

| OMB APPROVAL | |
|--|-----------|
| OMB Number: | 3235-0287 |
| Estimated average burden hours per response: | 0.5 |

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

STATEMENT OF CHANGES IN BENEFICIAL OWNERSHIP

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* BAKER JULIAN <hr/> (Last) (First) (Middle) 667 MADISON AVENUE, 21ST FLOOR <hr/> (Street) NEW YORK NY US 10065 <hr/> (City) (State) (Zip) | 2. Issuer Name and Ticker or Trading Symbol IDERA PHARMACEUTICALS, INC. [IDRA] | 5. Relationship of Reporting Person(s) to Issuer (Check all applicable) <input checked="" type="checkbox"/> Director 10% Owner Officer (give title below) Other (specify below) |
| | 3. Date of Earliest Transaction (Month/Day/Year) 01/04/2016 | |
| 4. If Amendment, Date of Original Filed (Month/Day/Year) | | |

Table I - Non-Derivative Securities Acquired, Disposed of, or Beneficially Owned

| 1. Title of Security (Instr. 3) | 2. Transaction Date (Month/Day/Year) | 2A. Deemed Execution Date, if any (Month/Day/Year) | 3. Transaction Code (Instr. 8) | | 4. Securities Acquired (A) or Disposed Of (D) (Instr. 3, 4 and 5) | | | 5. Amount of Securities Beneficially Owned Following Reported Transaction(s) (Instr. 3 and 4) | 6. Ownership Form: Direct (D) or Indirect (I) (Instr. 4) | 7. Nature of Indirect Beneficial Ownership (Instr. 4) |
|---------------------------------|--------------------------------------|--|--------------------------------|---|---|------------|-------|---|--|---|
| | | | Code | V | Amount | (A) or (D) | Price | | | |
| Common Stock | 01/04/2016 | | A | | 7,082 | A | \$3 | 650,252 | I | See footnote ⁽¹⁾⁽²⁾⁽⁵⁾⁽⁶⁾ |
| Common Stock | 01/04/2016 | | A | | 7,082 | A | \$3 | 6,348,612 | I | See footnote ⁽¹⁾⁽³⁾⁽⁵⁾⁽⁶⁾ |
| Common Stock | 01/04/2016 | | A | | 7,082 | A | \$3 | 78,885 | I | See footnote ⁽¹⁾⁽⁴⁾⁽⁵⁾⁽⁶⁾ |

Table II - Derivative Securities Acquired, Disposed of, or Beneficially Owned (e.g., puts, calls, warrants, options, convertible securities)

| 1. Title of Derivative Security (Instr. 3) | 2. Conversion or Exercise Price of Derivative Security | 3. Transaction Date (Month/Day/Year) | 3A. Deemed Execution Date, if any (Month/Day/Year) | 4. Transaction Code (Instr. 8) | | 5. Number of Derivative Securities Acquired (A) or Disposed of (D) (Instr. 3, 4 and 5) | 6. Date Exercisable and Expiration Date (Month/Day/Year) | | 7. Title and Amount of Securities Underlying Derivative Security (Instr. 3 and 4) | 8. Price of Derivative Security (Instr. 5) | 9. Number of derivative Securities Beneficially Owned Following Reported Transaction(s) (Instr. 4) | 10. Ownership Form: Direct (D) or Indirect (I) (Instr. 4) | 11. Nature of Indirect Beneficial Ownership (Instr. 4) |
|--|--|--------------------------------------|--|--------------------------------|---|--|--|-----------------|---|--|--|---|--|
| | | | | Code | V | | Date Exercisable | Expiration Date | | | | | |

| | | |
|--|--|--|
| 1. Name and Address of Reporting Person* BAKER JULIAN <hr/> (Last) (First) (Middle) 667 MADISON AVENUE, 21ST FLOOR <hr/> (Street) NEW YORK NY US 10065 <hr/> (City) (State) (Zip) | | |
|--|--|--|

1. Name and Address of Reporting Person *

[BAKER BROS. ADVISORS LP](#)

(Last) (First) (Middle)

667 MADISON AVENUE, 21ST FLOOR

(Street)

NEW YORK NY US 10065

(City) (State) (Zip)

1. Name and Address of Reporting Person *

[Baker Brothers Life Sciences LP](#)

(Last) (First) (Middle)

667 MADISON AVENUE, 21ST FLOOR

(Street)

NEW YORK NY US 10065

(City) (State) (Zip)

1. Name and Address of Reporting Person *

[14159, L.P.](#)

(Last) (First) (Middle)

667 MADISON AVENUE, 21ST FLOOR

(Street)

NEW YORK NY US 10065

(City) (State) (Zip)

1. Name and Address of Reporting Person *

[BAKER FELIX](#)

(Last) (First) (Middle)

667 MADISON AVENUE, 21ST FLOOR

(Street)

NEW YORK NY US 10065

(City) (State) (Zip)

1. Name and Address of Reporting Person *

[667, L.P.](#)

(Last) (First) (Middle)

667 MADISON AVENUE 21ST FLOOR

(Street)

NEW YORK NY US 10065

(City) (State) (Zip)

1. Name and Address of Reporting Person*

[Baker Bros. Advisors \(GP\) LLC](#)

(Last) (First) (Middle)

667 MADISON AVENUE 21ST FLOOR

(Street)

NEW YORK NY US 10065

(City) (State) (Zip)

Explanation of Responses:

- 2,916 shares of common stock (the "Common Stock") issued to Julian C. Baker and 4,166 shares of Common Stock issued to Dr. Kelvin M. Neu, respectively, a principal and an employee of Baker Bros. Advisors LP (the "Adviser") pursuant to the Issuer's 2013 Stock Incentive Plan (the "Stock Incentive Plan") in lieu of director retainer fees of \$8,750 and \$12,500, respectively. The shares of Common Stock are fully vested. Julian C. Baker and Dr. Neu serve on the Issuer's Board of Directors (the "Board") as representatives of the Funds (as defined below). Dr. Neu also serves on the Compensation Committee of the Board for which he receives additional director retainer fees. Pursuant to the policies of the Adviser, Julian C. Baker and Dr. Neu do not have any right to the pecuniary interest in the Issuer's securities issued in lieu of director retainer fees and the Funds (as defined below) are entitled to an indirect proportionate pecuniary interest in the securities issued in lieu of director fees. 667, L.P. ("667"), Baker Brothers Life Sciences, L.P. ("Life Sciences") and 14159, L.P. ("14159", and together with 667, and Life Sciences, the "Funds") each owns an indirect proportionate pecuniary interest in the shares of Common Stock. Solely as a result of their ownership interest in the general partners of the Funds, Felix J. Baker and Julian C. Baker may be deemed to have an indirect pecuniary interest in the shares of Common Stock issued in lieu of director retainer fees (ie. no direct pecuniary interest).
- As a result of Felix J. Baker's and Julian C. Baker's ownership interest in Baker Biotech Capital (GP), LLC, Felix J. Baker and Julian C. Baker may be deemed to have an indirect pecuniary interest in 650,252 shares of common stock of the Issuer beneficially owned by 667, a limited partnership of which the sole general partner is Baker Biotech Capital, L.P., a limited partnership of which the sole general partner is Baker Biotech Capital (GP), LLC, due to Baker Biotech Capital, L.P.'s right to receive an allocation of a portion of the profits from 667. Includes beneficial ownership of 43,780 shares issued pursuant to the Stock Incentive Plan in lieu of director retainer fees, of which the fund may be deemed to own a portion.
- As a result of Felix J. Baker's and Julian C. Baker's ownership interest in Baker Brothers Life Sciences Capital (GP), LLC, Felix J. Baker and Julian C. Baker may be deemed to have an indirect pecuniary interest 6,348,612 shares of common stock of the Issuer beneficially owned by Life Sciences, a limited partnership of which the sole general partner is Baker Brothers Life Sciences Capital, L.P., a limited partnership of which the sole general partner is Baker Brothers Life Sciences Capital (GP), LLC, due to Baker Brothers Life Sciences Capital, L.P.'s right to receive an allocation of a portion of the profits from Life Sciences. Includes beneficial ownership of 43,780 shares issued pursuant to the Stock Incentive Plan in lieu of director retainer fees, of which the fund may be deemed to own a portion.
- As a result of Felix J. Baker's and Julian C. Baker's ownership interest in 14159 Capital (GP), LLC, Felix J. Baker and Julian C. Baker may be deemed to have an indirect pecuniary interest in 78,885 shares of common stock of the Issuer beneficially owned by 14159, a limited partnership of which the sole general partner is 14159 Capital, L.P., a limited partnership of which the sole general partner is 14159 Capital (GP), LLC, due to 14159 Capital, L.P.'s right to receive an allocation of a portion of the profits from 14159. Includes beneficial ownership of 43,780 shares issued pursuant to the Stock Incentive Plan in lieu of director retainer fees, of which the fund may be deemed to own a portion.
- The Adviser serves as the Investment Adviser to the Funds. In connection with the services provided by the Adviser, the Adviser receives an asset-based management fee that does not confer any pecuniary interest in the securities held by the Funds. Baker Bros. Advisors (GP) LLC (the "Adviser GP") is the Adviser's sole general partner. Julian C. Baker and Felix J. Baker are principals of the Adviser GP. The Adviser has complete and unlimited discretion and authority with respect to the investment and voting power of the securities held by the Funds. The general partners of the Funds relinquished to the Adviser all discretion and authority with respect to the investment and voting power of the securities held by the Funds. Julian C. Baker, Felix J. Baker, the Adviser GP and the Adviser disclaim beneficial ownership of the securities held directly by the Funds except to the extent of their pecuniary interest therein, and this report shall not be deemed an admission that any of Julian C. Baker, Felix J. Baker, the Adviser GP or the Adviser is a beneficial owner of such securities for purposes of Section 16 or any other purpose.
- The disclosure of the grant of Common Stock reported on this form is the sum of two grants totaling 7,082 shares. The 7,082 shares are reported for each limited partnership as each has an indirect pecuniary interest.

Remarks:

Remarks: Julian C. Baker and Dr. Kevin M. Neu, respectively, a principal and an employee of Baker Bros. Advisors LP (the "Adviser") are directors of Idera Pharmaceuticals, Inc. ("the Issuer"). By virtue of their representation on the Board of Directors of the Issuer, for purposes of Section 16 of the Securities Exchange Act of 1934, as amended, the reporting persons are deemed directors by deputization of the Issuer.

| | |
|--|----------------------------|
| /s/ Julian C. Baker | 01/05/2016 |
| BAKER BROS. ADVISORS LP Name: Scott L. Lessing | 01/05/2016 |
| Title: President /s/ Scott L. Lessing | |
| Baker Bros. Advisors LP, Mgmt. Co. and Inv. Adviser to BAKER BROTHERS LIFE SCIENCES, L.P., pursuant to authority granted by Baker Brothers Life Sciences Capital, L.P., GP to Baker Brothers Life Sciences, L.P Name: Scott L. Lessing, Title: President /s/ | 01/05/2016 |
| Baker Bros. Advisors LP, Mgmt. Co. and Inv. Adviser to 14159, L.P., pursuant to authority granted by 14159 Capital, L.P., GP to 14159, L.P. Name: Scott L. Lessing, Title: President /s/ Scott L. Lessing | 01/05/2016 |
| /s/ Felix J. Baker | 01/05/2016 |

Baker Bros. Advisors, LP,
Mgmt. Co. and Inv. Adviser to
667, L.P., pursuant to
authority granted by Baker 01/05/2016
Biotech Capital, L.P., GP to
667, L.P. Name: Scott L.
Lessing, Title: President /s/
Scott L. Lessing

By: Baker Bros. Advisors (GP)
LLC Name: Scott L. Lessing 01/05/2016
Title: President /s/ Scott L.
Lessing

** 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.