

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

FORM S-8
REGISTRATION STATEMENT UNDER THE
SECURITIES ACT OF 1933

RXi PHARMACEUTICALS CORPORATION
(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

20-8099512
(I.R.S. Employer
Identification No.)

60 Prescott Street
Worcester, Massachusetts 01605
(Address of principal executive offices)

RXi Pharmaceuticals Corporation Employee Stock Purchase Plan
(Full title of the plan)

Mark J. Ahn, Ph.D.
President and Chief Executive Officer
RXi Pharmaceuticals Corporation
60 Prescott Street
Worcester, Massachusetts 01605
(Name and address of agent for service)

(508) 767-3861
(Telephone, including area code, of agent for service)

Copy to:

Dale E. Short
TroyGould PC
1801 Century Park East, Suite 1600
Los Angeles, California 90067
(310) 553-4441

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

☒ Smaller reporting company

(Do not check if a smaller reporting company)

CALCULATION OF REGISTRATION FEE

Title of each class of securities to be registered	Amount to be registered ⁽¹⁾	Proposed maximum offering price per share	Proposed maximum aggregate offering price	Amount of registration fee
Common stock, par value \$0.0001 per share	250,000 shares	\$1.30 ⁽²⁾	\$325,000 ⁽²⁾	\$37.74

- (1) Pursuant to Rule 416(a) of the Securities Act of 1933, this Registration Statement also covers such additional shares of common stock as may become issuable under the RXi Pharmaceuticals Corporation Employee Stock Purchase Plan (the “Plan”) as a result of the anti-dilution adjustment provisions of the Plan.
 - (2) Represents the current number of shares reserved for issuance under the Plan. The proposed maximum offering price per share and maximum aggregate offering price of these shares were estimated pursuant to Rule 457(c) of the Securities Act of 1933 on the basis of the \$1.30 average of the high and low sale prices of Registrant’s common stock as reported on The NASDAQ Capital Market on June 3, 2011.
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PART I
INFORMATION REQUIRED IN THE SECTION 10(a) PROSPECTUS

Item 1. Plan Information.*

Item 2. Registrant Information and Employee Plan Annual Information.*

* The information required by Part I to be contained in the Section 10(a) prospectus is omitted from the Registration Statement in accordance with Rule 428 of the Securities Act of 1933 and the Note to Part I of Form S-8.

PART II
INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

Item 3. Incorporation of Documents by Reference

The following documents previously filed by RXi Pharmaceuticals Corporation (“**we**,” “**us**,” “**our**,” or the “**Company**”) with the Securities and Exchange Commission (the “**Commission**”) under the Securities Exchange Act of 1934 (the “**Exchange Act**”) are incorporated by reference in this registration statement:

- Our Annual Report on Form 10-K for the year ended December 31, 2010 filed with the Commission on April 15, 2011, as amended by our Form 10-K/A filed with the SEC on May 2, 2011;
- Our Quarterly Report on Form 10-Q for the quarter ended March 31, 2011 filed with the Commission on May 16, 2011;
- Our Current Reports on Form 8-K and amended Current Reports on Form 8-K/A filed with the Commission on April 14, 2011, April 15, 2011, April 26, 2011, May 4, 2011, and May 17, 2011, respectively;
- Our Schedules 14A filed with the Commission on May 20, 2011 and May 31, 2011, respectively; and
- The description of our common stock and related rights contained in our registration statement on Form 8-A (file no. 001-33958), as amended, filed under the Exchange Act, including any amendment or report filed for the purpose of updating such description.

In addition, each document (other than any portion of such document that is deemed not “filed” in accordance with the Exchange Act and the Commission’s rules) that we file with the Commission under Section 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of this registration statement and prior to the filing of a post-effective amendment to this registration statement that indicates that all shares of common stock registered hereunder have been sold, or that deregisters all such shares of common stock then remaining unsold, shall be deemed to be incorporated by reference into this registration statement and to be part thereof from the date of the filing of such document.

Item 4. Description of Securities

Not applicable.

Item 5. Interests of Named Experts and Counsel

Not applicable.

Item 6. Indemnification of Directors and Officers

Section 145 of the Delaware General Corporation Law provides that a corporation may indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative, other than an action by or in the right of the corporation, by reason of the fact that the person is or was a director, officer, employee or agent of the corporation or is or was serving at the corporation’s request as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other

enterprise, against expenses, including attorneys' fees, judgments, fines and amounts paid in settlement actually and reasonably incurred by the person in connection with the action, suit or proceeding if the person acted in good faith and in a manner the person reasonably believed to be in or not opposed to the best interests of the corporation, and, with respect to any criminal action or proceeding, had no reasonable cause to believe the person's conduct was unlawful. The power to indemnify applies to actions brought by or in the right of the corporation as well, but only to the extent of expenses, including attorneys' fees but excluding judgments, fines and amounts paid in settlement, actually and reasonably incurred by the person in connection with the defense or settlement of the action or suit if the person acted in good faith and in a manner the person reasonably believed to be in or not opposed to the best interests of the corporation and except that no indemnification shall be made in respect of any claim, issue or matter as to which such person shall have been adjudged to be liable to the corporation unless and only to the extent that a court of competent jurisdiction shall determine that such indemnity is proper.

Section 145(g) of the Delaware General Corporation Law provides that a corporation shall have the power to purchase and maintain insurance on behalf of its officers, directors, employees and agents, against any liability asserted against and incurred by such persons in any such capacity.

Section 102(b)(7) of the General Corporation Law of the State of Delaware provides that a corporation may eliminate or limit the personal liability of a director to the corporation or its stockholders for monetary damages for breach of fiduciary duty as a director, provided that such provision shall not eliminate or limit the liability of a director (i) for any breach of the director's duty of loyalty to the corporation or its stockholders, (ii) for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, (iii) under Section 174 of the General Corporation Law of the State of Delaware, or (iv) for any transaction from which the director derived an improper personal benefit. No such provision shall eliminate or limit the liability of a director for any act or omission occurring prior to the date when such provision becomes effective.

Our Amended and Restated Certificate of Incorporation provides that our directors shall not be liable to the Registrant or its stockholders for monetary damages for breach of fiduciary duty as a director, except to the extent that the exculpation from liabilities is not permitted under the Delaware General Corporation Law as in effect at the time such liability is determined. In addition, our Amended and Restated Certificate of Incorporation provides that we shall indemnify our directors to the fullest extent permitted by the laws of the State of Delaware. We have entered into indemnification agreements with each of our non-employee directors that provide for indemnification and expense advancement to the fullest extent permitted by the laws of the State of Delaware.

Our Amended and Restated Certificate of Incorporation provides that we may purchase and maintain insurance policies on behalf of our directors and officers against specified liabilities for actions taken in their capacities as such, including liabilities under the Securities Act. We have obtained directors and officers' liability insurance to cover liabilities our directors and officers may incur in connection with their services to us.

Item 7. Exemption from Registration Claimed

Not applicable.

Item 8. Exhibits

The following exhibits are filed with or incorporated by reference as a part of this registration statement:

- 4.1 RXi Pharmaceuticals Corporation Employee Stock Purchase Plan (previously filed on April 23, 2010 as Annex B to the Registrant's definitive proxy statement on Schedule 14A and incorporated herein by reference).
- 5.1 Opinion of TroyGould PC (included with this registration statement).
- 23.1 Consent of BDO USA, LLP (included with this registration statement).
- 23.2 Consent of Lohman Company, PLLC (included with this registration statement)
- 23.3 Consent of TroyGould PC (included in the opinion filed as Exhibit 5.1).
- 24.1 Power of Attorney (included on the signature page of this registration statement).

Item 9. Undertakings

(a) The Company hereby undertakes:

(1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:

(i) To include any prospectus required by Section 10(a)(3) of the Securities Act of 1933;

(ii) To reflect in the prospectus any facts or events arising after the effective date of this registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in this registration statement;

(iii) To include any material information with respect to the plan of distribution not previously disclosed in this registration statement or any material change to such information in this registration statement; provided, however, that paragraphs (a)(1)(i) and (a)(1)(ii) do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in periodic reports filed with or furnished to the Commission by the Company pursuant to Section 13 or Section 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in this registration statement;

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

(3) To file a post-effective amendment to remove from registration any of the securities being registered that remain unsold at the termination of the offering.

(b) The Company hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, each filing of the Company's annual report pursuant to Section 13(a) or Section

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15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in this registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(c) Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the Company pursuant to the foregoing provisions, or otherwise, the Company has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Securities Act of 1933 and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the Company of expenses incurred or paid by a director, officer or controlling person of the Company in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the Company will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act of 1933 and will be governed by the final adjudication of such issue.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Boston, State of Massachusetts, on June 9, 2011.

RXi PHARMACEUTICALS CORPORATION

By: /s/ Mark J. Ahn

Mark J. Ahn

President and Chief Executive Officer

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Mark J. Ahn, Ph.D. and Robert E. Kennedy, and each of them, as his or her true and lawful attorney-in-fact and agent, with full power of substitution, for him or her and in his or her name, place and stead, in any and all capacities, to sign any and all amendments (including post-effective amendments) to this registration statement on Form S-8, with all exhibits thereto and all documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorney-in-fact and agent full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully to all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that said attorney-in-fact and agent, or his substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, this registration statement has been signed by the following persons in the capacities and on the dates indicated:

Signature	Title	Date
<u>/s/ Mark J. Ahn</u> Mark J. Ahn	President and Chief Executive Officer (Principal Executive Officer) and Director	June 9, 2011
<u>/s/ Robert E. Kennedy</u> Robert E. Kennedy	Chief Financial Officer (Principal Financial and Accounting Officer)	June 9, 2011
<u>/s/ Sanford J. Hillsberg</u> Sanford J. Hillsberg	Director	June 9, 2011
<u>/s/ Richard Chin</u> Richard Chin	Director	June 9, 2011
<u>/s/ Steven S. Galliker</u> Steven S. Galliker	Director	June 9, 2011

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Signature	Title	Date
<div><div>/s/ Steven S. Kriegsman</div><div>Steven S. Kriegsman</div></div>	Director	June 9, 2011
<div><div>/s/ Rudolph Nisi</div><div>Rudolph Nisi</div></div>	Director	June 9, 2011

EXHIBIT INDEX

The following exhibits are filed with this registration statement or are incorporated by reference as a part of this registration statement:

- 4.1 RXi Pharmaceuticals Corporation Employee Stock Purchase Plan (previously filed on April 23, 2010 as Annex B to the Registrant's definitive proxy statement on Schedule 14A and incorporated herein by reference).
- 5.1 Opinion of TroyGould PC (included with this registration statement).
- 23.1 Consent of BDO USA, LLP (included with this registration statement).
- 23.2 Consent of Lohman Company, PLLC (included with this registration statement)
- 23.3 Consent of TroyGould PC (included in the opinion filed as Exhibit 5.1).
- 24.1 Power of Attorney (included on the signature page of this registration statement).

TROYGOULD PC
1801 Century Park East, 16th Floor
Los Angeles, California 90067-2367

June 9, 2011

RXi Pharmaceuticals Corporation
60 Prescott Street
Worcester, Massachusetts 01605

Re: Registration Statement on Form S-8

Ladies and Gentlemen:

We have acted as counsel to RXi Pharmaceuticals Corporation, a Delaware corporation (the “Company”), in connection with a Registration Statement on Form S-8 (the “Registration Statement”) that the Company intends to file with the Securities and Exchange Commission (the “Commission”) under the Securities Act of 1933, as amended (the “Securities Act”), on or about June 9, 2011 for the purpose of registering the offer and sale of up to 250,000 shares (the “Shares”) of its common stock, par value \$0.0001 per share, issued or issuable under the Company’s Employee Stock Purchase Plan (the “Plan”). This opinion letter is being given to you pursuant to your request.

As a basis for rendering our opinion expressed below, we have reviewed originals or copies of originals, certified or otherwise identified to our satisfaction, of (i) the Registration Statement, (ii) the Plan, (iii) the Company’s Amended and Restated Certificate of Incorporation and Amended and Restated Bylaws, each as amended to date, (iv) minutes or resolutions of the Company’s Board of Directors and stockholders pertaining to the adoption of the Plan and issuance of the Shares, the Registration Statement and related matters, and (v) such other certificates of public officials, certificates of officers of the Company and other documents as we have considered necessary or appropriate as a basis for rendering our opinion.

With your permission, in order to render our opinion, we have made and relied upon such customary assumptions as we have deemed necessary or appropriate without any independent investigation or inquiry by us. Among other things, we have assumed that: all signatures on documents reviewed by us are genuine; all documents submitted to us as originals are authentic; and all documents submitted to us as copies conform to the originals of such documents, and such originals are authentic.

The law covered by our opinion is limited to the laws of the State of Delaware. We neither express nor imply any opinion with respect to any other laws or the laws of any other jurisdiction, and we assume no responsibility with respect to the application or effect of any such laws.

This opinion letter is limited to the opinion expressly stated below, does not include any implied opinions and is rendered as of the date hereof. We do not undertake to advise you of matters that may

RXi Pharmaceuticals Corporation

June 9, 2011

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come to our attention subsequent to the date hereof and that may affect our opinion, including, without limitation, future changes in applicable law.

Based upon and subject to all of the foregoing, we are of the opinion that all Shares that are issued, delivered and paid for in accordance with the terms and conditions of the Registration Statement and the Plan will be validly issued, fully paid and nonassessable.

We consent to the filing of this opinion letter as an exhibit to the Registration Statement. However, by giving you this opinion letter and consent, we do not thereby admit that we are within the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations of the Commission promulgated thereunder.

Very truly yours,

/s/ TroyGould PC

TROYGOULD PC

Consent of Independent Registered Public Accounting Firm

RXi Pharmaceuticals Corporation
60 Prescott Street
Worcester, Massachusetts 01605

We hereby consent to the incorporation by reference in the Prospectus constituting a part of this Registration Statement of our report dated April 15, 2011, relating to the financial statements of RXi Pharmaceuticals Corporation appearing in the company's Annual Report on Form 10-K for the year ended December 31, 2010.

/s/ BDO USA, LLP
Boston, Massachusetts

June 9, 2011

Consent of Independent Auditors

RXi Pharmaceuticals Corporation
60 Prescott Street
Worcester, Massachusetts 01605

We hereby consent to the incorporation by reference in the Prospectus constituting a part of this Registration Statement of our report dated April 11, 2011, relating to the financial statements of Apthera, Inc. appearing in the Current Report on Form 8-K/A of RXi Pharmaceuticals Corporation dated April 14, 2011.

/s/ Lohman Company, PLLC
Mesa, Arizona

June 9, 2011