

**UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION**

Washington, D.C. 20549

**FORM S-1  
REGISTRATION STATEMENT  
UNDER  
THE SECURITIES ACT OF 1933**

**Flex Pharma, Inc.**

(Exact Name of Registrant as Specified in Its Charter)

**Delaware**  
(State or Other Jurisdiction of  
Incorporation or Organization)

**2834**  
(Primary Standard Industrial  
Classification Code Number)

**46-5087339**  
(I.R.S. Employer  
Identification Number)

**800 Boylston Street, 24<sup>th</sup> Floor  
Boston, MA 02199  
(617) 874-1821**

(Address, Including Zip Code, and Telephone Number, Including Area Code, of Registrant's Principal Executive Offices)

**Christoph Westphal, M.D., Ph.D.  
President and Chief Executive Officer  
Flex Pharma, Inc.  
800 Boylston Street, 24<sup>th</sup> Floor  
Boston, MA 02199  
(617) 874-1821**

(Name, Address, Including Zip Code, and Telephone Number, Including Area Code, of Agent for Service)

**Copies to:**

**Lester Fagen  
Marc Recht  
Miguel Vega**  
Cooley LLP  
500 Boylston Street, 14th Floor  
Boston, Massachusetts 02116  
(617) 937-2300

**Peter N. Handrinos  
Nathan Ajiashvili**  
Latham & Watkins LLP  
John Hancock Tower  
200 Clarendon Street  
Boston, Massachusetts 02116  
(617) 948-6000

**Approximate date of commencement of proposed sale to the public: As soon as practicable after this registration statement becomes effective.**

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, as amended (the "Securities Act"), check the following box.

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.  (File No. 333-201276)

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

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 EACH CLASS 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(2)(3)
Common Stock, \$0.0001 par value per share	902,750	\$ 16.00	\$ 14,444,000	\$ 1,679

(1) The shares being registered pursuant to this Registration Statement are in addition to the 5,307,250 shares registered pursuant to the Registrant's Registration Statement on Form S-1 (Registration No. 333-201276). Includes 117,750 shares that the underwriters have the option to purchase.

(2) Based on the initial public offering price.

(3) Calculated pursuant to Rule 457(a) under the Securities Act of 1933, as amended.

**This Registration Statement shall become effective upon filing in accordance with Rule 462(b) under the Securities Act of 1933.**

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**EXPLANATORY NOTE AND  
INCORPORATION OF CERTAIN INFORMATION BY REFERENCE**

This Registration Statement is being filed with the Securities and Exchange Commission (the "Commission") with respect to the registration of additional shares of common stock, par value \$0.0001 per share, of Flex Pharma, Inc., a Delaware corporation, pursuant to Rule 462(b) under the Securities Act of 1933, as amended. This Registration Statement incorporates by reference the contents of, including all amendments and exhibits thereto and all information incorporated by reference therein, the Registration Statement on Form S-1 (Registration No. 333-201276), which was declared effective by the Commission on January 28, 2015, and is being filed solely for the purpose of increasing the aggregate number of shares to be offered in the public offering by 902,750 shares including the shares that may be sold pursuant to the underwriters' option to purchase additional shares.

The required opinions and consents are listed on the Exhibit Index attached hereto.

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**SIGNATURES**

Pursuant to the requirements of the Securities Act, the Registrant 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 the 28<sup>th</sup> day of January, 2015.

**FLEX PHARMA, INC.**

By: /s/ Christoph Westphal  
Christoph Westphal, M.D., Ph.D.  
*President and Chief Executive Officer*

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

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Christoph Westphal</u> Christoph Westphal, M.D., Ph.D.	President, Chief Executive Officer, Chairman of the Board of Directors (Principal Executive Officer)	January 28 , 2015
<u>/s/ John McCabe</u> John McCabe	Vice President, Finance (Principal Financial and Accounting Officer)	January 28 , 2015
<u>/s/ Peter Barton Hutt*</u> Peter Barton Hutt	Member of the Board of Directors	January 28 , 2015
<u>/s/ Marc Kozin*</u> Marc Kozin	Member of the Board of Directors	January 28 , 2015
<u>/s/ Stephen Kraus*</u> Stephen Kraus	Member of the Board of Directors	January 28 , 2015
<u>/s/ Stuart Randle*</u> Stuart Randle	Member of the Board of Directors	January 28 , 2015
<u>/s/ John Sculley*</u> John Sculley	Member of the Board of Directors	January 28 , 2015

\*Pursuant to power of attorney

By: /s/ John McCabe  
John McCabe

**EXHIBIT INDEX**

<b>Exhibit Number</b>	<b>Description of Document</b>
5.1	Opinion of Cooley LLP.
23.1	Consent of Ernst & Young LLP, an Independent Registered Public Accounting Firm.
23.2	Consent of Cooley LLP. Reference is made to Exhibit 5.1.
24.1(1)	Power of Attorney.
(1)	Included on the signature page of Registration Statement on Form S-1 (File No. 333-201276), filed with the Securities and Exchange Commission on January 13, 2015, and incorporated herein by reference.



Marc A. Recht  
T: +1 617 937 2316  
mrecht@cooley.com

January 28, 2015

Flex Pharma, Inc.  
800 Boylston Street, 24th Floor  
Boston, Massachusetts 02199

Ladies and Gentlemen:

You have requested our opinion with respect to certain matters in connection with the filing by Flex Pharma, Inc., a Delaware corporation (the "*Company*"), of a registration statement on Form S-1 (the "*Registration Statement*") with the Securities and Exchange Commission pursuant to Rule 462(b) promulgated under the Securities Act of 1933, as amended, covering an underwritten public offering of up to 902,750 shares of the Company's common stock, par value \$0.0001 per share (the "*Shares*"), to be sold by the Company. The Registration Statement incorporates by reference the registration statement on Form S-1 (No. 333-201276), which was declared effective on January 28, 2015 (the "*Prior Registration Statement*"), including the prospectus which forms a part of the Prior Registration Statement (the "*Prospectus*"). We are acting as counsel for the Company.

In connection with this opinion, we have examined and relied upon (a) the Registration Statement, the Prior Registration Statement and the Prospectus, (b) the Company's Amended and Restated Certificate of Incorporation, as amended, and Bylaws, as currently in effect, (c) the Company's Amended and Restated Certificate of Incorporation, filed as Exhibit 3.5 to the Prior Registration Statement and the Company's Bylaws, filed as Exhibit 3.7 to the Prior Registration Statement, each of which is to be in effect immediately after the closing of the offering contemplated by the Registration Statement, and (d) the originals or copies certified to our satisfaction of such records, documents, certificates, memoranda and other instruments as in our judgment are necessary or appropriate to enable us to render the opinion expressed below. We have assumed the genuineness and authenticity of all documents submitted to us as originals and the conformity to originals of all documents submitted to us as copies. As to certain factual matters, we have relied upon a certificate of an officer of the Company and have not sought independently to verify such matters.

Our opinion is expressed only with respect to the General Corporation Law of the State of Delaware. We express no opinion as to whether the laws of any particular jurisdiction are applicable to the subject matter hereof. We are not rendering any opinion as to compliance with any federal or state antifraud law, rule or regulation relating to securities, or to the sale or issuance thereof.

On the basis of the foregoing, and in reliance thereon, we are of the opinion that the Shares, when sold and issued against payment therefor as described in the Registration Statement and the Prospectus, will be validly issued, fully paid and non-assessable.

500 BOYLSTON STREET, BOSTON, MA 02116-3736 T: (617) 937-2300 F: (617) 937-2400 WWW.COOLEY.COM

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We consent to the filing of this opinion as an exhibit to the Registration Statement.

Sincerely,

Cooley LLP

By: /s/ Marc A. Recht  
Marc A. Recht, Esq.

**Consent of Independent Registered Public Accounting Firm**

We consent to the incorporation by reference in the Registration Statement on Form S-1 filed pursuant to Rule 462(b) of the Securities Act of 1933 of the reference to our firm under the caption "Experts" and to the incorporation by reference of our report dated December 8, 2014 (except for Note 13(D)(i), as to which the date is January 20, 2015) relating to the financial statements of Flex Pharma, Inc. included in Amendment No. 2 to the Registration Statement (Form S-1 No. 333-201276) and related Prospectus of Flex Pharma, Inc. for the registration of its common stock.

/s/ Ernst & Young LLP

Boston, Massachusetts  
January 28, 2015

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