## SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

Schedule 13D

# INFORMATION TO BE INCLUDED IN STATEMENTS FILED PURSUANT TO RULES 13d-1 (a) AND AMENDMENTS THERETO FILED PURSUANT TO 13d-2 (a)

(AMENDMENT NO. 1)\*

## AcelRx Pharmaceuticals, Inc.

(Name of Issuer)

Common Stock (Title of Class of Securities)

> 00444T100 (CUSIP Number)

Mark Wan c/o Three Arch Partners 3200 Alpine Road Portola Valley, California 94028 (650) 529-8000

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

## **COPY TO:**

Sean Caplice, Esq. c/o Gunderson Dettmer Stough Villeneuve Franklin & Hachigian, LLP 1200 Seaport Boulevard, Redwood City, California 94063 (650) 321-2400

May 29, 2012

(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 Rule 13d-1(e), 13d-1(f) or 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 the cover page.

The information required on the remainder of this cover page shall not be deemed to be "filed" for the purposes 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).

(Continued on following pages)

| 1  |                        | EPORTING P                 | ERSONS<br>. (the <u>'TAP IV</u> ")  |
|--|------------------------|----------------------------|---|
| 2  |                        |                            | TE BOX IF A MEMBER OF A GROUP (See Instructions)  |
|  |                        |                            | (a) [_]   |
|  |                        |                            |   |
|  |                        |                            | (b) [X]   |
| 3  | SEC USE Of             | NLY                        |   |
| 4  | SOURCE OF<br>WC        | FUNDS                      |   |
| 5  |                        | X IF DISCLOS<br>TO ITEMS 2 | SURE OF LEGAL PROCEEDINGS IS REQUIRED (d) OR 2(e)   |
|  |                        |                            |   |
| 6  | CITIZENSHI<br>Delaware | P OR PLACE                 | OF ORGANIZATION   |
| NUMBER OF<br>SHARES<br>BENEFICIALLY<br>OWNED BY EACH |                        | 7                          | SOLE VOTING POWER 4,146,849 shares (including 188,020 shares represented by warrants exercisable on November 29, 2012), except that Three Arch Management IV, L.L.C. (the " <u>TAM IV</u> ") is the general partner of TAP IV and may be deemed to have sole power to vote these shares, and Mark Wan (" <u>Wan</u> ") and Wilfred Jaeger (" <u>Jaeger</u> ") are the managing members of TAM IV and may be deemed to have shared power to vote these shares. |
| REPOI<br>PER   | SON                    | 8                          | SHARED VOTING POWER See response to row 7.  |
| WI   | IH                     | 9                          | SOLE DISPOSITIVE POWER 4,146,849 shares (including 188,020 shares represented by warrants exercisable on November 29, 2012), except that TAM IV is the general partner of TAP IV and may be deemed to have sole power to dispose of these shares, and Wan and Jaeger are the managing members of TAM IV and may be deemed to have shared power to dispose of these shares.  |
|  |                        | 10                         | SHARED DISPOSITIVE POWER See response to row 9.   |
| 11   | AGGREGAT<br>REPORTING  |                            | BENEFICIALLY OWNED BY EACH  |
|  |                        |                            | 4,146,849   |
| 12   |                        |                            | GREGATE AMOUNT IN ROW (9) IARES (See Instructions)  |
|  |                        |                            |   |
| 13   | PERCENT O              | F CLASS RE                 | PRESENTED BY AMOUNT IN ROW (9)  |
|  |                        |                            | 20.9%   |
| 14   | TYPE OF RE             | PORTING PE                 | RSON (See Instructions) PN  |

| 1  |                        | EPORTING P<br>ssociates IV. I | ERSONS<br>L.P. ( <u>'TAA IV</u> ")  |
|--|------------------------|-------------------------------|---|
| 2  |                        |                               | TE BOX IF A MEMBER OF AGROUP (See Instructions)   |
|  |                        |                               | (a) [_]   |
|  |                        |                               | (b) [X]   |
|  |                        |                               | (6) [A]   |
| 3  | SEC USE ON             |                               |   |
| 4  | SOURCE OF<br>WC        | FUNDS                         |   |
| 5  | CHECK BOX<br>PURSUANT  |                               | SURE OF LEGAL PROCEEDINGS IS REQUIRED (d) OR 2(e)   |
|  |                        |                               |   |
| 6  | CITIZENSHI<br>Delaware | P OR PLACE                    | OF ORGANIZATION   |
| NUMBER OF<br>SHARES<br>BENEFICIALLY<br>OWNED BY EACH |                        | 7                             | SOLE VOTING POWER 91,559 shares (including 4,151 shares represented by warrants exercisable on November 29, 2012), except that TAM IV is the general partner of TAA IV and may be deemed to have sole power to vote these shares, and Wan and Jaeger are the managing members of TAM IV and may be deemed to have shared power to vote these shares.                  |
| PER  |                        | 8                             | SHARED VOTING POWER See response to row 7.  |
| WI   | ТН                     | 9                             | SOLE DISPOSITIVE POWER 91,559 shares (including 4,151 shares represented by warrants exercisable on November 29, 2012), except that TAM IV is the general partner of TAA IV and may be deemed to have sole power to dispose of these shares, and Wan and Jaeger are the managing members of TAM IV and may be deemed to have shared power to dispose of these shares. |
|  |                        | 10                            | SHARED DISPOSITIVE POWER See response to row 9.   |
| 11   | AGGREGAT<br>REPORTING  |                               | BENEFICIALLY OWNED BY EACH  |
|  |                        |                               | 91,559  |
| 12   |                        |                               | GREGATE AMOUNT IN ROW (9) IARES (See Instructions)  |
|  | PERCENT O              | E CI ASS DE                   | PRESENTED BY AMOUNT IN ROW (9)  |
| 13   | I ERCENT O             | A CLASS RE                    | 0.5%  |
| 14   | TYPE OF RE             | PORTING PE                    | PN (See Instructions)   |

| 1   |   | EPORTING Pl | ERSONS<br>, L.L.C. (" <u>TAM IV</u> ")   |
|---|---|-------------|--|
| 2   |   |             | TE BOX IF A MEMBER OF AGROUP (See Instructions)  |
|   |   |             | (a) [_]  |
|   |   |             | (b) [X]  |
| 3   | SEC USE ON  | NLY         |  |
| 4   | SOURCE OF<br>WC   |             |  |
| 5   |   | IF DISCLOS  | SURE OF LEGAL PROCEEDINGS IS REQUIRED  |
|   | PURSUANT  | TO ITEMS 2( | (d) OR 2(e)  |
|   |   |             |  |
| _   |   |             |  |
| 6   | CITIZENSHI<br>Delaware  | P OR PLACE  | OF ORGANIZATION  |
| NUMBER OF<br>SHARES<br>BENEFICIALLY<br>OWNED BY EACH<br>REPORTING<br>PERSON |   | 7           | SOLE VOTING POWER 4,238,408 shares (including 188,020 shares represented by warrants exercisable on November 29, 2012 by TAP IV and 4,151 shares represented by warrants exercisable on November 29, 2012 by TAA IV), of which 4,146,849 are directly owned by TAP IV and 91,559 are directly owned by TAA IV. TAM IV is the general partner of each of TAP IV and TAA IV and may be deemed to have sole power to vote these shares. Wan and Jaeger are the managing members of TAM IV and may be deemed to have shared power to vote these shares.                  |
| WI  | TH  | 8           | SHARED VOTING POWER See response to row 7.   |
|   |   | 9           | SOLE DISPOSITIVE POWER 4,238,408 shares (including 188,020 shares represented by warrants exercisable on November 29, 2012 by TAP IV and 4,151 shares represented by warrants exercisable on November 29, 2012 by TAA IV), of which 4,146,849 are directly owned by TAP IV and 91,559 are directly owned by TAA IV. TAM IV is the general partner of each of TAP IV and TAA IV and may be deemed to have sole power to dispose of these shares. Wan and Jaeger are the managing members of TAM IV and may be deemed to have shared power to dispose of these shares. |
|   |   | 10          | SHARED DISPOSITIVE POWER See response to row 9.  |
| 11  | AGGREGAT<br>REPORTING   |             | BENEFICIALLY OWNED BY EACH   |
|   | KLI OKTINO  | TERSON      | 4,238,408  |
| 12  | CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (See Instructions) |             |  |
|   | EXCLUDES  | CERTAIN 3H  | []   |
| 13  | PERCENT O   | F CLASS REI | PRESENTED BY AMOUNT IN ROW (9)   |
|   |   |             | 21.3%  |
| 14  | TYPE OF RE  | PORTING PE  | RSON (See Instructions)  |
|   |   |             | 00   |

| SECUSE ONLY  SOURCE OF FUNDS WC  CHECK BOX IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEMS 2(d) OR 2(e)  [  CHIZENSHIP OR PLACE OF ORGANIZATION Delaware  NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH  SOLE VOTING POWER 3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), except that Three Arch Management III, L.L.C. (the "TAM III") is the general partner of TAP III and may be deemed to have sale power to vote these shares, and Wan and Jacger are the managing members of TAM III and may be represented by warrants exercisable on November 29, 2012), except that Three Arch Management III, L.L.C. (the "TAM III") is the general partner of TAP III and may be deemed to have shared power to vote these shares.  SOLE DISPOSITIVE POWER See response to row 7.  SOLE DISPOSITIVE POWER 3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), except that TAM III is the general partner of TAP III and may be deemed to have sole power to dispose of these shares, and Wan and Jacger are the managing members of TAM III and may be deemed to have sole power to dispose of these shares, and Wan and Jacger are the managing members of TAM III and may be deemed to have sole power to dispose of these shares, and Wan and Jacger are the managing members of TAM III and may be deemed to have sole power to dispose of these shares, and Wan and Jacger are the managing members of TAM III and may be deemed to have sole power to dispose of these shares, and Wan and Jacger are the managing members of TAM III and may be deemed to have sole power to dispose of these shares.  10 SITARED DISPOSITIVE POWER See response to row 9.  11 AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON  3,765,501   |     | 1         |             |  |
|--|-----|-----------|-------------|--|
| CHECK THE APPROPRIATE BOX IF A MEMBER OF AGROUP (See Instructions)  (a) [ (b) [ (c) [ (c) [ (d)  | 1   |           |             |  |
| (a) [ (b) [2]  3   | 2   |           |             |  |
| SEC USE ONLY  SOURCE OF FUNDS WC  CHECK BOX IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEMS 2(d) OR 2(e)  [I  CITIZENSHIP OR PLACE OF ORGANIZATION Delaware  7 SOLE VOTING POWER 3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), SHARED SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH  8 SHARED OTING POWER 3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), and may be deemed to have shared power to vote these shares.  8 SHARED OTING POWER See response to row 7.  9 SOLE DISPOSITIVE POWER See response to row 7.  9 SOLE DISPOSITIVE POWER 3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), except that TAM III is the general partner of TAP III and may be deemed to have share power to vote these shares.  10 SHARED DISPOSITIVE POWER See response to row 7.  11 AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON  3,765,501  12 CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (See Instructions)  13 PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)  14 TYPE OF REPORTING PERSON (See Instructions)   | 2   |           |             |  |
| 3 SEC USE ONLY 4 SOURCE OF FUNDS WC 5 CHECK BOX IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEMS 2(d) OR 2(e)  [ CHECK BOX IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEMS 2(d) OR 2(e)  [ CHECK BOX IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEMS 2(d) OR 2(e)  [ CHECK BOX IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEMS 2(d) OR 2(e)  [ CHECK BOX IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED    PURSUANT TO ITEMS 2(d) OR 2(e)    CHECK BOX IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED   PURSUANT TO ITEMS 2(d) OR 2(e)    CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9)   EXCLUDES CERTAIN SHARES (See Instructions)    CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9)   EXCLUDES CERTAIN SHARES (See Instructions)    TYPE OF REPORTING PERSON (See Instructions)   |     |           |             | (a) [_]  |
| SOURCE OF FUNDS WC  CHECK BOX IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEMS 2(d) OR 2(e)  [  CHIZENSHIP OR PLACE OF ORGANIZATION Delaware  7  SOLE VOTING POWER 3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), except that Thire Arch Management III, L.L.C. (the "TAM III") is the general partner of TAP III and may be deemed to have sole power to vote these shares.  8  SHARED PERSON WITH  8  SHARED VOTING POWER See response to row 7.  9  SOLE DISPOSITIVE POWER 3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), except that TAM III is the general partner of TAP III and may be deemed to have share power to vote these shares.  10  SHARED DISPOSITIVE POWER See response to row 7.  11  AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON  3,765,501  12  CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9)  EXCLUDES CERTAIN SHARES (See Instructions)  13  PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)  19.19  11  TYPE OF REPORTING PERSON (See Instructions)  |     |           |             | (b) [X]  |
| SOURCE OF FUNDS WC  CHECK BOX IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEMS 2(d) OR 2(e)  [  CHITZENSHIP OR PLACE OF ORGANIZATION Delaware  7  SOLE VOTING POWER 3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), except that Thire Arch Management III, LLC. (the "TAM III") is the general partner of TAP III and may be deemed to have sole power to vote these shares.  8  SHARED OSING POWER 3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), except that TAM III and may be deemed to have sole power to vote these shares.  8  SHARED VOTING POWER 3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), except that TAM III is the general partner of TAP III and may be deemed to have sole power to dispose of these shares.  10  SHARED DISPOSITIVE POWER 3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), except that TAM III and may be deemed to have sole power to dispose of these shares.  10  SHARED DISPOSITIVE POWER See response to row 9.  See response to row 9.  3,765,501  2  CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9)  EXCLUDES CERTAIN SHARES (See Instructions)  [ ]  11  PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)  [ ]  12  TYPE OF REPORTING PERSON (See Instructions)  |     |           |             |  |
| CHECK BOX IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEMS 2(d) OR 2(e)  CITIZENSHIP OR PLACE OF ORGANIZATION Delaware  7 SOLE VOTING POWER SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH  8 SHARED VOTING POWER 3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), except that Three Arch Management III, L.L.C. (the "TAM III") is the general partner of TAP III and may be deemed to have sole power to vote these shares.  8 SHARED VOTING POWER Sec response to row 7.  9 SOLE DISPOSITIVE POWER 3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), except that TAM III is the general partner of TAP III and may be deemed to have sole power to other shares, and Wan and Jacger are the managing members of TAM III and may be deemed to have share power to dispose of these shares.  10 SHARED DISPOSITIVE POWER Sec response to row 9.  11 AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON  3,765,501  2 CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9)  EXCLUDES CERTAIN SHARES (See Instructions)  12  TYPE OF REPORTING PERSON (See Instructions)  | 3   |           |             |  |
| PURSUANT TO ITEMS 2(d) OR 2(e)  [I  OR CITIZENSHIP OR PLACE OF ORGANIZATION Delaware    NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH    SOLE VOTING POWER   3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), and may be deemed to have sole power to vote these shares, and Wan and Jaeger are the managing members of TAM III and may be deemed to have sole power to vote these shares.    SHARED VOTING POWER   See response to row 7.   SOLE DISPOSITIVE POWER   3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), except that TAM III is the general partner of TAP III and may be deemed to have sole power to dispose of these shares, and Wan and Jaeger are the managing members of TAM III and may be deemed to have sole power to dispose of these shares, and Wan and Jaeger are the managing members of TAM III and may be deemed to have sole power to dispose of these shares.    I0  | 4   |           | F FUNDS     |  |
| PURSUANT TO THEMS 2(d) OR 2(e)  [  | 5   |           |             |  |
| 6 CITIZENSHIP OR PLACE OF ORGANIZATION    NUMBER OF SHARES   BENEFICIALLY OWNED BY EACH REPORTING PERSON   WITH  | 3   | PURSUAN   | T TO ITEM   | S 2(d) OR 2(e)   |
| NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH  11  AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON  12  CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9)  EXCLUDES CERTAIN SHARES (See Instructions)  SOLE VOTING POWER 3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), except that TAM III is the general partner of TAP III and may be deemed to have shared power to vote these shares.  10  SHARED DISPOSITIVE POWER 3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), except that TAM III is the general partner of TAP III and may be deemed to have sole power to dispose of these shares.  10  SHARED DISPOSITIVE POWER 3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), except that TAM III is the general partner of TAP III and may be deemed to have sole power to dispose of these shares.  10  SHARED DISPOSITIVE POWER 3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), except that TAM III is the general partner of TAP III and may be deemed to have share power to dispose of these shares.  10  SHARED DISPOSITIVE POWER 3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), except that TAM III is the general partner of TAP III and may be deemed to have share power to dispose of these shares.  10  SHARED DISPOSITIVE POWER 3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), except that TAM III and may be deemed to have share the managing members of TAM III and may be deemed to have share the managing members of TAM III and may be deemed to have share the managing members of TAM III and may be deemed to have share the managing members of TAM III and may be deemed to have share the managing members of TAM III and may be deemed to have share the managing members of TAM III and may be deemed to have share the managing mem |     |           |             |  |
| NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH  11  AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON  12  CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9)  EXCLUDES CERTAIN SHARES (See Instructions)  SOLE VOTING POWER 3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), except that TAM III is the general partner of TAP III and may be deemed to have shared power to vote these shares.  10  SHARED DISPOSITIVE POWER 3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), except that TAM III is the general partner of TAP III and may be deemed to have sole power to dispose of these shares.  10  SHARED DISPOSITIVE POWER 3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), except that TAM III is the general partner of TAP III and may be deemed to have sole power to dispose of these shares.  10  SHARED DISPOSITIVE POWER 3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), except that TAM III is the general partner of TAP III and may be deemed to have share power to dispose of these shares.  10  SHARED DISPOSITIVE POWER 3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), except that TAM III and may be deemed to have share power to dispose of these shares.  10  SHARED DISPOSITIVE POWER 3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), except that TAM III and may be deemed to have share power to dispose of these shares.  10  SHARED DISPOSITIVE POWER 3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), except that TAM III and may be deemed to have shares represented by warrants exercisable on November 29, 2012), except that TAM III and may be deemed to have shares represented by warrants exercisable on November 29, 2012), except that TAM III and may be deemed to have |     |           |             |  |
| NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH  8 SHARED VOTING POWER 3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), except that Three Arch Management III, L.L.C. (the "TAM III") is the general partner of TAP III and may be deemed to have sole power to vote these shares, and wan and Jaeger are the managing members of TAM III PERSON WITH  9 SOLE DISPOSITIVE POWER 3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), except that TAM III is the general partner of TAP III and may be deemed to have slare power to dispose of these shares, and Wan and Jaeger are the managing members of TAM III and may be deemed to have slare power to dispose of these shares.  10 SHARED DISPOSITIVE POWER See response to row 9.  11 AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON  3,765,501  2 CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (See Instructions)  [ In the person of the p | 6   |           | HIP OR PLA  | CE OF ORGANIZATION   |
| NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH  8 SHARED VOTING POWER See response to row 7.  9 SOLE DISPOSITIVE POWER 3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), except that Three Arch Management III, L.L.C. (the "TAM III") is the general partner of TAP III and may be deemed to have sole power to vote these shares, and Wan and Jaeger are the managing members of TAM III and may be deemed to have shared power to vote these shares.  8 SHARED VOTING POWER See response to row 7.  9 SOLE DISPOSITIVE POWER 3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), except that TAM III is the general partner of TAP III and may be deemed to have share power to dispose of these shares, and Wan and Jaeger are the managing members of TAM III and may be deemed to have share power to dispose of these shares.  10 SHARED DISPOSITIVE POWER See response to row 9.  11 AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON  3,765,501  3,7 |     | Delaware  |             |  |
| SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH  8 SHARED VOTING POWER See response to row 7.  9 SOLE DISPOSITIVE POWER 3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), except that TAM III is the general partner of TAM III and may be deemed to have shared power to vote these shares.  10 SHARED DISPOSITIVE POWER See response to row 9.  11 AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON  2 CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (See Instructions)  13 PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)  14 TYPE OF REPORTING PERSON (See Instructions)  |     |           | 7           |  |
| BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH   |     |           |             |  |
| REPORTING PERSON WITH  8 SHARED VOTING POWER See response to row 7.  9 SOLE DISPOSITIVE POWER 3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), except that TAM III is the general partner of TAP III and may be deemed to have sole power to dispose of these shares, and Wan and Jaeger are the managing members of TAM III and may be deemed to have share power to dispose of these shares.  10 SHARED DISPOSITIVE POWER See response to row 9.  11 AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON  2,765,502  CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (See Instructions)  [1]  PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)  13  TYPE OF REPORTING PERSON (See Instructions)   |     |           |             | deemed to have sole power to vote these shares, and Wan and Jaeger are the managing members of TAM III   |
| PERSON WITH  See response to row 7.  Sole DISPOSITIVE POWER 3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), except that TAM III is the general partner of TAP III and may be deemed to have sole power to dispose of these shares, and Wan and Jaeger are the managing members of TAM III and may be deemed to have share power to dispose of these shares.  10 SHARED DISPOSITIVE POWER See response to row 9.  See response to row 9.  11 AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON  3,765,50  12 CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9)  EXCLUDES CERTAIN SHARES (See Instructions)  [13 PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)  119.1°  |     |           |             | and may be deemed to have shared power to vote these shares.   |
| WITH  9 SOLE DISPOSITIVE POWER 3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), except that TAM III is the general partner of TAP III and may be deemed to have sole power to dispose of these shares, and Wan and Jaeger are the managing members of TAM III and may be deemed to have share power to dispose of these shares.  10 SHARED DISPOSITIVE POWER See response to row 9.  11 AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON  3,765,50  12 CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (See Instructions)  [13  PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)  19.19  11  TYPE OF REPORTING PERSON (See Instructions)   |     |           | 8           |  |
| 3,765,501 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012), except that TAM III is the general partner of TAP III and may be deemed to have sole power to dispose of these shares, and Wan and Jaeger are the managing members of TAM III and may be deemed to have share power to dispose of these shares.  10 SHARED DISPOSITIVE POWER See response to row 9.  11 AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON  3,765,50  12 CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (See Instructions)  [Instruction of the part of the p |     |           | 0           |  |
| except that TAM III is the general partner of TAP III and may be deemed to have sole power to dispose of these shares, and Wan and Jaeger are the managing members of TAM III and may be deemed to have share power to dispose of these shares.  10 SHARED DISPOSITIVE POWER See response to row 9.  11 AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON  2,765,50  12 CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (See Instructions)  [13 PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)  19.1*  14 TYPE OF REPORTING PERSON (See Instructions)   |     |           | 9           |  |
| power to dispose of these shares.  10 SHARED DISPOSITIVE POWER See response to row 9.  11 AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON  3,765,50  12 CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (See Instructions)  [13 PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)  14 TYPE OF REPORTING PERSON (See Instructions)  |     |           |             | except that TAM III is the general partner of TAP III and may be deemed to have sole power to dispose of |
| 10 SHARED DISPOSITIVE POWER See response to row 9.  11 AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON  3,765,50  12 CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (See Instructions)  [13 PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)  14 TYPE OF REPORTING PERSON (See Instructions)   |     |           |             |  |
| See response to row 9.  11 AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON  3,765,50  12 CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (See Instructions)  [13 PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)  14 TYPE OF REPORTING PERSON (See Instructions)   |     |           | 10          |  |
| AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON  12 CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (See Instructions)  [ PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)  13 TYPE OF REPORTING PERSON (See Instructions)  |     |           | 10          |  |
| 2 CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (See Instructions)  PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)  13 TYPE OF REPORTING PERSON (See Instructions)   | 11  |           |             |  |
| 12 CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (See Instructions)  [ PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)  13 TYPE OF REPORTING PERSON (See Instructions)  |     | REPORTIN  | G PERSON    |  |
| EXCLUDES CERTAIN SHARES (See Instructions)  [13] PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)  14.  TYPE OF REPORTING PERSON (See Instructions)   |     |           |             | 3,765,501  |
| EXCLUDES CERTAIN SHARES (See Instructions)  [13 PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)  14 TYPE OF REPORTING PERSON (See Instructions)  |     | CHECK P.  | W III THE S | ACCRECATE AMOUNT BY DOW (0)  |
| PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)  13  TYPE OF REPORTING PERSON (See Instructions)   | 12  |           |             |  |
| PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)  19.19  TYPE OF REPORTING PERSON (See Instructions)  |     |           |             |  |
| 19.1 TYPE OF REPORTING PERSON (See Instructions)   |     |           |             |  |
| 19.1°  TYPE OF REPORTING PERSON (See Instructions)   | 12  | PERCENT   | OF CLASS    | REPRESENTED BY AMOUNT IN ROW (9)   |
| TYPE OF REPORTING PERSON (See Instructions)  | 15  |           |             | 10.10/   |
|  |     |           |             | 19.1%  |
|  | 14  | TYPE OF R | EPORTING    | PERSON (See Instructions)  |
|  | 1-7 |           |             | PN   |
|  |     |           |             | TIN  |

| 1                   | NAME OF R              | EPORTING PE                                       | PRONS  |  |
|---------------------|------------------------|---|--|--|
| 1                   |                        | ssociates III, L.                                 |  |  |
| 2                   | CHECK THE              | APPROPRIAT  | TE BOX IF A MEMBER OF AGROUP (See Instructions)  |  |
|                     |                        |   | (a) [_]  |  |
|                     |                        |   |  |  |
|                     |                        |   | (b) [X]  |  |
| 3                   | SEC USE ON             | NLY   |  |  |
| 4                   | SOURCE OF              |   |  |  |
|                     | WC                     |   |  |  |
| 5                   |                        |   | URE OF LEGAL PROCEEDINGS IS REQUIRED   |  |
|                     | PURSUANT               | TO ITEMS 2(                                       | d) OR 2(e)   |  |
|                     |                        |   |  |  |
|                     |                        |   |  |  |
| 6                   | CITIZENSHI<br>Delaware | P OR PLACE (                                      | OF ORGANIZATION  |  |
|                     |                        | 7   | SOLE VOTING POWER  |  |
| NUMB                |                        |   | 202,442 shares (including 3,268 shares represented by warrants exercisable on November 29, 2012), except that TAM III is the general partner of TAA III and may be deemed to have sole power to vote these |  |
| SHA<br>BENEFI       |                        |   | shares, and Wan and Jaeger are the managing members of TAM III and may be deemed to have shared  |  |
| OWNED I             |                        |   | power to vote these shares.  |  |
| REPOI<br>PER:<br>WI | SON                    | 8   | SHARED VOTING POWER See response to row 7.   |  |
| WI                  | IH                     | 9   | SOLE DISPOSITIVE POWER   |  |
|                     |                        |   | 202,442 shares (including 3,268 shares represented by warrants exercisable on November 29, 2012), except that TAM III is the general partner of TAA III and may be deemed to have sole power to dispose of |  |
|                     |                        |   | these shares, and Wan and Jaeger are the managing members of TAM III and may be deemed to have shared  |  |
|                     |                        |   | power to dispose of these shares.  |  |
|                     |                        | 10  | SHARED DISPOSITIVE POWER See response to row 9.  |  |
| 11                  | AGGREGAT               | E AMOUNT E  | BENEFICIALLY OWNED BY EACH   |  |
| 11                  | REPORTING              | PERSON  |  |  |
|                     |                        |   | 202,442  |  |
|                     | CHECK DOX              | Z III TIIII A GG                                  | DECATE AMOUNT BY DOW (0)   |  |
| 12                  |                        |   | REGATE AMOUNT IN ROW (9) ARES (See Instructions)   |  |
|                     |                        |   |  |  |
|                     |                        |   |  |  |
| 13                  | PERCENT O              | PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9) |  |  |
|                     |                        |   | 1.0%   |  |
|                     |                        |   |  |  |
| 14                  | TYPE OF RE             | PORTING PEF                                       | RSON (See Instructions)  |  |
|                     |                        |   | PN   |  |
|                     |                        |   |  |  |

| 1   |                         | EPORTING P     | ERSONS<br>L.L.C. (" <u>TAM III</u> ")  |
|---|-------------------------|----------------|--|
| 2   |                         |                | TE BOX IF A MEMBER OF AGROUP (See Instructions)  |
|   |                         |                | (a) [_]  |
|   |                         |                | (b) [X]  |
| 3   | SEC USE ON              | NLY            |  |
| 4   | SOURCE OF<br>WC         |                |  |
| 5   |                         | IF DISCLOS     | URE OF LEGAL PROCEEDINGS IS REQUIRED   |
|   | PURSUANT                | TO ITEMS 20    | (d) OR 2(e)  |
|   |                         |                |  |
| 6   | CITIZENSHII<br>Delaware | P OR PLACE     | OF ORGANIZATION  |
|   | Delaware                | 7              | SOLE VOTING POWER  |
| NUMBER OF<br>SHARES<br>BENEFICIALLY<br>OWNED BY EACH<br>REPORTING<br>PERSON |                         | ,              | 3,967,943 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012 by TAP III and 3,268 shares represented by warrants exercisable on November 29, 2012 by TAA III), of which 3,765,501 are directly owned by TAP III and 202,442 are directly owned by TAA III. TAM III is the general partner of each of TAP III and TAA III and may be deemed to have sole power to vote these shares. Wan and Jaeger are the managing members of TAM III and may be deemed to have shared power to vote these shares.                                    |
| WI  | TH                      | 8              | SHARED VOTING POWER See response to row 7.   |
|   |                         | 9              | SOLE DISPOSITIVE POWER 3,967,943 shares (including 60,789 shares represented by warrants exercisable on November 29, 2012 by TAP III and 3,268 shares represented by warrants exercisable on November 29, 2012 by TAA III), of which 3,765,501 are directly owned by TAP III and 202,442 are directly owned by TAA III. TAM III is the general partner of each of TAP III and TAA III and may be deemed to have sole power to dispose of these shares. Wan and Jaeger are the managing members of TAM III and may be deemed to have shared power to dispose of these shares. |
|   |                         | 10             | SHARED DISPOSITIVE POWER See response to row 9.  |
| 11  | AGGREGAT<br>REPORTING   |                | BENEFICIALLY OWNED BY EACH   |
|   | KLI OKTIVO              | TEROOT         | 3,967,943  |
| 12  |                         |                | GREGATE AMOUNT IN ROW (9) (ARES (See Instructions)   |
|   | ENCECEE                 | CDICITIII V DI |  |
| 13  | PERCENT O               | F CLASS RE     | PRESENTED BY AMOUNT IN ROW (9)   |
|   |                         |                | 20.1%  |
| 14  | TYPE OF RE              | PORTING PE     | RSON (See Instructions)  |
|   |                         |                | 00   |

| 1   |                 |              | ERSONS<br>NO. OF ABOVE PERSON (Entities Only).   |
|---|-----------------|--------------|--|
| 2   | CHECK THE       | E APPROPRIA  | TE BOX IF A MEMBER OF AGROUP (See Instructions)  |
|   |                 |              | (a) [_]  |
|   |                 |              |  |
|   |                 |              | (b) [X]  |
| 3   | SEC USE O       | NLY          |  |
| 4   | SOURCE OF<br>WC | FUNDS        |  |
| 5   |                 | K IF DISCLOS | SURE OF LEGAL PROCEEDINGS IS REQUIRED  |
| 3   | PURSUANT        | TO ITEMS 2   | (d) OR 2(e)  |
| 6   | CITIZENSHI      | P OR PLACE   | OF ORGANIZATION  |
|   | United States   |              |  |
| NUMB  | ER OF           | 7            | SOLE VOTING POWER 0 shares.  |
| NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH |                 | 8            | SHARED VOTING POWER 8,206,351 shares (including 188,020 shares represented by warrants exercisable on November 29, 2012 by TAP IV; 4,151 shares represented by warrants exercisable on November 29, 2012 by TAA IV; 60,789 shares represented by warrants exercisable on November 29, 2012 by TAP III; and 3,268 shares represented by warrants exercisable on November 29, 2012 by TAA III), of which 4,146,849 are directly owned by TAP IV, 91,559 are directly owned by TAA IV, 3,765,501 are directly owned by TAP III and 202,442 are directly owned by TAA III. TAM IV, the general partner of each of TAP IV and TAA IV, may be deemed to have the sole power to vote the shares held by TAP IV and TAA IV. TAM III, the general partner of each of TAP III and TAA III. Wan is a managing member of TAM IV and TAM III, and may be deemed to have shared power to vote the shares held by TAP IV, TAA IV, TAP III and TAA III.  |
|   |                 | 9            | SOLE DISPOSITIVE POWER 0 shares.   |
|   |                 | 10           | SHARED DISPOSITIVE POWER 8,206,351 shares (including 188,020 shares represented by warrants exercisable on November 29, 2012 by TAP IV; 4,151 shares represented by warrants exercisable on November 29, 2012 by TAP III; and 3,268 shares represented by warrants exercisable on November 29, 2012 by TAP III; and 3,268 shares represented by warrants exercisable on November 29, 2012 by TAP III, of which 4,146,849 are directly owned by TAP IV, 91,559 are directly owned by TAA IV, 3,765,501 are directly owned by TAP III and 202,442 are directly owned by TAA III. TAM IV, the general partner of each of TAP IV and TAA IV, may be deemed to have the sole power to dispose of the shares held by TAP IV and TAA IV. TAM III, the general partner of each of TAP III and TAA III, may be deemed to have the sole power to dispose of the shares held by TAP III and TAA III. Wan is a managing member of TAM IV and TAM III, and may be deemed to have shared power to dispose of the shares held by TAP IV, TAA IV, TAP III and TAA III. |
| 11  |                 |              | BENEFICIALLY OWNED BY EACH   |
|   | REPORTING       | PERSON       | 8,206,351  |
|   | CHECK BOX       | Y IE THE ACA | GREGATE AMOUNT IN ROW (9)  |
| 12  |                 |              | JARES (See Instructions)   |
|   |                 |              |  |
| 13  | PERCENT C       | F CLASS RE   | PRESENTED BY AMOUNT IN ROW (9)   |
| -   |                 |              | 41.1%  |

| 14 | TYPE OF REPORTING PERSON (See Instructions) |
|----|---|
| 17 |   |
|    | IN  |
|    |   |

| 1  |                             |              | PERSONS NO. OF ABOVE PERSON (Entities Only).   |
|--|-----------------------------|--------------|--|
| 2  |                             |              | ATE BOX IF A MEMBER OF AGROUP (See Instructions)   |
|  |                             |              | (a) [_]  |
|  |                             |              | (b) [X]  |
|  |                             |              | (b) [A]  |
| 3  | SEC USE O                   | NLY          |  |
| 4  | SOURCE OF WC                | F FUNDS      |  |
| 5  |                             | X IF DISCLO  | SURE OF LEGAL PROCEEDINGS IS REQUIRED  |
| 3  | PURSUANT                    | TO ITEMS 2   | 2(d) OR 2(e)   |
| 6  | CITIZENSHI<br>United States |              | E OF ORGANIZATION  |
|  |                             | 7            | SOLE VOTING POWER  |
|  | BER OF                      |              | 0 shares.  |
|  | ARES<br>ICIALLY             |              |  |
| OWNED BY EACH<br>REPORTING<br>PERSON<br>WITH |                             | 8            | SHARED VOTING POWER 8,206,351 shares (including 188,020 shares represented by warrants exercisable on November 29, 2012 by TAP IV; 4,151 shares represented by warrants exercisable on November 29, 2012 by TAA IV; 60,789 shares represented by warrants exercisable on November 29, 2012 by TAP III; and 3,268 shares represented by warrants exercisable on November 29, 2012 by TAP III; and 3,268 shares represented by warrants exercisable on November 29, 2012 by TAP III), of which 4,146,849 are directly owned by TAP IV, 91,559 are directly owned by TAA IV, 3,765,501 are directly owned by TAP III and 202,442 are directly owned by TAA III. TAM IV, the general partner of each of TAP IV and TAA IV, may be deemed to have the sole power to vote the shares held by TAP III and TAA III. Jaeger is a managing member of TAM IV and TAM III, and may be deemed to have shared power to vote the shares held by TAP IV, TAA IV, TAP III and TAA III.  |
|  |                             | 9            | SOLE DISPOSITIVE POWER 0 shares.   |
|  |                             | 10           | SHARED DISPOSITIVE POWER 8,206,351 shares (including 188,020 shares represented by warrants exercisable on November 29, 2012 by TAP IV; 4,151 shares represented by warrants exercisable on November 29, 2012 by TAA IV; 60,789 shares represented by warrants exercisable on November 29, 2012 by TAP III; and 3,268 shares represented by warrants exercisable on November 29, 2012 by TAA III), of which 4,146,849 are directly owned by TAP IV, 91,559 are directly owned by TAA IV, 3,765,501 are directly owned by TAP III and 202,442 are directly owned by TAA III. TAM IV, the general partner of each of TAP IV and TAA IV, may be deemed to have the sole power to dispose of the shares held by TAP IV and TAA IV. TAM III, the general partner of each of TAP III and TAA III, may be deemed to have the sole power to dispose of the shares held by TAP III and TAA III. Jaeger is a managing member of TAM IV and TAM III, and may be deemed to have shared power to dispose of the shares held by TAP IV, TAA IV, TAP III and TAA III. |
| 11   |                             |              | BENEFICIALLY OWNED BY EACH   |
|  | REPORTING                   | J PEKSUN     |  |
|  |                             |              | 8,206,351  |
| 12   | CHECK BOX                   | X IF THE AG  | GGREGATE AMOUNT IN ROW (9)   |
| 12   |                             |              | HARES (See Instructions)   |
|  |                             |              |  |
|  | DEDCENT                     | DE CI ACC DI | EDDESENTED DV AMOLINT IN DOW (0)   |
|  |                             |              |  |

| 13 | FERCENT OF CLASS REFRESENTED DT AMOUNT IN ROW (3) | 1.1% |
|----|---|------|
| 14 | TYPE OF REPORTING PERSON (See Instructions)       | IN   |

## Statement on Schedule 13D

This Amendment No. 1 to Schedule 13D is filed to report the aggregate purchases of 284,698 shares of Common Stock and warrants representing 256,228 shares of Common Stock of AcelRx Pharmaceuticals, Inc., a Delaware corporation by the Reporting Persons on May 29, 2012. This Amendment No. 1 supplements and amends the Schedule 13D originally filed with the Securities and Exchange Commission on February 25, 2011 (the "Schedule 13D"). Only those items that are hereby reported are amended; all other items remain unchanged.

#### ITEM 3. SOURCE AND AMOUNT OF FUNDS OR OTHER CONSIDERATION.

Item 3 of the Schedule 13D is hereby amended by adding the following to the end thereof:

On May 29, 2012, each of TAP IV, TAA IV, TAP III and TAA III purchased from the Issuer an aggregate of 284,698 shares of Common Stock fo a purchase price of \$3.40 per share, or \$967,973.20 in the aggregate.

On May 29, 2012, each of TAP IV, TAA IV, TAP III and TAA III purchased from the Issuer warrants to purchase 256,228 shares of Common Stock, exercisable on November 29, 2012. The warrants were purchased for a purchase price of \$0.125 per warrant, or \$32,028.50 in the aggregate.

The source of the funds for the acquisition of the Common Stock and warrants purchased from the Issuer by TAP IV, TAA IV, TAP III and TAA II was from working capital. No part of the purchase price was borrowed by TAP IV, TAA IV, TAP III or TAA III or TAAA III or TAA III or T

#### ITEM 5. INTEREST IN SECURITIES OF THE ISSUER.

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

(a,b) Regarding aggregate beneficial ownership, see Row 11 of the cover page of each Reporting Person. Regarding percentage beneficial ownership, see Row 13 of the cover page of each Reporting Person. Regarding sole power to vote shares, see Row 7 of the cover page of each Reporting Person. Regarding shared power to vote shares, see Row 8 of the cover page of each Reporting Person. Regarding sole power to dispose of shares, see Row 9 of the cover page of each Reporting Person. Regarding shared power to dispose of shares, see Row 10 of the cover page of each Reporting Person. The percentages of ownership listed in Row 13 for each Reporting Person was calculated based upon 19,692,150 shares of Common Stock outstanding as of May 1, 2012.

# ITEM 7. MATERIAL TO BE FILED AS EXHIBITS.

Item 7 of the Schedule 13D is amended to add the following Exhibit:

Exhibit C Power of Attorney

Exhibit D Form of Warrant

Exhibit E Form of Securities Purchase Agreement, dated May 29, 2012

# **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.

Date: June 8, 2012

Three Arch Partners IV, L.P.

By Three Arch Management IV, L.L.C.

Its General Partner

/s/ Steve Agelopoulos

Steve Agelopoulos, by Power of Attorney

Three Arch Associates IV, L.P.

By Three Arch Management IV, L.L.C.

Its General Partner

/s/ Steve Agelopoulos

Steve Agelopoulos, by Power of Attorney

Three Arch Partners III, L.P.

By Three Arch Management III, L.L.C.

Its General Partner

/s/ Steve Agelopoulos

Steve Agelopoulos, by Power of Attorney

Three Arch Associates III, L.P.

By Three Arch Management III, L.L.C.

Its General Partner

/s/ Steve Agelopoulos

Steve Agelopoulos, by Power of Attorney

Three Arch Management IV, L.L.C.

/s/ Steve Agelopoulos

Steve Agelopoulos, by Power of Attorney

Three Arch Management III, L.L.C.

/s/ Steve Agelopoulos

Steve Agelopoulos, by Power of Attorney

Mark Wan

/s/ Steve Agelopoulos

Steve Agelopoulos, by Power of Attorney

Wilfred Jaeger

/s/ Steve Agelopoulos

Steve Agelopoulos, by Power of Attorney

# INDEX TO EXHIBITS

EXHIBIT C Power of Attorney (filed as Exhibits 24 and 24.2 to the Form 4 filed with the Commission by the Reporting Persons on

May 31, 2012, and incorporated herein by reference).

EXHIBIT D Form of Warrant (filed as an exhibit to AcelRx's Current Report on Form 8-K filed with the Securities and Exchange

Commission on March 30, 2012, incorporated by reference as Exhibit 4.8 to AcelRx's Current Report on Form 8-K filed

with the Securities and Exchange Commission on June 4, 2012, and incorporated herein by reference).

EXHIBIT E Form of Securities Purchase Agreement, dated May 29, 2012 (filed as an exhibit to AcelRx's Current Report on Form 8-

K filed with the Securities and Exchange Commission on March 30, 2012, incorporated by reference as Exhibit 10.23 to AcelRx's Current Report on Form 8-K filed with the Securities and Exchange Commission on June 4, 2012, and

incorporated herein by reference).