchange for services.

Interest Income (Expense)

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.

Interest expenses were approximately $1,000 for the three months ended September 30, 2012, compared with interest income of $1,000 for the three months ended September 30, 2011. The decrease of $2,000 or 200% was primarily due to interest expense from the Company's financing leases.

Interest expenses were approximately $29,000 for the nine months ended September 30, 2012, compared with interest income of approximately $1,000 for the nine months ended September 30, 2011. The decrease of $30,000 was primarily due to the interest expense from the bridge notes funded by TCP and RTW.

Other Income/Expense

Other income was $53,000 for the three months ended September 30, 2012, compared with $123,000 for the three months ended September 30, 2011. The decrease of $70,000 or 57% was primarily related to a decrease of $123,000 in the change in the fair value of Galena's derivatives potentially settleable in cash issued in connection with several financing transactions offset by $39,000 related to the reimbursement for prior period expenses on the Company's government grants.

Other income was $124,000 for the nine months ended September 30, 2012, compared with $2,513,000 for the nine months ended September 30, 2011. The decrease of $2,389,000 or 95% primarily related to a decrease of $2,513,000 in the change in the fair value of Galena's derivatives potentially settleable in cash issued in connection with several financing transactions offset by $110,000 related to the reimbursement for prior period expenses on the Company's government grants.

Series A Preferred Stock Accretion and Dividends

As of April 27, 2012, the date of completion of RXi's spin-off from Galena, the Company issued 9,500 of Series A Preferred Stock to TCP and RTW, as provided for in the securities purchase agreement. The rights and preferences of the Series A Preferred Stock, as well as the beneficial conversion feature as a result of the issuance of preferred stock and the calculation of dividend payable is described further in Note 4 to the notes of the condensed financial statements.

The accretion of the Series A convertible preferred stock and dividends was approximately $1,277,000 for the three months ended September 30, 2012 compared with no accretion of Series A convertible preferred stock and dividends for the three months ended September 30, 2011. The balance relates to the fair value of the Series A Preferred Stock dividends paid to preferred shareholders for the three months ended September 30, 2012.

Accretion of Series A convertible preferred stock and dividends was approximately $11,897,000 for the nine months ended September 30, 2012 compared with no Series A convertible preferred stock accretion and dividends for the nine months ended September 30, 2011. Of the total balance, $9,500,000 relates to the beneficial conversion feature of the Series A Preferred Stock and $2, 397,000 relates to the fair value of the dividends payable to preferred shareholders for the nine months ended September 30, 2012.

Liquidity and Capital Resources

We had cash and cash equivalents of approximately $6.3 million as of September 30, 2012, compared with $0.5 million as of December 31, 2011. As of April 27, 2012, the Company completed the spin-off from Galena and issued 9,500 of Series A Preferred Stock to TCP and RTW upon the conversion of the $1,026,736 principal and accrued interest under the bridge notes outstanding at this date and the receipt of the remaining $8,473,624 from TCP and RTW, as provided for in the securities purchase agreement. At the closing of the spin-off transaction, RXi reimbursed Galena and TCP $300,000 and $100,000, respectively, for transaction related expenses. The Company believes that the cash available at September 30, 2012 should be sufficient to fund RXi's operations into the third quarter of 2013. We expect to incur significant operating losses as we advance our product candidates through the drug development and regulatory process. We have generated minimal to no revenue to date and may not generate product revenue in the foreseeable future, if ever. 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.

Net Cash Flow from Operating Activities

Net cash used in operating activities was approximately $3,912,000 for the nine months ended September 30, 2012, compared with $7,179,000 for the nine months ended September 30, 2011. The decrease of approximately $3,267,000 related primarily to the Company's net loss of $11,168,000 for the nine months ended September 30, 2012 as compared to $7,766,000, as described above, and the adjustments to net loss for non-cash items to arrive at the net cash used in operating activities. The non-cash items adjusted for the nine months ended September 30, 2012 was approximately $6,960,000, compared with ($288,000) for the nine months ended September 30, 2011. The increase from the same period in the prior year is primarily related to the fair value of common stock issued in exchange for patent and technology rights of $6,173,000.

Net Cash Flow from Investing Activities

Net cash provided by investing activities was $14,000 for the nine months ended September 30, 2012, compared with net cash used by investing activities of $53,000 for the nine months ended September 30, 2011. The increase was primarily due to $25,000 in proceeds received from the disposal of equipment and a decrease of $44,000 in purchases of equipment and furnishings during the nine months ended September 30, 2012 as compared with purchases for the same period in 2011.

Net Cash Flow from Financing Activities

Net cash provided by financing activities was $9,673,000 for the nine months ended September 30, 2012, compared with $763,000 for the nine months ended September 30, 2011. The increase was primarily due to proceeds received from the issuance of preferred stock of $8,500,000.

Off-Balance Sheet Arrangements

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

ITEM 4. CONTROLS AND PROCEDURES

Disclosure Controls and Procedures

As of the end of the period covered by this quarterly report on Form 10-Q, Dr. Geert Cauwenbergh our Chief Executive Officer and acting Chief Financial Officer (the "Certifying Officer"), evaluated the effectiveness of our disclosure controls and procedures. Disclosure controls and procedures are controls and procedures designed to reasonably assure that information required to be disclosed in our reports filed under the Securities Exchange Act of 1934 (the "Exchange Act"), such as this Form 10-Q, is recorded, processed, summarized and reported within the time periods specified in the SEC rules and forms. Disclosure controls and procedures are also designed to reasonably assure that such information is accumulated and communicated to our management, including the Certifying Officer, as appropriate to allow timely decisions regarding required disclosure. Based on these evaluations, the Certifying Officer has concluded, that, as of the end of the period covered by this quarterly report on Form 10-Q:

(a) our disclosure controls and procedures were effective to provide reasonable assurance that information required to be disclosed by us in the reports we file or submit under the Exchange Act was recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms; and

(b) our disclosure controls and procedures were effective to provide reasonable assurance that material information required to be disclosed by us in the reports we file or submit under the Exchange Act was accumulated and communicated to our management, including the Certifying Officer, as appropriate to allow timely decisions regarding required disclosure.

Changes in Internal Control over Financial Reporting

There has not been any change in our internal control over financial reporting that occurred during the quarterly period ended September 30, 2012 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

PART II — OTHER INFORMATION

ITEM 1. LEGAL PROCEEDINGS

None.

ITEM 1A. RISK FACTORS

You should consider the "Risk Factors" included under Item 1A. of our Special Financial Report on Form 10-K for the year ended December 31, 2011 filed with the SEC on May 7, 2012.

ITEM 2. UNREGISTERED SALES OF EQUITY SECURITIES AND USE OF PROCEEDS

None.

ITEM 3. DEFAULTS UPON SENIOR SECURITIES

None.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

ITEM 5. OTHER INFORMATION

None.

ITEM 6. EXHIBITS

EXHIBIT INDEX

Exhibit Number	Description
31.1	Sarbanes-Oxley Act Section 302 Certification of Chief Executive Officer and Chief Financial Officer.
32.1	Sarbanes-Oxley Act Section 906 Certification of Chief Executive Officer and Chief Financial Officer.
101	The following financial information from the Quarterly Report on Form 10-Q of RXi Pharmaceuticals Corporation for the quarter ended September 30, 2012, formatted in XBRL (eXtensible Business Reporting Language): (1) Condensed Balance Sheets as of September 30, 2012 and December 31, 2011; (2) Condensed Statements of Expenses for the three and nine months ended September 30, 2012 and 2011 and for the period from January 1, 2003 (inception) to September 30, 2012; (3) Condensed Statements of Cash Flows for the nine months ended September 30, 2012 and 2011 and for the cumulative period from January 1, 2003 (inception) to September 30, 2012; and (4) Notes to Condensed Consolidated Financial Statements (Unaudited).*

* In accordance with Rule 406T of Regulation S-T, the XBRL-related information in Exhibit 101 to this Quarterly Report on Form 10-Q is deemed not filed or part of a registration statement or prospectus for purposes of Sections 11 and 12 of the Securities Act, is deemed not filed for purposes of Section 18 of the Exchange Act, and otherwise is not subject to liability under these sections, is not part of any registration statement or prospectus to which it relates and is not incorporated by reference into any registration statement, prospectus or other document.

SIGNATURES

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

RXi Pharmaceuticals Corporation (Registrant)

By: /s/ Geert Cauwenbergh
Geert Cauwenbergh, Dr. Med. Sc.
President, Chief Executive Officer and Chief Financial Officer

Date: November 13, 2012

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Exhibit 31.1

CERTIFICATION OF CHIEF EXECUTIVE OFFICER AND CHIEF FINANCIAL OFFICER
PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Geert Cauwenbergh, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of RXi Pharmaceuticals Corporation;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. I am responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) for the registrant and have:

a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

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

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

5. I have disclosed, based on my most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of registrant's board of directors (or persons performing the equivalent functions):

a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal controls over financial reporting.

Dated: November 13, 2012

/s/ Geert Cauwenbergh
Geert Cauwenbergh, Dr. Med. Sc.
President, Chief Executive Officer and Chief Financial Officer

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Exhibit 32.1

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Quarterly Report of RXi Pharmaceuticals Corporation (the "Company") on Form 10-Q for the period ended September 30, 2012 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), the undersigned officer of the Company certifies, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that to his knowledge:

1. The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

2. The information contained in the Report fairly presents, in all material respects, the Company's financial condition and result of operations.

/s/ Geert Cauwenbergh
Geert Cauwenbergh, Dr. Med. Sc.
President, Chief Executive Officer and Chief Financial Officer

November 13, 2012