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

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**FORM 8-K**

**CURRENT REPORT  
PURSUANT TO SECTION 13 OR 15(D) OF THE  
THE SECURITIES EXCHANGE ACT OF 1934**

Date of report (Date of earliest event reported): March 31, 2010

**RXI PHARMACEUTICALS CORPORATION**

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of  
incorporation or organization)

001-33958

(Commission  
File Number)

20-8099512

(I.R.S. Employer  
Identification No.)

60 Prescott Street, Worcester, MA 01605

(Address of Principal Executive Offices) (Zip Code)

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

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions ( *see* General Instruction A.2. below):

- Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
  - Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
  - Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
  - Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))
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**Item 2.02 Results of Operations and Financial Condition.**

On March 31, 2010 RXi Pharmaceuticals Corporation issued a press release announcing its financial results for its fourth quarter and fiscal year ended December 31, 2009, a copy of which is attached as Exhibit 99.1 to this Current Report and incorporated herein by reference.

The information being furnished under Item 2.02 in this Form 8-K, including the accompanying exhibits, shall not be deemed to be “filed” for the purposes of Section 18 of the Securities and Exchange Act of 1934 (the “Exchange Act”), or otherwise subject to the liability of such section, nor shall such information be deemed incorporated by reference in any filing under the Securities Act of 1933 or the Exchange Act, regardless of the general incorporation language of such filing, except as shall be expressly set forth by specific reference in such filing.

**Item 9.01 Financial Statements and Exhibits.**

(d) Exhibits

99.1 Press Release issued by RXi Pharmaceuticals Corporation on March 31, 2010

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**Signature**

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 hereunto duly authorized.

RXI PHARMACEUTICALS CORPORATION

Date: March 31, 2010

By: /s/ Noah D. Beerman

Name: Noah D. Beerman

Title: Chief Executive Officer

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## Index to Exhibits

<u>Exhibit No.</u>	<u>Description</u>
99.1	Press Release issued by Rxi Pharmaceuticals Corporation on March 31, 2010



## RXi Pharmaceuticals Reports Fourth Quarter and 2009 Financial Results

**Worcester, MA, March 31, 2010** – RXi Pharmaceuticals Corporation (Nasdaq: RXII), a biopharmaceutical company pursuing the development and commercialization of proprietary therapeutics based on RNA interference (RNAi), today reported financial results for the fourth quarter and year ended December 31, 2009.

“We have continued to demonstrate our scientific and business leadership throughout 2009 and into 2010,” said Noah D. Beerman, President and Chief Executive Officer of RXi. “We have advanced our therapeutic platform, strengthened our intellectual property position, published robust scientific findings in peer reviewed journals, presented broad-based applications of our proprietary compounds at leading RNAi conferences, and established research collaborations to further explore the use of our technology in additional therapeutic areas. Further, with our recent financing, we strengthened our balance sheet and are well positioned to execute on our 2010 goals, including selecting a product candidate to advance into development, refining the therapeutic focus for our rxRNA technology, and securing one or more corporate partnerships.”

### 2009 and Other Recent Highlights

#### *Corporate Highlights:*

- **Completed \$16.2 million Public Offering.** After deal-related expenses including placement agent fees and the repurchase of 675,000 shares of RXi stock from CytRx Corporation at a price of \$5.70 per share, RXi received approximately \$11.4 million in net proceeds from the offering that closed on March 26, 2010. Proceeds from the transaction will be used to meet working capital needs and for general corporate purposes.
  - **Appointed Noah D. Beerman as President and Chief Executive Officer.** In November 2009, Noah D. Beerman joined RXi as its new President and Chief Executive Officer. Mr. Beerman also joined RXi’s Board of Directors. Appointing a seasoned business leader was part of a planned succession in leadership with the goal of advancing RXi from a research-focused company to a company focused on product development and execution of therapeutic collaborations and partnerships. Mr. Beerman succeeded RXi’s co-founder, Tod Woolf, Ph.D., who continues to serve as a member of RXi’s Scientific Advisory Board.
  - **Completed \$8.3 million Public Offering.** After deal-related expenses including placement agent fees, RXi received approximately \$7.8 million in net proceeds from the offering that closed on August 4, 2009. Proceeds from the transaction are being used to meet working capital needs and for general corporate purposes.
  - **Strengthened Intellectual Property Position.** RXi filed multiple patent applications, acquired direct ownership of previously licensed RNAi delivery technology from Advirna LLC, and received notices of allowance on small interfering RNA sequence patents in-licensed from Thermo Fisher Scientific.
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- **Signed Multiple Research and Feasibility Agreements.** In a concerted effort to accelerate the development of its proprietary rxRNA technology and other related technologies, RXi entered into research agreements with several undisclosed pharmaceutical and biotechnology companies.
- **Appointed Two New Board Directors.** As part of a continuing effort to add deep scientific and clinical development expertise to its Board of Directors, RXi added two new members to its Board during the first half of 2009, Richard Chin, M.D. and Rudolph Nisi, M.D. RXi's Board currently has 7 members.
- **Expanded Management Team.** In March 2009, Ramani Varanasi, MS, MBA joined the company as Vice President of Business Development. Ms. Varanasi has more than 15 years of experience in structuring, negotiating and executing strategic alliances, licenses and collaborations and in providing business development, management and strategic leadership in the pharmaceutical industry.
- **Secured \$25 Million Standby Equity Distribution Agreement.** Under the terms of this agreement with Yorkville Advisors signed in January 2009, RXi has the option, at its sole discretion, to sell to Yorkville newly issued common shares, subject to certain conditions, in increments of up to \$500,000 each over a two-year period for a total of up to \$25 million in proceeds to RXi.
- **Participated in Numerous Investor Events .** Management participated in several investor focused conferences hosted by investment banks and other organizations. RXi also hosted an Analyst Day Event where senior management along with RXi co-founder and Nobel Laureate, Dr. Craig Mello, updated investors on RXi's corporate and scientific developments and 2009 goals.

Scientific Achievements:

- **Publication of Data in Peer Reviewed Journals.** An article entitled "Modified sdrRNAs that are not processed by Dicer maintain potency and are incorporated into the RISC" was published in the journal Nucleic Acids Research, January 2010. The data expands the understanding of how chemically modified RNAi duplexes interact with key proteins involved in the silencing pathway and that longer, modified duplexes can be highly potent target gene silencers. RXi also announced that new pre-clinical data on oral delivery of RNAi compounds was published by Michael Czech, Ph.D., co-founder of, and Scientific Advisor to, RXi Pharmaceuticals and Professor and Chair of Molecular Medicine and Professor of Biochemistry and Molecular Pharmacology, University of Massachusetts Medical School (UMMS) in the prestigious journal Nature Biotechnology. (Aouadi, et al, Nature, Vol. 458 (7242), pp. 1180-1184).
  - **Research Collaboration Focused on Ocular Disease.** RXi initiated a research collaboration with Shalesh Kaushal, M.D., Ph.D., Chairman of the Department of Ophthalmology at The University of Massachusetts Medical School focused on the application of RXi's self-delivering RNAi (sd-rxRNA™) compounds for ocular diseases such as age-related macular degeneration.
  - **Collaboration for Potential ALS Treatments.** Three prominent philanthropic organizations – The Angel Fund, The ALS Therapy Alliance and Project ALS – dedicated to finding a treatment for amyotrophic lateral sclerosis (ALS) financed a new collaboration between RXi and one of the world's leading ALS researchers, Robert Brown, M.D., D.Phil, Chair of the Department of Neurology at the University of Massachusetts Medical School in Worcester.
  - **Received 2009 RNAi Frost & Sullivan Award .** RXi received Frost & Sullivan's 2009 North American RNAi Therapeutic Design & Delivery Technology Innovation of the Year Award for the
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development of its proprietary RNAi compounds, rxRNA™, and advanced delivery approaches, including the sdrxRNA™.

- **Continued the Advancement of RNAi Therapeutics Platform.** RXi's comprehensive therapeutic platform, which is comprised of next generation rxRNA compounds and advanced delivery approaches, continues to produce promising pre-clinical data. Specifically, data has been presented at numerous conferences demonstrating the robustness and potential for broad-based applications using sd-rxRNA compounds in diverse therapeutic areas that may enable multiple opportunities for developing a sustainable pipeline of RNAi therapeutics for unmet medical needs in both local and systemic applications.

2009 Financial Highlights:

For the year ended December 31, 2009, our net loss was approximately \$18.4 million, an increase of approximately \$4.0 million, or 28%, compared with a net loss of \$14.4 million for the year ended December 31, 2008. The Company had 16,207,625 common shares outstanding at December 31, 2009, as compared with 13,763,231 common shares outstanding at December 31, 2008. The Company had a net loss per share on both a basic and diluted basis of \$1.24 and \$1.09 at December 31, 2009 and December 31, 2008, respectively.

For the fourth quarter of 2009, our net loss was approximately \$6.1 million, or \$0.38 per share on both a basic and diluted basis, compared with a net loss of \$4.0 million, or \$0.29 per share on both a basic and diluted basis, for the fourth quarter of 2008.

Research and development expenses for the fourth quarter of 2009 were \$2.4 million, including approximately \$0.6 million in non-cash share-based compensation, compared with \$2.0 million, including \$0.1 million in non-cash share-based compensation, for the fourth quarter of 2008. The increase of \$0.4 million, or 18%, was primarily due to an increase in non-employee non-cash share-based compensation as well as compensation and related expenses from the additional headcount to support the Company's collaborations and internal discovery efforts.

For the year ended December 31, 2009, research and development expenses were approximately \$8.9 million, including approximately \$2.2 million in non-cash share-based compensation, an increase of approximately \$1.8 million, or 26%, compared with research and development expenses of \$7.1 million for the year ended December 31, 2008, which included approximately \$1.9 million in non-cash share-based compensation. This increase was due to higher staff-related costs, supplies and increased patent application and prosecution expenses that were \$1.6 million higher in 2009 than in 2008.

General and administrative expenses for the fourth quarter of 2009 were \$1.9 million including \$0.6 million in non-cash share based compensation, compared with \$2.0 million including \$0.6 million in non-cash share-based compensation for the fourth quarter of 2008. The decrease of \$0.1 million, or 4%, was primarily due to the non cash share based compensation expense associated with stock warrants expensed in the fourth quarter of 2008.

For the year ended December 31, 2009, general and administrative expenses were \$8.6 million, compared with \$7.5 million for the year ended December 31, 2008. The increase of \$1.1 million, or 15%, was primarily due to higher staff-related costs as well as higher costs related to professional service fees in association with business activities, including \$2.0 million in non-cash share based compensation, and \$1.1 million in costs related to warrants and common stock issued in exchange for services.

As of December 31, 2009, cash and cash equivalents totaled \$5.7 million, compared with cash and cash equivalents of \$9.9 million at December 31, 2008. This decrease was due to cash used in operations of \$11.8 million for the twelve months ended December 31, 2009 partially offset by the proceeds from

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RXi's registered direct offering in July 2009 where RXi raised approximately \$7.8 million in net proceeds after deducting placement agent fees and other offering costs.

### **About RXi Pharmaceuticals Corporation**

RXi Pharmaceuticals is a discovery-stage biopharmaceutical company pursuing the development and commercialization of proprietary therapeutics based on RNA interference (RNAi) for the treatment of human diseases. RXi has a comprehensive therapeutic platform that includes both novel RNAi compounds and advanced delivery methods that can be applied for local and systemic applications, against targets that may be undruggable by other modalities. RXi uses its proprietary version of RNAi compounds — rxRNA™ — that provide an advanced alternative to conventional small interfering RNAs (siRNAs) and define the next generation of RNAi technology. These include rxRNAori™, rxRNAsolo™, and sd-rxRNA™ (or “self delivering” RNA), which are distinct from, and potentially convey significant advantages over classic siRNA's. RXi Pharmaceuticals believes it is well positioned to compete successfully in the RNAi-based therapeutics market with its accomplished scientific advisors, including Dr. Craig Mello, recipient of the 2006 Nobel Prize for his co-discovery of RNAi; a management team that is experienced in developing RNAi products; and a strong and early, but broad, intellectual property position in RNAi chemistry and delivery. [www.rxipharma.com](http://www.rxipharma.com)

### **Forward-Looking Statements**

This press release contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Such statements include, but are not limited to, statements about future expectations, plan and future development of RXi Pharmaceutical Corporation's products and technologies. These forward-looking statements about future expectations, plans and prospects of the development of RXi Pharmaceutical Corporation's products and technologies involve significant risks, uncertainties and assumptions, including the risk that the development of our RNAi-based therapeutics may be delayed or may not proceed as planned and we may not be able to complete development of any RNAi-based product, the risk that the FDA approval process may be delayed for any drugs that we develop, risks related to development and commercialization of products by our competitors, risks related to our ability to control the timing and terms of collaborations with third parties and the possibility that other companies or organizations may assert patent rights that prevent us from developing our products. Actual results may differ materially from those contemplated by these forward-looking statements. RXi Pharmaceuticals Corporation does not undertake to update any of these forward-looking statements to reflect a change in its views or events or circumstances that occur after the date of this release.

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RXi Pharmaceuticals Corporation  
(A Development Stage Company)  
Condensed Statements of Expenses  
(in thousands, except share and per share data)  
(Unaudited)

	For the Three Months Ended December 31, 2009	For the Three Months Ended December 31, 2008	For the Twelve Months Ended December 31, 2009	For the Twelve Months Ended December 31, 2008
Research and development expense	\$ 2,359	\$ 2,000	\$ 8,892	\$ 7,054
General and administrative expense	1,933	2,022	8,628	7,499
Operating loss	(4,292)	(4,022)	(17,520)	(14,553)
Other income (expense), net	(1,856)	21	(867)	180
Net loss	<u>\$ (6,148)</u>	<u>\$ (4,001)</u>	<u>\$ (18,387)</u>	<u>\$ (14,373)</u>
Net loss per common share:				
Basic and diluted loss per share	<u>\$ (0.38)</u>	<u>\$ (0.29)</u>	<u>\$ (1.24)</u>	<u>\$ (1.09)</u>
Weighted average common shares outstanding:				
Basic and diluted	<u>16,207,625</u>	<u>13,757,731</u>	<u>14,796,541</u>	<u>13,239,942</u>

RXi Pharmaceuticals Corporation  
(A Development Stage Company)  
Condensed Balance Sheets  
(in thousands)  
(Unaudited)

	December 31, 2009	December 31, 2008
Cash and cash equivalents	\$ 5,684	\$ 9,856
Prepaid expenses and other current assets	120	73
Equipment and furnishings, net	432	414
Deposits	16	16
Total assets	<u>\$ 6,252</u>	<u>\$ 10,359</u>
Accounts payable	\$ 625	\$ 394
Accrued expense and other current liabilities	1,077	976
Warrants potentially settled in cash	3,721	—
Current maturities of capital lease obligations	52	17
Total current liabilities	5,475	1,387
Capital lease obligations, net of current maturities	36	4
Total liabilities	5,511	1,391
Total stockholders' equity	741	8,968
Total liabilities and stockholders' equity	<u>\$ 6,252</u>	<u>\$ 10,359</u>

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