

SECURITIES AND EXCHANGE COMMISSION
Washington, DC 20549

SCHEDULE 13D

Under the Securities Exchange Act of 1934
(Amendment No. 3)*

Flex Pharma, Inc.

(Name of Issuer)

Common Stock, \$0.0001 par value

(Title of Class of Securities)

33938A 105

(CUSIP Number)

John Lawrence
c/o Longwood Fund Management, LLC
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)

October 16, 2018

(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)

(b)

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)

6. Citizenship or Place of Organization
Delaware, United States of America

7. Sole Voting Power
0

Number of
Shares
Beneficially
Owned by
Each
Reporting
Person With

8. Shared Voting Power
0

9. Sole Dispositive Power
0

10. Shared Dispositive Power
0

11. Aggregate Amount Beneficially Owned by Each Reporting Person
0

12. Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions)

13. Percent of Class Represented by Amount in Row 11
0.0%

14. Type of Reporting Person (See Instructions)

1. Name of Reporting Persons
Longwood Fund III, L.P.

2. Check the Appropriate Box if a Member of a Group (See Instructions)

(a)

(b)

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)

6. Citizenship or Place of Organization
Delaware, United States of America

7. Sole Voting Power
0

Number of
Shares
Beneficially
Owned by
Each
Reporting
Person With

8. Shared Voting Power
0

9. Sole Dispositive Power
0

10. Shared Dispositive Power
0

11. Aggregate Amount Beneficially Owned by Each Reporting Person
0

12. Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions)

13. Percent of Class Represented by Amount in Row 11
0.0%

14. Type of Reporting Person (See Instructions)

1. Name of Reporting Persons
Longwood Fund II GP, LLC

2. Check the Appropriate Box if a Member of a Group (See Instructions)

(a)

(b)

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)

6. Citizenship or Place of Organization
Delaware, United States of America

7. Sole Voting Power
0

Number of
Shares
Beneficially
Owned by
Each
Reporting
Person With

8. Shared Voting Power
0

9. Sole Dispositive Power
0

10. Shared Dispositive Power
0

11. Aggregate Amount Beneficially Owned by Each Reporting Person
0

12. Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions)

13. Percent of Class Represented by Amount in Row 11
0.0%

14. Type of Reporting Person (See Instructions)

1. Name of Reporting Persons
Longwood Fund III GP, LLC

2. Check the Appropriate Box if a Member of a Group (See Instructions)

(a)

(b)

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)

6. Citizenship or Place of Organization
Delaware, United States of America

7. Sole Voting Power
0

Number of
Shares
Beneficially
Owned by
Each
Reporting
Person With

8. Shared Voting Power
0

9. Sole Dispositive Power
0

10. Shared Dispositive Power
0

11. Aggregate Amount Beneficially Owned by Each Reporting Person
0

12. Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions)

13. Percent of Class Represented by Amount in Row 11
0.0%

14. Type of Reporting Person (See Instructions)

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)

(b)

3. SEC Use Only

4. Source of Funds (See Instructions)
PF

5. Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 2(d) or 2(e)

6. Citizenship or Place of Organization
United States citizen

7. Sole Voting Power
3,941,118

Number of
Shares
Beneficially
Owned by
Each
Reporting
Person With

8. Shared Voting Power
0

9. Sole Dispositive Power
3,941,118

10. Shared Dispositive Power
0

11. Aggregate Amount Beneficially Owned by Each Reporting Person
3,941,118

12. Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions)

13. Percent of Class Represented by Amount in Row 11
21.8%

14. Type of Reporting Person (See Instructions)

1. Name of Reporting Persons

Richard Aldrich

2. Check the Appropriate Box if a Member of a Group (See Instructions)

(a)

(b)

3. SEC Use Only

4. Source of Funds (See Instructions)

PF

5. Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 2(d) or 2(e)

6. Citizenship or Place of Organization

United States citizen

7. Sole Voting Power

216,828

8. Shared Voting Power

0

9. Sole Dispositive Power

216,828

10. Shared Dispositive Power

0

Number of
Shares
Beneficially
Owned by
Each
Reporting
Person With

11. Aggregate Amount Beneficially Owned by Each Reporting Person

216,828

12. Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions)

13. Percent of Class Represented by Amount in Row 11

1.2%

14. Type of Reporting Person (See Instructions)

Explanatory Note

This Amendment No. 3 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., and Richard Aldrich, (collectively, the “Reporting Persons”), pursuant to §240.13d-2(a), to amend the Schedule 13D filed by the Reporting Persons on February 19, 2015, as amended on March 22, 2016 and May 19, 2016 (the “Existing 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 reflect the shares of Common Stock sold by Longwood Fund II, L.P. and Longwood Fund III, L.P. on October 16, 2018. Except as set forth below, all Items of the Existing Schedule 13D remain unchanged. All capitalized terms not otherwise defined herein shall have the meanings ascribed to such terms in the Existing Schedule 13D.

Item 1. Security and Issuer.

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

Item 2. Identity and Background.

There are no amendments to Item 2 of the Existing Schedule 13D.

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

There are no amendments to Item 3 of the Existing Schedule 13D.

Item 4. Purpose of Transaction.

As a result of the transactions listed in item 5(c) to this Schedule 13D, the Reporting Persons and/or certain of their affiliates no longer constitute a “group” for purposes of Section 13(d) of the Securities Exchange Act of 1934, as amended (the “Exchange Act”). Longwood Fund II, L.P., Longwood Fund III, L.P., Longwood Fund II GP, LLC, Longwood Fund III GP, LLC and Richard Aldrich, each expressly disclaim beneficial ownership over any shares owned by Christoph Westphal, M.D., Ph.D., (“Westphal”) reported in this Schedule 13D. Westphal is separately making a Schedule 13D filing reporting his beneficial ownership.

Item 5. Interest in Securities of the Issuer.

Items 5(a) and 5(b) of the Existing 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 SEC rules and is based upon 18,069,476 shares of the Issuer’s Common Stock outstanding as of July 27, 2018, as set forth on the cover page of the Issuer’s Quarterly Report on Form 10-Q for the quarter ended June 30, 2018. 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 close of business on October 16, 2018, Longwood Fund II, L.P. beneficially owned 0 shares of Common Stock, representing 0.0% of the outstanding shares of Common Stock.

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

B. Longwood Fund II GP, LLC

(a) As of the close of business on October 16, 2018, Longwood Fund II GP, LLC beneficially owned 0 shares of Common

Stock, representing 0.0% of the outstanding shares of Common Stock.

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

C. Longwood Fund III, L.P.

(a) As of the close of business on October 16, 2018, Longwood Fund III, L.P. beneficially owned 0 shares of Common Stock, representing 0.0% of the outstanding shares of Common Stock.

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

D. Longwood Fund III GP, LLC

(a) As of the close of business on October 16, 2018, Longwood Fund III GP, LLC beneficially owned 0 shares of Common Stock, representing 0.0% of the outstanding shares of Common Stock.

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

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

(a) As of the close of business on October 16, 2018, Christoph Westphal, M.D., Ph.D. beneficially owned 3,941,118 shares of Common Stock, representing a beneficial ownership of approximately 21.8% of the outstanding shares of Common Stock. 3,902,927 of these shares are directly held by Dr. Westphal personally, 22,321 are directly held by The Christoph H. Westphal Revocable Trust of 2007 and 15,870 are directly held by The Christoph Westphal Roth IRA.

(b)	1. Sole power to vote or direct vote:	3,941,118
	2. Shared power to vote or direct vote:	0
	3. Sole power to dispose or direct the disposition:	3,941,118
	4. Shared power to dispose or direct the disposition:	0

F. Richard Aldrich

(a) As of the close of business on October 16, 2018, Richard Aldrich, beneficially owned 216,828 shares of Common Stock, representing a beneficial ownership of approximately 1.2% of the outstanding shares of Common Stock. 170,488 of these shares are directly held by Mr. Aldrich personally and 46,340 are directly held by the Richard H. Aldrich 2014 GRAT.

(b)	1. Sole power to vote or direct vote:	216,828
	2. Shared power to vote or direct vote:	0
	3. Sole power to dispose or direct the disposition:	216,828
	4. Shared power to dispose or direct the disposition:	0

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

On October 16, 2018 Longwood Fund II, L.P. sold 2,697,264 shares of Common Stock of the Issuer, and Longwood Fund III, L.P. sold 515,597 shares of Common Stock of the Issuer. These shares were sold in multiple open market sale transactions at prices ranging from \$0.70 to \$1.33, inclusive, for an aggregate sale price of \$2,941,013.38.

Item 5(e) is hereby amended and restated in its entirety as follows:

As a result of the sales made on October 16, 2018, Longwood Fund II, L.P., Longwood Fund III, L.P., Longwood Fund II GP, LLC, Longwood Fund III GP, LLC and Richard Aldrich no longer beneficially own 5% of the outstanding shares of Common Stock of the Issuer.

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

There are no amendments to Item 6 of the Existing Schedule 13D.

Item 7. Material to be Filed as Exhibits.

There are no amendments to Item 7 of the Existing Schedule 13D.

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: October 26, 2018

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/ John Lawrence
John Lawrence, Chief Financial Officer

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/ John Lawrence
John Lawrence, Chief Financial Officer

LONGWOOD FUND II GP, LLC

By: /s/ John Lawrence
John Lawrence, Chief Financial Officer

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

LONGWOOD FUND III GP, LLC

By: /s/ John Lawrence
John Lawrence, Chief Financial Officer

/s/ Richard Aldrich
Richard Aldrich

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