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

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

ACELRX PHARMACEUTICALS, INC.
(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

**351 Galveston Drive
Redwood City, CA 94063
(650) 216-3500**
(Address of principal executive offices,
including zip code)

41-2193603
(I.R.S. Employer Identification No.)

2011 Equity Incentive Plan
(Full titles of the plans)

**Richard A. King
President and Chief Executive Officer
AcelRx Pharmaceuticals, Inc.
351 Galveston Drive
Redwood City, CA 94063
(650) 216-3500**
(Name, address, including zip code, and telephone number, including area code, of agent for service)

Copies to:
**Mark B. Weeks
Cooley LLP
3175 Hanover Street
Palo Alto, California 94304
(650) 843-5000
Facsimile: (650) 849-7400**

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.

Large Accelerated filer

Accelerated filer

Non-accelerated filer (Do not check if a smaller reporting company)

Smaller reporting company

CALCULATION OF REGISTRATION FEE

Title of Securities to be Registered	Amount to be Registered(1)	Proposed Maximum Offering Price Per Share(2)	Proposed Maximum Aggregate Offering Price(2)	Amount of Registration Fee
Common Stock, par value \$0.001 per share	1,748,495 shares	\$4.65	\$8,130,502	\$945

- (1) Pursuant to Rule 416(a) promulgated under the Securities Act of 1933, as amended (the "Securities Act"), this Registration Statement shall also cover any additional shares of the Registrant's Common Stock that become issuable under the plan set forth herein by reason of any stock dividend, stock split, recapitalization or other similar transaction effected without receipt of consideration that increases the number of outstanding shares of the Registrant's Common Stock.
 - (2) Estimated solely for the purpose of calculating the amount of the registration fee pursuant to Rule 457(h) and Rule 457(c) promulgated under the Securities Act. The offering price per share and the aggregate offering price are based upon the average of the high and low prices of the Registrant's Common Stock as reported on the NASDAQ Global Market on March 11, 2015.
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EXPLANATORY NOTE

This Registration Statement on Form S-8 is being filed for the purpose of registering an additional 1,748,495 shares of the common stock of AcelRx Pharmaceuticals, Inc. (the "Registrant") to be issued pursuant to the Registrant's 2011 Equity Incentive Plan.

INCORPORATION BY REFERENCE OF CONTENTS OF REGISTRATION STATEMENT ON FORM S-8

The contents of the Registration Statements on Form S-8 (File Nos. 333-194634, 333-172409, 333-180334 and 333-187206) are incorporated by reference herein.

EXHIBITS

Exhibit Number	Description
3.1	Amended and Restated Certificate of Incorporation of the Registrant. ⁽¹⁾
3.2	Amended and Restated Bylaws of the Registrant. ⁽²⁾
4.1	Reference is made to Exhibits 3.1 and 3.2.
4.2	Specimen Common Stock Certificate of the Registrant. ⁽³⁾
4.3	Second Amended and Restated Investor's Rights Agreement, among the Registrant and certain of its security holders, dated as of November 23, 2009. ⁽⁴⁾
4.4	Warrant to Purchase Common Stock of the Registrant, issued to Hercules Technology II, L.P., dated as of December 16, 2013. ⁽⁵⁾
4.5	Warrant to Purchase Common Stock of the Registrant, issued to Hercules Technology Growth Capital, Inc., dated as of December 16, 2013. ⁽⁶⁾
4.6	Form of Warrant issued to certain purchasers pursuant to the Securities Purchase Agreement dated May 29, 2012, between the Registrant and the purchasers identified therein. ⁽⁷⁾
5.1	Opinion of Cooley LLP.
23.1	Consent of Independent Registered Public Accounting Firm.
23.2	Consent of Cooley LLP (included in Exhibit 5.1).
24.1	Power of Attorney. Reference is made to the signature page of this Form S-8.
99.1	2011 Equity Incentive Plan. ⁽⁸⁾
99.2	Forms of Stock Option Grant Notice, Stock Option Exercise Notice and Stock Option Agreement under 2011 Equity Incentive Plan. ⁽⁹⁾
99.3	Form of Restricted Stock Unit Award Agreement under 2011 Equity Incentive Plan. ⁽¹⁰⁾

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- (1) Incorporated herein by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K (File No. 001-35068), as filed with the Commission on February 18, 2011.
- (2) Incorporated herein by reference to Exhibit 3.4 to the Registrant's Registration Statement on Form S-1 (File No. 333-170594), as filed with the Commission on January 7, 2011, as amended.
- (3) Incorporated herein by reference to Exhibit 4.2 to the Registrant's Registration Statement on Form S-1 (File No. 333-170594), as filed with the Commission on January 31, 2011, as amended.
- (4) Incorporated herein by reference to Exhibit 4.3 to the Registrant's Registration Statement on Form S-1 (File No. 333-170594), as filed with the Commission on November 12, 2010, as amended.
- (5) Incorporated herein by reference to Exhibit 4.5 to the Registrant's Annual Report on Form 10-K (File No. 001-35068), as filed with the Commission on March 17, 2014.
- (6) Incorporated herein by reference to Exhibit 4.6 to the Registrant's Annual Report on Form 10-K (File No. 001-35068), as filed with the Commission on March 17, 2014.
- (7) Incorporated herein by reference to Exhibit 4.8 to the Registrant's Current Report on Form 8-K (File No. 001-35068), as filed with the Commission on May 30, 2012.
- (8) Incorporated herein by reference to Exhibit 99.3 to the Registrant's Registration Statement on Form S-8 (File No. 333-172409), as filed with the Commission on February 24, 2011.
- (9) Incorporated herein by reference to Exhibit 10.5 to the Registrant's Annual Report on Form 10-K (File No. 001-35068), as filed with the Commission on March 30, 2011.
- (10) Incorporated herein by reference to Exhibit 10.6 to the Registrant's Annual Report on Form 10-K (File No. 001-35068), as filed with the Commission on March 30, 2011.



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CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in the Registration Statement (Form S-8) pertaining to the 2011 Equity Incentive Plan of AcelRx Pharmaceuticals, Inc. of our reports dated March 12, 2015, with respect to the financial statements of AcelRx Pharmaceuticals, Inc. and the effectiveness of internal control over financial reporting of AcelRx Pharmaceuticals, Inc. included in its Annual Report (Form 10-K) for the year ended December 31, 2014 filed with the Securities and Exchange Commission.

/s/ Ernst & Young LLP

Redwood City, California
March 12, 2015