
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, DC 20549

SCHEDULE 13D

UNDER THE SECURITIES EXCHANGE ACT OF 1934
(Amendment No. 1)*

Flex Pharma, Inc.
(Name of Issuer)

Common Stock, \$0.0001 par value
(Title of Class of Securities)

33938A 105
(CUSIP Number)

Christoph Westphal, M.D., Ph.D.
Longwood Fund Management
Prudential Tower, Suite 1555
800 Boylston Street
Boston, MA 02199
(617) 351-2590

(Name, Address and Telephone Number of Person Authorized to Receive Notices and Communications)

March 18, 2016
(Date of Event Which Requires Filing of this Statement)

If the filing person has previously filed a statement on Schedule 13G to report the acquisition that is the subject of this Schedule 13D, and is filing this schedule because of §§240.13d-1(e), 240.13d-1(f) or 240.13d-1(g), check the following box.

Note: Schedules filed in paper format shall include a signed original and five copies of the schedule, including all exhibits. See Rule 13d-7 for other parties to whom copies are to be sent.

* The remainder of this cover page shall be filled out for a reporting person's initial filing on this form with respect to the subject class of securities, and for any subsequent amendment containing information which would alter disclosures provided in a prior cover page.

The information required on the remainder of this cover page shall not be deemed to be "filed" for the purpose of Section 18 of the Securities Exchange Act of 1934 ("Act") or otherwise subject to the liabilities of that section of the Act but shall be subject to all other provisions of the Act (however, *see the Notes*).

1.	Name of Reporting Persons Longwood Fund II, L.P.	
2.	Check the Appropriate Box if a Member of a Group (see instructions) (a) <input checked="" type="checkbox"/> (b) <input type="checkbox"/>	
3.	SEC USE ONLY	
4.	Source of Funds (see instructions) N/A	
5.	Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 2(d) or 2(e) <input type="checkbox"/>	
6.	Citizenship or Place of Organization Delaware, United States of America	
Number of Shares Beneficially Owned by Each Reporting Person With	7.	Sole Voting Power 0
	8.	Shared Voting Power 2,697,264
	9.	Sole Dispositive Power 0
	10.	Shared Dispositive Power 2,697,264
11.	Aggregate Amount Beneficially Owned by Each Reporting Person 2,697,264	
12.	Check if the Aggregate Amount in Row (11) Excludes Certain Shares (see instructions) <input type="checkbox"/>	
13.	Percent of Class Represented by Amount in Row 11 15.0%	
14.	Type of Reporting Person (see instructions) PN	

1.	Name of Reporting Persons Longwood Fund III, L.P.	
2.	Check the Appropriate Box if a Member of a Group (see instructions) (a) <input checked="" type="checkbox"/> (b) <input type="checkbox"/>	
3.	SEC USE ONLY	
4.	Source of Funds (see instructions) WC	
5.	Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 2(d) or 2(e) <input type="checkbox"/>	
6.	Citizenship or Place of Organization Delaware, United States of America	
Number of Shares Beneficially Owned by Each Reporting Person With	7.	Sole Voting Power 0
	8.	Shared Voting Power 165,633
	9.	Sole Dispositive Power 0
	10.	Shared Dispositive Power 165,633
11.	Aggregate Amount Beneficially Owned by Each Reporting Person 165,633	
12.	Check if the Aggregate Amount in Row (11) Excludes Certain Shares (see instructions) <input type="checkbox"/>	
13.	Percent of Class Represented by Amount in Row 11 0.9%	
14.	Type of Reporting Person (see instructions) PN	

1.	Name of Reporting Persons Longwood Fund II GP, LLC	
2.	Check the Appropriate Box if a Member of a Group (see instructions) (a) <input checked="" type="checkbox"/> (b) <input type="checkbox"/>	
3.	SEC USE ONLY	
4.	Source of Funds (see instructions) N/A	
5.	Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 2(d) or 2(e) <input type="checkbox"/>	
6.	Citizenship or Place of Organization Delaware, United States of America	
Number of Shares Beneficially Owned by Each Reporting Person With	7.	Sole Voting Power 0
	8.	Shared Voting Power 2,697,264
	9.	Sole Dispositive Power 0
	10.	Shared Dispositive Power 2,697,264
11.	Aggregate Amount Beneficially Owned by Each Reporting Person 2,697,264	
12.	Check if the Aggregate Amount in Row (11) Excludes Certain Shares (see instructions) <input type="checkbox"/>	
13.	Percent of Class Represented by Amount in Row 11 15.0%	
14.	Type of Reporting Person (see instructions) OO	

1.	Name of Reporting Persons Longwood Fund III GP, LLC	
2.	Check the Appropriate Box if a Member of a Group (see instructions) (a) <input checked="" type="checkbox"/> (b) <input type="checkbox"/>	
3.	SEC USE ONLY	
4.	Source of Funds (see instructions) N/A	
5.	Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 2(d) or 2(e) <input type="checkbox"/>	
6.	Citizenship or Place of Organization Delaware, United States of America	
Number of Shares Beneficially Owned by Each Reporting Person With	7.	Sole Voting Power 0
	8.	Shared Voting Power 165,633
	9.	Sole Dispositive Power 0
	10.	Shared Dispositive Power 165,633
11.	Aggregate Amount Beneficially Owned by Each Reporting Person 165,633	
12.	Check if the Aggregate Amount in Row (11) Excludes Certain Shares (see instructions) <input type="checkbox"/>	
13.	Percent of Class Represented by Amount in Row 11 0.9%	
14.	Type of Reporting Person (see instructions) OO	

1.	Name of Reporting Persons Christoph Westphal, M.D., Ph.D.	
2.	Check the Appropriate Box if a Member of a Group (see instructions) (a) <input checked="" type="checkbox"/> (b) <input type="checkbox"/>	
3.	SEC USE ONLY	
4.	Source of Funds (see instructions) AF, PF	
5.	Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 2(d) or 2(e) <input type="checkbox"/>	
6.	Citizenship or Place of Organization United States citizen	
Number of Shares Beneficially Owned by Each Reporting Person With	7.	Sole Voting Power 3,925,248
	8.	Shared Voting Power 2,862,897
	9.	Sole Dispositive Power 3,925,248
	10.	Shared Dispositive Power 2,862,897
11.	Aggregate Amount Beneficially Owned by Each Reporting Person 6,788,145	
12.	Check if the Aggregate Amount in Row (11) Excludes Certain Shares (see instructions) <input type="checkbox"/>	
13.	Percent of Class Represented by Amount in Row 11 37.8%	
14.	Type of Reporting Person (see instructions) IN	

1.	Name of Reporting Persons Richard Aldrich	
2.	Check the Appropriate Box if a Member of a Group (see instructions) (a) <input checked="" type="checkbox"/> (b) <input type="checkbox"/>	
3.	SEC USE ONLY	
4.	Source of Funds (see instructions) N/A	
5.	Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 2(d) or 2(e) <input type="checkbox"/>	
6.	Citizenship or Place of Organization United States citizen	
Number of Shares Beneficially Owned by Each Reporting Person With	7.	Sole Voting Power 216,828
	8.	Shared Voting Power 2,862,897
	9.	Sole Dispositive Power 216,828
	10.	Shared Dispositive Power 2,862,897
11.	Aggregate Amount Beneficially Owned by Each Reporting Person 3,079,725	
12.	Check if the Aggregate Amount in Row (11) Excludes Certain Shares (see instructions) <input type="checkbox"/>	
13.	Percent of Class Represented by Amount in Row 11 17.2%	
14.	Type of Reporting Person (see instructions) IN	

1.	Name of Reporting Persons Michelle Dipp, M.D., Ph.D.	
2.	Check the Appropriate Box if a Member of a Group (see instructions) (a) <input checked="" type="checkbox"/> (b) <input type="checkbox"/>	
3.	SEC USE ONLY	
4.	Source of Funds (see instructions) N/A	
5.	Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 2(d) or 2(e) <input type="checkbox"/>	
6.	Citizenship or Place of Organization United States citizen	
Number of Shares Beneficially Owned by Each Reporting Person With	7.	Sole Voting Power 216,829
	8.	Shared Voting Power 2,862,897
	9.	Sole Dispositive Power 216,829
	10.	Shared Dispositive Power 2,862,897
11.	Aggregate Amount Beneficially Owned by Each Reporting Person 3,079,726	
12.	Check if the Aggregate Amount in Row (11) Excludes Certain Shares (see instructions) <input type="checkbox"/>	
13.	Percent of Class Represented by Amount in Row 11 17.2%	
14.	Type of Reporting Person (see instructions) IN	

Explanatory Note

This Amendment No. 1 to Schedule 13D is being filed by Longwood Fund II, L.P., Longwood Fund III, L.P., Longwood Fund II GP, LLC, Longwood Fund III GP, LLC, Christoph Westphal, M.D., Ph.D., Richard Aldrich, and Michelle Dipp, M.D., Ph.D. (collectively, the "Reporting Persons"), pursuant to §240.13d-2(a), to amend the Schedule 13D filed by certain of the Reporting Persons on February 19, 2015 (the "Initial Schedule 13D") relating to the Common Stock, \$0.0001 par value per share (the "Common Stock"), of Flex Pharma, Inc. (the "Issuer"). The purpose of this amendment is to add Longwood Fund III, L.P. and Longwood Fund III GP, LLC, as a member of the group following Longwood Fund III, L.P.'s purchase of Common Stock. Except as set forth below, all Items of the Initial Schedule 13D remain unchanged. All capitalized terms not otherwise defined herein shall have the meanings ascribed to such terms in the Initial Schedule 13D.

Item 1. Security and Issuer.

There are no amendments to Item 1 of the Initial Schedule 13D.

Item 2. Identity and Background.

Items 2(a), 2(c), 2(f) of the Initial Schedule 13D are hereby amended and restated in their entirety as follows:

- (a) This statement is filed by:
- (i) Longwood Fund II, L.P., a Delaware limited partnership ("Longwood Fund II"), with respect to the shares of Common Stock directly and beneficially owned by it;
 - (ii) Longwood Fund III, L.P., a Delaware limited partnership ("Longwood Fund III" and together with Longwood Fund II, the "Funds"), with respect to the shares of Common Stock directly and beneficially owned by it;
 - (iii) Longwood Fund II GP, LLC, a Delaware limited liability company, with respect to the shares of Common Stock beneficially owned by it;
 - (iv) Longwood Fund III GP, LLC, a Delaware limited liability company, with respect to the shares of Common Stock beneficially owned by it;
 - (v) Christoph Westphal, M.D., Ph.D., with respect to the shares of Common Stock directly and beneficially owned by him;
 - (vi) Richard Aldrich, with respect to the shares of Common Stock directly and beneficially owned by him; and
 - (vii) Michelle Dipp, M.D., Ph.D., with respect to the shares of Common Stock directly and beneficially owned by her.

Each of the foregoing is referred to as a "Reporting Person" and collectively as the "Reporting Persons."

Longwood Fund II GP, LLC is the ultimate General Partner of Longwood Fund II, and Longwood Fund III GP, LLC is the ultimate General Partner of Longwood Fund III. Christoph Westphal, M.D., Ph.D., Richard Aldrich, and Michelle Dipp, M.D., Ph.D. (collectively, the "Managers") are managers of Longwood Fund II GP, LLC and Longwood Fund III GP, LLC, and, as such, may be deemed to have shared voting and dispositive power with respect to the Issuer's securities held by Longwood Fund II and Longwood Fund III (the "Longwood Shares"). Longwood Fund II GP, LLC, Longwood Fund III GP, LLC, and the Managers each disclaim beneficial ownership of the Longwood Shares, except to the extent of their pecuniary interest therein.

(c) The present principal business of Longwood Fund II, Longwood Fund III, Longwood Fund II GP, LLC, Longwood Fund III GP, LLC, Dr. Westphal, Mr. Aldrich, and Dr. Dipp is the venture capital investment business. Dr. Westphal is also the president, chief executive officer and chairman of the Issuer. Dr. Dipp is the chief executive officer of OvaScience, Inc., a pharmaceutical company located at 215 First Street, #240, Cambridge, MA 02142.

(f) Citizenship of the Reporting Persons is as set forth below:

Longwood Fund II	Delaware, United States of America
Longwood Fund II GP, LLC	Delaware, United States of America
Longwood Fund III	Delaware, United States of America
Longwood Fund III GP, LLC	Delaware, United States of America
Dr. Westphal	United States of America
Mr. Aldrich	United States of America
Dr. Dipp	United States of America

Item 3. Source and Amount of Funds or Other Consideration.

Item 3 is hereby amended to append the following:

From the filing of the Initial Schedule 13D through December 4, 2015, Dr. Westphal purchased in the open market through various transactions 22,321 shares of Common Stock at an aggregate purchase price of \$309,679.37. Such shares were purchased with Dr. Westphal's personal funds.

On March 11, 2016, Longwood Fund III purchased in the open market 89,680 shares of Common Stock at a purchase price of \$7.00, for an aggregate purchase price of \$627,760. On March 15, 2016, Longwood Fund III purchased in the open market 19,237 shares of Common Stock at a purchase price of \$9.62, for an aggregate purchase price of \$185,091.93. On March 16, 2016, Longwood Fund III purchased in the open market 19,142 shares of Common Stock at a purchase price of \$10.85, for an aggregate purchase price of \$207,647.08. On March 17, 2016, Longwood Fund III purchased in the open market 19,137 shares of Common Stock at a purchase price of \$10.94, for an aggregate purchase price of \$209,305.36. On March 18, 2016, Longwood Fund III purchased in the open market 18,437 shares of Common Stock at a purchase price of \$11.06, for an aggregate purchase price of \$203,953.92. The working capital of Longwood Fund III was the source of funds for the purchase of these shares.

Item 4. Purpose of Transaction.

There are no amendments to Item 4 of the Initial Schedule 13D.

Item 5. Interest in Securities of the Issuer.

Items 5(a) and 5(b) of the Initial Schedule 13D are hereby amended and restated in their entirety as follows:

The aggregate percentage of shares of Common Stock reported beneficially owned by each person named herein is determined in accordance with Securities and Exchange Commission ("SEC") rules and is based upon 17,954,774 shares of the Issuer's Common Stock outstanding as of March 4, 2016. The applicable SEC rules generally attribute beneficial ownership of securities to persons who possess sole or shared voting power or investment power with respect to those securities.

A. Longwood Fund II, L.P.

(a) As of the closing of business on March 18, 2016, Longwood Fund II beneficially owned 2,697,264 shares of Common Stock, representing a beneficial ownership of approximately 15.0% of the shares of Common Stock. All such shares are directly held by Longwood Fund II.

(b) 1. Sole power to vote or direct vote:	0
2. Shared power to vote or direct vote:	2,697,264
3. Sole power to dispose or direct the disposition:	0
4. Shared power to dispose or direct the disposition:	2,697,264

B. Longwood Fund II GP, LLC

(a) As of the closing of business on March 18, 2016, Longwood Fund II GP, LLC beneficially owned 2,697,264 shares of Common Stock, representing a beneficial ownership of approximately 15.0% of the shares of Common Stock. All such shares are directly held by Longwood Fund II.

(b) 1. Sole power to vote or direct vote:	0
2. Shared power to vote or direct vote:	2,697,264
3. Sole power to dispose or direct the disposition:	0
4. Shared power to dispose or direct the disposition:	2,697,264

C. Longwood Fund III, L.P.

(a) As of the closing of business on March 18, 2016, Longwood Fund III beneficially owned 165,633 shares of Common Stock, representing a beneficial ownership of approximately 0.9% of the shares of Common Stock. All such shares are directly held by Longwood Fund III.

(b) 1. Sole power to vote or direct vote:	0
2. Shared power to vote or direct vote:	165,633
3. Sole power to dispose or direct the disposition:	0
4. Shared power to dispose or direct the disposition:	165,633

D. Longwood Fund III GP, LLC

(a) As of the closing of business on March 18, 2016, Longwood Fund III GP, LLC beneficially owned 165,633 shares of Common Stock, representing a beneficial ownership of approximately 0.9% of the shares of Common Stock. All such shares are directly held by Longwood Fund III.

(b) 1. Sole power to vote or direct vote:	0
2. Shared power to vote or direct vote:	165,633
3. Sole power to dispose or direct the disposition:	0
4. Shared power to dispose or direct the disposition:	165,633

E. Christoph Westphal, M.D., Ph.D.

(a) As of the closing of business on March 18, 2016, Christoph Westphal, M.D., Ph.D., beneficially owned 6,788,145 shares of Common Stock, representing a beneficial ownership of approximately 37.8% of the shares of Common Stock. 3,925,248 of these shares are directly held by Dr. Westphal personally and 2,862,897 are directly held by the Funds.

(b) 1. Sole power to vote or direct vote:	3,925,248
2. Shared power to vote or direct vote:	2,862,897
3. Sole power to dispose or direct the disposition:	3,925,248
4. Shared power to dispose or direct the disposition:	2,862,897

F. Richard Aldrich

(a) As of the closing of business on March 18, 2016, Richard Aldrich beneficially owned 3,079,725 shares of Common Stock, representing a beneficial ownership of approximately 17.2% of the shares of Common Stock. 170,488 of these shares are directly held by Mr. Aldrich personally, 46,340 are directly held by the Richard H. Aldrich 2014 GRAT and 2,862,897 are directly held by the Funds.

(b) 1. Sole power to vote or direct vote:	216,828
2. Shared power to vote or direct vote:	2,862,897
3. Sole power to dispose or direct the disposition:	216,828
4. Shared power to dispose or direct the disposition:	2,862,897

G. Michelle Dipp, M.D., Ph.D.

(a) As of the closing of business on March 18, 2016, Michelle Dipp, M.D., Ph.D. beneficially owned 3,079,726 shares of Common Stock, representing a beneficial ownership of approximately 17.2% of the shares of Common Stock. 216,829 of these shares are directly held by Dr. Dipp and 3,079,726 of these shares are directly held by the Funds.

(b) 1. Sole power to vote or direct vote:	216,829
2. Shared power to vote or direct vote:	2,862,897
3. Sole power to dispose or direct the disposition:	216,829
4. Shared power to dispose or direct the disposition:	2,862,897

Item 5(c) is hereby amended to append the following:

Item 3 sets forth the transactions effected by Longwood Fund III in the past sixty (60) days. None of the other Reporting Persons has effected any transaction in the Common Stock during the last 60 days.

Item 6. Contracts, Arrangements, Understandings or Relationships with Respect to Securities of the Issuer.

The first paragraph of Item 6 of the Initial Schedule 13D under the heading “Amended and Restated Investors’ Rights Agreement” is hereby amended and restated as follows:

“Longwood Fund II, Longwood Fund II GP, LLC, Christoph Westphal, M.D., Ph.D., Richard Aldrich, and Michelle Dipp, M.D., Ph.D. and certain other stockholders of the Issuer have entered into an Amended and Restated Investors’ Rights Agreement dated July 23, 2014 (the “Investors’ Rights Agreement”) with the Issuer. The Investors’ Rights Agreement provides these holders various rights, including the right to have the Issuer file registration statements covering their shares of Common Stock issued upon conversion of their preferred stock or request that such shares be covered by a registration statement that the Issuer is otherwise filing, the right to receive certain financial information and the right to participate in future equity offerings.”

Item 6 of the Initial Schedule 13D is hereby amended by deleting the heading “Lock-Up Agreements” and the information contained under such heading.

Item 7. Material to Be Filed as Exhibits.

The following documents are filed as Exhibits to this statement:

<u>Exhibit Number</u>	<u>Exhibit Description</u>
99.1	Joint Filing Agreement

SIGNATURES

After reasonable inquiry and to the best of my knowledge and belief, I certify that the information set forth in this statement is true, complete and correct.

Dated: March 22, 2016

LONGWOOD FUND II, L.P.

By: Longwood Fund II GP, LLC, a
Delaware limited liability company and
general partner of Longwood Fund II L.P.

By: /s/ Michelle Dipp
Michelle Dipp, M.D., Ph.D., Manager

LONGWOOD FUND II GP, LLC

By: /s/ Michelle Dipp
Michelle Dipp, M.D., Ph.D., Manager

/s/ Christoph Westphal
Christoph Westphal, M.D., Ph.D.

/s/ Richard Aldrich
Richard Aldrich

/s/ Michelle Dipp
Michelle Dipp, M.D., Ph.D.

LONGWOOD FUND III, L.P.

By: Longwood Fund III GP, LLC, a
Delaware limited liability company and
general partner of Longwood Fund II L.P.

By: /s/ Michelle Dipp
Michelle Dipp, M.D., Ph.D., Manager

LONGWOOD FUND III GP, LLC

By: /s/ Michelle Dipp
Michelle Dipp, M.D., Ph.D., Manager

**Attention: Intentional misstatements or omissions of fact
constitute Federal criminal violations (See 18 U.S.C. 1001)**