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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): September 21, 2009

**RXI PHARMACEUTICALS CORPORATION**

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(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of  
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 1.01 Entry into a Material Definitive Agreement.**

On September 21, 2009, RXi Pharmaceuticals Corporation (the "Company") entered into a Patent and Technology Assignment Agreement with Advirna, LLC ("Advirna"), a Colorado limited liability company co-founded by Anastasia Khvorova, Chief Scientific Officer of the Company. Pursuant to the terms of the agreement, Advirna assigned to the Company certain patent and technology rights related to chemically modified polynucleotides (the "Rights") and the Company granted to Advirna a fully paid-up license to the Rights in a specified field.

Under the terms of the agreement, the Company will pay to Advirna an annual maintenance fee beginning on January 1, 2011, certain payments upon the achievement of regulatory milestones and royalty payments on the sales of certain products. The agreement will terminate upon the earlier of (x) the expiration of the last to expire of the patent rights included in the agreement and (y) the abandonment of the last to be abandoned of any patents included in the agreement, but either party may terminate the agreement upon written notice of a material breach by the other party, subject to certain cure provisions and restrictions. In addition, the Company may terminate the agreement upon 90 days' prior written notice to Advirna and Advirna may terminate upon 90 days' prior written notice to the Company in the event the Company ceases to use reasonable efforts to research, develop, license or otherwise commercialize the Rights. If the agreement expires in accordance with its terms or is terminated by a party in the absence of a material breach or for cause in the event that the Company fails to pay Advirna certain fees, the Company will assign the Rights back to Advirna.

The Company's press release announcing the agreement is filed as Exhibit 99.1 to this Current Report on Form 8-K, and is incorporated herein by reference.

**Item 9.01. Financial Statements and Exhibits.**

(d) Exhibits

<u>Exhibit No.</u>	<u>Description</u>
99.1	Press release of RXi Pharmaceuticals Corporation dated September 25, 2009

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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: September 25, 2009

By: /s/ Tod Woolf \_\_\_\_\_

Name: Tod Woolf

Title: Chief Executive Officer

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Index to Exhibits

99.1 Press release of RXi Pharmaceuticals Corporation dated September 25, 2009



## **RXi Pharmaceuticals Obtains Direct Ownership of Previously Licensed RNAi Delivery Intellectual Property**

### **Strengthens Position in RXi Proprietary Self-delivering rxRNA™**

**Worcester, MA, September 25, 2009** — RXi Pharmaceuticals Corporation (Nasdaq: RXII), a biopharmaceutical company pursuing the development and commercialization of proprietary therapeutics based on RNA interference (RNAi), today announced that it has recently acquired direct ownership of technology for which it had previously exercised its option to exclusively license from Advirna LLC. The novel acquired technologies potentially enable *in vivo* delivery of RNAi therapeutics. Terms of the agreement were not disclosed.

Tod Woolf, Ph.D., President and Chief Executive Officer of RXi, stated, “RXi’s self-delivering rxRNA™ (sd-rxRNA™) technology platform, which is based on a combination of this technology acquired from Advirna and RXi internally developed technology, has shown extremely promising results in pre-clinical studies. This prompted us to acquire direct ownership of the technology instead of merely licensing it. By combining this newly acquired technology into RXi’s own portfolio and gaining full control of the patent prosecution, we enhance the potential of obtaining broader claims that would further strengthen RXi’s intellectual property position.”

The broad clinical potential of Advirna’s technology in combination with RXi’s rxRNA™ platform, which includes sd-rxRNA’s, may enable RXi to develop a robust and sustainable RNAi therapeutic platform with significant competitive advantages in efficacy, toxicity, ease of administration and manufacturing costs when compared to traditional RNAi compounds. The unique capabilities of this technology are generating substantial interest in the scientific and business community.

#### **About RNA Interference (RNAi)**

Regarded as a revolutionary discovery in biology, RNA interference (RNAi) is a naturally occurring mechanism whereby short, double-stranded RNA molecules interfere with the expression of genes in living cells. This mechanism has the potential to be harnessed to “silence” or specifically block the production of disease-causing proteins before they are made. This technology can potentially be used to treat human diseases by “turning-off” genes that lead to disease in the first place. RXi Pharmaceuticals is using RNAi technology to develop RNA-derived molecules targeting disease-causing genes.

#### **About RXi Pharmaceuticals Corporation**

RXi Pharmaceuticals is a discovery-stage biopharmaceutical company pursuing the development and potential commercialization of proprietary therapeutics based on RNA interference (RNAi) for the treatment of human diseases. RXi has a comprehensive therapeutic platform that includes both RNAi compounds and delivery methods. RXi uses its own version of RNAi compounds — rxRNA™ — that provide an advanced alternative to conventional small interfering RNAs (siRNAs) and define the next generation of RNAi technology. rxRNA™ compounds are designed specifically for therapeutic use and

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contain many of the properties needed to move RNAi based drugs into the clinic. 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 early intellectual property position in RNAi chemistry and delivery. [www.rxipharma.com](http://www.rxipharma.com)

### **About Advirna LLC**

Advirna LLC is a small biotechnology company, founded in 2006 by Alexey Wolfson, Ph.D. and Anastasia Khvorova, Ph.D., RXi's Chief Scientific Officer, located in Boulder, CO. The company is primarily focused on the discovery and development of next generation nucleotide chemistries and formulation to enable efficient and non-toxic oligonucleotide delivery to a range of tissues.

### **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 RXi Pharmaceuticals Corporation 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.

### **CONTACT:**

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