

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)

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

February 16, 2011

(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 | NAME OF REPORTING PERSONS Three Arch Partners IV, L.P. (the "TAP IV") | |
| 2 | CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (See Instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/> | |
| 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) <input type="checkbox"/> | |
| 6 | CITIZENSHIP OR PLACE OF ORGANIZATION Delaware | |
| NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH | 7 | SOLE VOTING POWER 3,749,918 shares, except that Three Arch Management IV, L.L.C. (the "TAM IV") is the general partner of TAP IV and may be deemed to have sole power to vote these shares, and Mark Wan ("Wan") and Wilfred Jaeger ("Jaeger") are the managing members of TAM IV 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 3,749,918 shares, 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 | AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON | 3,749,918 |
| 12 | CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (See Instructions) | <input type="checkbox"/> |
| 13 | PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9) | 19.4% |
| 14 | TYPE OF REPORTING PERSON (See Instructions) | PN |

| | | |
|---|---|--|
| 1 | NAME OF REPORTING PERSONS Three Arch Associates IV, L.P. ("TAA IV") | |
| 2 | CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (See Instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/> | |
| 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) <input type="checkbox"/> | |
| 6 | CITIZENSHIP OR PLACE OF ORGANIZATION Delaware | |
| NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH | 7 | SOLE VOTING POWER 82,795 shares, 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. |
| | 8 | SHARED VOTING POWER See response to row 7. |
| | 9 | SOLE DISPOSITIVE POWER 82,795 shares, 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 | AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON | 82,795 |
| 12 | CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (See Instructions) | <input type="checkbox"/> |
| 13 | PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9) | 0.4% |
| 14 | TYPE OF REPORTING PERSON (See Instructions) | PN |

| | | |
|---|---|---|
| 1 | NAME OF REPORTING PERSONS Three Arch Management IV, L.L.C. ("TAM IV") | |
| 2 | CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (See Instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/> | |
| 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) <input type="checkbox"/> | |
| 6 | CITIZENSHIP OR PLACE OF ORGANIZATION Delaware | |
| NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH | 7 | SOLE VOTING POWER 3,832,713 shares, of which 3,749,918 are directly owned by TAP IV and 82,795 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. |
| | 8 | SHARED VOTING POWER See response to row 7. |
| | 9 | SOLE DISPOSITIVE POWER 3,832,713 shares, of which 3,749,918 are directly owned by TAP IV and 82,795 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 | AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON | 3,832,713 |
| 12 | CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (See Instructions) | <input type="checkbox"/> |
| 13 | PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9) | 19.8% |
| 14 | TYPE OF REPORTING PERSON (See Instructions) | OO |

| | | |
|---|---|---|
| 1 | NAME OF REPORTING PERSONS Three Arch Partners III, L.P. (the " <u>TAP III</u> ") | |
| 2 | CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (See Instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/> | |
| 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) <input type="checkbox"/> | |
| 6 | CITIZENSHIP OR PLACE OF ORGANIZATION Delaware | |
| NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH | 7 | SOLE VOTING POWER 3,637,169 shares, 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 3,637,169 shares, 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 shared power to dispose of these shares. |
| | 10 | SHARED DISPOSITIVE POWER See response to row 9. |
| 11 | AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON | 3,637,169 |
| 12 | CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (See Instructions) | <input type="checkbox"/> |
| 13 | PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9) | 18.8% |
| 14 | TYPE OF REPORTING PERSON (See Instructions) | PN |

| | | |
|---|--|--|
| 1 | NAME OF REPORTING PERSONS Three Arch Associates III, L.P. ("TAA III") | |
| 2 | CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (See Instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/> | |
| 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) <input type="checkbox"/> | |
| 6 | CITIZENSHIP OR PLACE OF ORGANIZATION Delaware | |
| NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH | 7 | SOLE VOTING POWER 195,543 shares, except that TAM III is the general partner of TAA 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 195,543 shares, 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 | AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON | 195,543 |
| 12 | CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (See Instructions) | <input type="checkbox"/> |
| 13 | PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9) | 1.0% |
| 14 | TYPE OF REPORTING PERSON (See Instructions) | PN |

| | | |
|---|--|--|
| 1 | NAME OF REPORTING PERSONS Three Arch Management III, L.L.C. ("TAM III") | |
| 2 | CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (See Instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/> | |
| 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) <input type="checkbox"/> | |
| 6 | CITIZENSHIP OR PLACE OF ORGANIZATION Delaware | |
| NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH | 7 | SOLE VOTING POWER 3,832,712 shares, of which 3,637,169 are directly owned by TAP III and 195,543 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. |
| | 8 | SHARED VOTING POWER See response to row 7. |
| | 9 | SOLE DISPOSITIVE POWER 3,832,712 shares, of which 3,637,169 are directly owned by TAP III and 195,543 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 | AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON | 3,832,712 |
| 12 | CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (See Instructions) | <input type="checkbox"/> |
| 13 | PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9) | 19.8% |
| 14 | TYPE OF REPORTING PERSON (See Instructions) | OO |

| | | |
|---|--|---|
| 1 | NAME OF REPORTING PERSONS I.R.S. IDENTIFICATION NO. OF ABOVE PERSON (Entities Only). Mark Wan (“ <u>Wan</u> ”) | |
| 2 | CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (See Instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/> | |
| 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) <input type="checkbox"/> | |
| 6 | CITIZENSHIP OR PLACE OF ORGANIZATION United States | |
| NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH | 7 | SOLE VOTING POWER 0 shares. |
| | 8 | SHARED VOTING POWER 7,665,425 shares, of which 3,749,918 are directly owned by TAP IV, 82,795 are directly owned by TAA IV, 3,637,169 are directly owned by TAP III and 195,543 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, may be deemed to have the sole power to vote 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 vote the shares held by TAP IV, TAA IV, TAM III and TAA III. |
| | 9 | SOLE DISPOSITIVE POWER 0 Shares. |
| | 10 | SHARED DISPOSITIVE POWER 7,665,425 shares, of which 3,749,918 are directly owned by TAP IV, 82,795 are directly owned by TAA IV, 3,637,169 are directly owned by TAP III and 195,543 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 | AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON | 7,665,425 |
| 12 | CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (See Instructions) | <input type="checkbox"/> |
| 13 | PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9) | 39.6% |
| 14 | TYPE OF REPORTING PERSON (See Instructions) | IN |

| | | |
|---|--|--|
| 1 | NAME OF REPORTING PERSONS I.R.S. IDENTIFICATION NO. OF ABOVE PERSON (Entities Only). Wilfred Jaeger ("Jaeger") | |
| 2 | CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (See Instructions) (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/> | |
| 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) <input type="checkbox"/> | |
| 6 | CITIZENSHIP OR PLACE OF ORGANIZATION United States | |
| NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH | 7 | SOLE VOTING POWER 0 shares. |
| | 8 | SHARED VOTING POWER 7,665,425 shares, of which 3,749,918 are directly owned by TAP IV, 82,795 are directly owned by TAA IV, 3,637,169 are directly owned by TAP III and 195,543 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, 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 7,665,425 shares, of which 3,749,918 are directly owned by TAP IV, 82,795 are directly owned by TAA IV, 3,637,169 are directly owned by TAP III and 195,543 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 | AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON | 7,665,425 |
| 12 | CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (See Instructions) | <input type="checkbox"/> |
| 13 | PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9) | 39.6% |
| 14 | TYPE OF REPORTING PERSON (See Instructions) | IN |

Statement on Schedule 13D

ITEM 1. SECURITY AND ISSUER.

This statement on Schedule 13D (the "Schedule 13D") relates to the Common Stock, \$0.001 par value per share (the "Common Stock"), of AcclRx Pharmaceuticals, Inc., a Delaware corporation whose principal executive offices are located at 575 Chesapeake Drive, Redwood City, California 94063 (the "Issuer").

ITEM 2. IDENTITY AND BACKGROUND.

(a-c, f) This Schedule 13D is being filed on behalf of: (i) Three Arch Partners IV, L.P., a Delaware limited partnership ("TAP IV"); (ii) Three Arch Associates IV, L.P., a Delaware limited partnership ("TAA IV"); (iii) Three Arch Partners III, L.P., a Delaware limited partnership ("TAP III"); (iv) Three Arch Associates III, L.P., a Delaware limited partnership ("TAA III"); (v) Three Arch Management IV, L.L.C., a Delaware limited liability company ("TAM IV"); (vi) Three Arch Management III, L.L.C., a Delaware limited liability company ("TAM III"); (vii) Mark Wan, a United States citizen ("Wan"); and (viii) Wilfred Jaeger, a United States citizen ("Jaeger") and together with Wan, the "Managing Members". TAP IV, TAA IV, TAP III, TAA III, TAM IV, TAM III and the Managing Members are collectively referred to as the "Reporting Persons."

TAM IV is the general partner of each of TAP IV and TAA IV. TAM III is the general partner of each of TAP III and TAA III. The Managing Members are the managing members of each of TAM IV and TAM III. The principal business office of the Reporting Persons is c/o Three Arch Partners, 3200 Alpine Road, Portola Valley, California 94028.

(d) None of the Reporting Persons, individually or collectively, has, during the last five years, been convicted in a criminal proceeding (excluding traffic violations or similar misdemeanors).

(e) None of the Reporting Persons has, during the last five years, been a party to a civil proceeding of a judicial or administrative body of competent jurisdiction and as a result of such proceeding was or is subject to a judgment, decree or final order enjoining future violations of, or prohibiting or mandating activities subject to, Federal or state securities laws or finding any violation with respect to such laws.

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

On August 15, 2006, each of TAP IV, TAA IV, TAP III and TAA III entered into a Series A Preferred Stock Purchase Agreement pursuant to which such funds acquired from the Issuer an aggregate of 3,600,000 shares of Series A Convertible Preferred Stock for a purchase price of \$2.50 per share, or \$9,000,000 in the aggregate.

On February 4, 2008, each of TAP IV, TAA IV, TAP III and TAA III entered into a Series B Preferred Stock Purchase Agreement pursuant to which such funds acquired from the Issuer an aggregate of 2,625,000 shares of Series B Convertible Preferred Stock for a purchase price of \$4.00 per share, or \$10,500,000 in the aggregate.

On November 23, 2009, each of TAP IV, TAA IV, TAP III and TAA III entered into a Series C Preferred Stock Purchase Agreement pursuant to which such funds acquired from the Issuer an aggregate of 7,009,351 shares of Series C Convertible Preferred Stock for a purchase price of \$0.9857 per share, or \$6,909,117.30 in the aggregate.

On September 14, 2010, each of TAP IV, TAA IV, TAP III and TAA III acquired Convertible Promissory Notes and Warrants from the Issuer for an aggregate of \$3,793,652, convertible and exercisable into Common Stock.

On February 11, 2011, each of TAP IV, TAA IV, TAP III and TAA III acquired Convertible Promissory Notes and Warrants of the Issuer from a third party for an aggregate of \$6, convertible and exercisable into Common Stock.

On February 16, 2011, in connection with the Issuer's initial public offering, TAP IV, TAA IV, TAP III and TAA III purchased an aggregate of 2,579,579 shares of Common Stock for a purchase price of \$5.00 per share, or \$12,897,895 in the aggregate.

The source of the funds for the acquisition of the Series A Convertible Preferred Stock purchased by TAP IV, TAA IV, TAP III and TAA III was from working capital. No part of the purchase price was borrowed by TAP IV, TAA IV, TAP III or TAA III for the purpose of acquiring such securities.

The source of the funds for the acquisition of the Series B Convertible Preferred Stock purchased by TAP IV, TAA IV, TAP III and TAA III was from working capital. No part of the purchase price was borrowed by TAP IV, TAA IV, TAP III or TAA III for the purpose of acquiring such securities.

The source of the funds for the acquisition of the Series C Convertible Preferred Stock purchased by TAP IV, TAA IV, TAP III and TAA III was from working capital. No part of the purchase price was borrowed by TAP IV, TAA IV, TAP III or TAA III for the purpose of acquiring such securities.

The source of the funds for the acquisition of the Convertible Promissory Notes and Warrants purchased 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 for the purpose of acquiring such securities.

The source of the funds for the acquisition of the Common Stock purchased by TAP IV, TAA IV, TAP III and TAA III in connection with the Issuer's initial public offering was from working capital. No part of the purchase price was borrowed by TAP IV, TAA IV, TAP III or TAA III for the purpose of acquiring such securities.

The number of shares acquired by the Reporting Persons as described above reflect the actual shares acquired on each respective date of purchase, and is not adjusted to reflect the 1-for-4 reverse stock split of the Issuer's Common Stock and Preferred Stock that became effective on January 28, 2011.

ITEM 4. PURPOSE OF TRANSACTION.

The Reporting Persons hold the securities described in Item 5 of this statement for investment purposes only.

The Reporting Persons have no plan or proposal which relates to, or would result in, any of the actions enumerated in Item 4 of the instructions to Schedule 13D.

ITEM 5. INTEREST IN SECURITIES OF THE ISSUER.

(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 set forth below are based on 19,371,750 shares of Common Stock outstanding as of February 18, 2011.

TAP IV¹

- (a) Amount Beneficially Owned: 3,749,918
- (b) Fully Diluted Ownership: 19.4%

TAA IV¹

- (a) Amount Beneficially Owned: 82,795
 - (b) Fully Diluted Ownership: 0.4%
-

TAP III¹

- (a) Amount Beneficially Owned: 3,637,169
- (b) Fully Diluted Ownership: 18.8%

TAA III¹

- (a) Amount Beneficially Owned: 195,543
- (b) Fully Diluted Ownership: 1.0%

TAM IV¹

- (a) Amount Beneficially Owned: 3,832,713
- (b) Fully Diluted Ownership: 19.8%

TAM III¹

- (a) Amount Beneficially Owned: 3,832,712
- (b) Fully Diluted Ownership: 19.8%

Each Managing Member¹

- (a) Amount Beneficially Owned: 7,665,425
- (b) Fully Diluted Ownership: 39.6%

¹ TAP IV, TAA IV, TAP III and TAA III directly own the shares being reported hereunder, as described above. TAM IV is the general partner of each of TAP IV and TAA IV. TAM III is the general partner of each of TAP III and TAA III. The Managing Members are the managing members of each of TAM IV and TAM III. Therefore, each of TAM IV, TAM III and the Managing Members may be deemed a beneficial owner of the shares directly owned by TAP IV, TAA IV, TAP III and TAA III, as applicable. See the cover page of each entity for the sole power to vote shares, shared power to vote shares, sole power to dispose of shares and shared power to dispose of shares.

(c) Except as set forth in Item 3 above, the Reporting Persons have not effected any transaction in the common stock of the Issuer during the past 60 days.

(d) Except as set forth in this Item 5, no person other than each respective record owner referred to herein of securities is known to have the right to receive or the power to direct the receipt of dividends from, or the proceeds from the sale of, such securities.

(e) Not applicable.

ITEM 6. CONTRACTS, ARRANGEMENTS, UNDERSTANDINGS OR RELATIONSHIPS WITH RESPECT TO SECURITIES OF THE ISSUER.

In connection with acquisition of the preferred stock and warrants of the Issuer, each of TAP IV, TAA IV, TAP III and TAA III and certain other investors entered into an investors' rights agreement, entitling such parties to the registration of their shares, including demand and piggyback registration rights. Such registration rights are more fully described in the Prospectus filed with the Commission by the Issuer on February 18, 2011, and incorporated herein by reference.

In connection with the public offering of the shares of Common Stock of the Issuer, the Fund entered into a lock-up agreement and has agreed that it will not offer or sell for a period of 180 days after the date of the public offering. After the expiration of the 180-day period, the Common Stock held by the Fund may be sold subject to applicable securities regulations.

The 180-day lock-up period described in the preceding paragraph is subject to adjustment under certain circumstances. If in the event that either (1) during the last 17 days of the “lock-up” period, the Issuer releases earnings results or material news or a material event relating to the Issuer occurs or (2) prior to the expiration of the “lock-up” period, the Issuer announces that it will release earnings results during the 16-day period beginning on the last day of the “lock-up” period, then in either case the expiration of the “lock-up” will be extended until the expiration of the 18-day period beginning on the date of the release of the earnings results or the occurrence of the material news or event, as applicable, unless the representatives waive, in writing, such an extension. Such lock-up period is more fully described in the Prospectus filed with the Commission by the Issuer on February 18, 2011, and incorporated herein by reference.

ITEM 7. MATERIAL TO BE FILED AS EXHIBITS.

Exhibit A Agreement of Joint Filing.

Exhibit B Power of Attorney

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: February 25, 2011

Three Arch Partners IV, L.P.
By Three Arch management IV, L.L.C.
Its General Partner

/s/ Stephen Bonelli
Stephen Bonelli, by Power of Attorney

Three Arch Associates IV, L.P.
By Three Arch management IV, L.L.C.
Its General Partner

/s/ Stephen Bonelli
Stephen Bonelli, by Power of Attorney

Three Arch Partners III, L.P.
By Three Arch management III, L.L.C.
Its General Partner

/s/ Stephen Bonelli
Stephen Bonelli, by Power of Attorney

Three Arch Associates III, L.P.
By Three Arch management III, L.L.C.
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/s/ Stephen Bonelli
Stephen Bonelli, by Power of Attorney

Mark Wan

/s/ Stephen Bonelli
Stephen Bonelli, by Power of Attorney

Wilfred Jaeger

/s/ Stephen Bonelli
Stephen Bonelli, by Power of Attorney

INDEX TO EXHIBITS

EXHIBIT A Agreement of Joint Filing

EXHIBIT B Power of Attorney (filed as Exhibit 99 to the Form 3 filed with the Commission by the Reporting Persons on February 10, 2011, and incorporated herein by reference).

EXHIBIT A

Agreement of Joint Filing

The undersigned hereby agree that a single Schedule 13D (or any amendment thereto) relating to the Common Stock of AcelRx Pharmaceuticals, Inc. shall be filed on behalf of each of the undersigned and that this Agreement shall be filed as an exhibit to such Schedule 13D.

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