## FORM 4

## UNITED STATES SECURITIES AND EXCHANGE COMMISSION

| Washington, D | D.C. | 20549 |
|---------------|------|-------|
|---------------|------|-------|

|   | APPROVAL      |
|---|---------------|
|   | er: 3235-0287 |
| l | erage burden  |
|   | sponse: 0.5   |
|   | rerage burden |

Check this box if no longer subject to Section 16. Form 4 or Form 5 obligations may continue. See Instruction 1(b)

Filed pursuant to Section 16(a) of the Securities Exchange Act of 1934 or Section 30(h) of the Investment Company Act of 1940

| 1. Name and Address of Reporting Person*  Westphal Christoph H     |                                                                                                                                              |                                                          |        |                                   |                              | 2. Issuer Name <b>and</b> Ticker or Trading Symbol Flex Pharma, Inc. [FLKS] |                                                                             |                                            |                                                             |                                                                                                                                                       |                    |                                 |                                                                          | Relationship of Reporting Person(s) to Issuer (Check all applicable)     X Director X 10% Owner |                                                                   |                                                                                                 |                                                     |                                                                          |                                                   |  |
|--------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|--------|-----------------------------------|------------------------------|-----------------------------------------------------------------------------|-----------------------------------------------------------------------------|--------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------------------------|--------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-----------------------------------------------------|--------------------------------------------------------------------------|---------------------------------------------------|--|
| (Last) (First) (Middle) C/O FLEX PHARMA, INC. 800 BOYLSTON STREET  |                                                                                                                                              |                                                          |        |                                   |                              | 3. Date of Earliest Transaction (Month/Day/Year) 04/13/2015                 |                                                                             |                                            |                                                             |                                                                                                                                                       |                    |                                 |                                                                          | X Officer (give title Other (specify below)  President and CEO                                  |                                                                   |                                                                                                 |                                                     |                                                                          |                                                   |  |
| (Street) BOSTON (City)                                             | - 4. If                                                                                                                                      | 4. If Amendment, Date of Original Filed (Month/Day/Year) |        |                                   |                              |                                                                             |                                                                             |                                            |                                                             | 6. Individual or Joint/Group Filing (Check Applicable Line)     X Form filed by One Reporting Person     Form filed by More than One Reporting Person |                    |                                 |                                                                          |                                                                                                 |                                                                   |                                                                                                 |                                                     |                                                                          |                                                   |  |
|                                                                    | Table I - Non-Derivative Securities Acquired, Disposed of, or Beneficially Owned                                                             |                                                          |        |                                   |                              |                                                                             |                                                                             |                                            |                                                             |                                                                                                                                                       |                    |                                 |                                                                          |                                                                                                 |                                                                   |                                                                                                 |                                                     |                                                                          |                                                   |  |
| 1. Title of Security (Instr. 3)  2. Transaction Date (Month/Day/Ye |                                                                                                                                              |                                                          |        |                                   | Execution Date,              |                                                                             |                                                                             |                                            | 4. Securities<br>Disposed Of                                |                                                                                                                                                       |                    | Beneficially<br>Owned Following |                                                                          | es<br>ially<br>Following                                                                        | 6. Ownership<br>Form: Direct<br>(D) or Indirect<br>(I) (Instr. 4) |                                                                                                 | 7. Nature of<br>Indirect<br>Beneficial<br>Ownership |                                                                          |                                                   |  |
|                                                                    |                                                                                                                                              |                                                          |        |                                   |                              |                                                                             |                                                                             |                                            | Code                                                        | v                                                                                                                                                     | Amount             | (A) or<br>(D)                   | Price                                                                    |                                                                                                 |                                                                   |                                                                                                 | Reported Transaction (Instr. 3 and                  |                                                                          | (Instr. 4)                                        |  |
| Common Stock 04/13/201                                             |                                                                                                                                              |                                                          |        |                                   |                              | 15                                                                          |                                                                             | P <sup>(1)</sup>                           |                                                             | 282                                                                                                                                                   | Α                  | \$19.63                         | 374 3,90                                                                 |                                                                                                 | 03,743                                                            |                                                                                                 | D                                                   |                                                                          |                                                   |  |
| Common Stock                                                       |                                                                                                                                              |                                                          |        |                                   |                              |                                                                             |                                                                             |                                            |                                                             |                                                                                                                                                       |                    |                                 |                                                                          |                                                                                                 | 2,697,264                                                         |                                                                                                 |                                                     | Ι                                                                        | By<br>Longwood<br>Fund II.<br>L.P. <sup>(2)</sup> |  |
|                                                                    | Table II - Derivative Securities Acquired, Disposed of, or Beneficially Owned (e.g., puts, calls, warrants, options, convertible securities) |                                                          |        |                                   |                              |                                                                             |                                                                             |                                            |                                                             |                                                                                                                                                       |                    |                                 |                                                                          |                                                                                                 |                                                                   |                                                                                                 |                                                     |                                                                          |                                                   |  |
| 1. Title of<br>Derivative<br>Security<br>(Instr. 3)                | 2.<br>Conversion<br>or Exercise<br>Price of<br>Derivative<br>Security                                                                        | 3. Transaction<br>Date<br>(Month/Day/Year)               | if any | emed<br>tion Date,<br>n/Day/Year) | 4.<br>Transa<br>Code (<br>8) |                                                                             | 5. Nu<br>of<br>Deriv<br>Secu<br>Acqu<br>(A) or<br>Dispo<br>of (D)<br>(Instr | rities<br>ired<br>r<br>osed<br>)<br>: 3, 4 | Expiration Date Amo<br>(Month/Day/Year) Sect<br>Und<br>Deri |                                                                                                                                                       |                    |                                 | Title and mount of scurities nderlying erivative ecurity (Instr. 3 ad 4) |                                                                                                 | Price of<br>ivative<br>curity<br>str. 5)                          | 9. Number of derivative Securities Beneficially Owned Following Reported Transaction (Instr. 4) | y                                                   | 10.<br>Ownership<br>Form:<br>Direct (D)<br>or Indirect<br>(I) (Instr. 4) | Beneficial<br>Ownership<br>t (Instr. 4)           |  |
|                                                                    |                                                                                                                                              |                                                          |        |                                   | Code                         | v                                                                           | (A)                                                                         | (D)                                        | Date<br>Exerc                                               | cisable                                                                                                                                               | Expiration<br>Date | Title                           | Amount<br>or<br>Number<br>of<br>Shares                                   | r                                                                                               |                                                                   |                                                                                                 |                                                     |                                                                          |                                                   |  |

## **Explanation of Responses:**

2. Longwood Fund II GP, LLC is the ultimate General Partner of Longwood Fund II, L.P. 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, as such, may be deemed to have shared voting and dispositive power with respect to the issuer's securities held by Longwood Fund II, L.P. (the "Longwood Shares"). Each of the Managers disclaims beneficial ownership of the Longwood Shares in this report shall not be deemed an admission of beneficial ownership of the shares for purposes of Section 16 or for any other purpose.

## Remarks:

/s/ Robert Hadfield, Attorney-04/15/2015 in-Fact

\*\* Signature of Reporting Person Date

Reminder: Report on a separate line for each class of securities beneficially owned directly or indirectly.

- \* If the form is filed by more than one reporting person, see Instruction 4 (b)(v).
- \*\* Intentional misstatements or omissions of facts constitute Federal Criminal Violations See 18 U.S.C. 1001 and 15 U.S.C. 78ff(a).

Note: File three copies of this Form, one of which must be manually signed. If space is insufficient, see Instruction 6 for procedure.

Persons who respond to the collection of information contained in this form are not required to respond unless the form displays a currently valid OMB Number.

 $<sup>1. \</sup> The purchase reported in this Form 4 was effected pursuant to a Rule 10b5-1 trading plan adopted on February 17, 2015.$