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**UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
WASHINGTON, D.C. 20549**

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**SCHEDULE 13G**

**Under the Securities Exchange Act of 1934  
(Amendment No. 5)\***

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**AcelRx Pharmaceuticals, Inc.**

(Name of Issuer)

**Common Stock, \$0.001 par value  
(Title of Class of Securities)**

**00444T 10 0  
(CUSIP Number)**

**July 17, 2017  
(Date of Event Which Requires Filing of this Statement)**

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Check the appropriate box to designate the rule pursuant to which this Schedule is filed:

- Rule 13d-1(b)
- Rule 13d-1(c)
- Rule 13d-1(d)

\* 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 the disclosures provided in a prior cover page.

The information required in the remainder of this cover page shall not be deemed to be "filed" for the purpose of Section 18 of the Securities Exchange Act of 1934 ("Act") or otherwise subject to the liabilities of that section of the Act but shall be subject to all other provisions of the Act (however, see the Notes).

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(1)	NAMES OF REPORTING PERSONS I.R.S. IDENTIFICATION NOS. OF ABOVE PERSONS (ENTITIES ONLY)  Perceptive Advisors LLC	
(2)	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (SEE INSTRUCTIONS) (a) <input type="checkbox"/> (b) <input type="checkbox"/>	
(3)	SEC USE ONLY	
(4)	CITIZENSHIP OR PLACE OF ORGANIZATION  Delaware	
NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH	(5)	SOLE VOTING POWER  0
	(6)	SHARED VOTING POWER  1,244,608
	(7)	SOLE DISPOSITIVE POWER  0
	(8)	SHARED DISPOSITIVE POWER  1,244,608
(9)	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON  1,244,608	
(10)	CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (SEE INSTRUCTIONS) <input type="checkbox"/>	
(11)	PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)  2.7%	
(12)	TYPE OF REPORTING PERSON (SEE INSTRUCTIONS)  IA	

(1)	NAMES OF REPORTING PERSONS I.R.S. IDENTIFICATION NOS. OF ABOVE PERSONS (ENTITIES ONLY)  <b>Joseph Edelman</b>	
(2)	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (SEE INSTRUCTIONS) (a) <input type="checkbox"/> (b) <input type="checkbox"/>	
(3)	SEC USE ONLY	
(4)	CITIZENSHIP OR PLACE OF ORGANIZATION  <b>United States of America</b>	
NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH	(5)	SOLE VOTING POWER  <b>0</b>
	(6)	SHARED VOTING POWER  <b>1,244,608</b>
	(7)	SOLE DISPOSITIVE POWER  <b>0</b>
	(8)	SHARED DISPOSITIVE POWER  <b>1,244,608</b>
(9)	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON  <b>1,244,608</b>	
(10)	CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (SEE INSTRUCTIONS) <input type="checkbox"/>	
(11)	PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)  <b>2.7%</b>	
(12)	TYPE OF REPORTING PERSON (SEE INSTRUCTIONS)  <b>IN</b>	

(1)	NAMES OF REPORTING PERSONS I.R.S. IDENTIFICATION NOS. OF ABOVE PERSONS (ENTITIES ONLY)  Perceptive Life Sciences Master Fund, Ltd.	
(2)	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (SEE INSTRUCTIONS) (a) <input type="checkbox"/> (b) <input type="checkbox"/>	
(3)	SEC USE ONLY	
(4)	CITIZENSHIP OR PLACE OF ORGANIZATION  Cayman Islands	
NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH	(5)	SOLE VOTING POWER  0
	(6)	SHARED VOTING POWER  1,244,608
	(7)	SOLE DISPOSITIVE POWER  0
	(8)	SHARED DISPOSITIVE POWER  1,244,608
(9)	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON  1,244,608	
(10)	CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (SEE INSTRUCTIONS) <input type="checkbox"/>	
(11)	PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)  2.7%	
(12)	TYPE OF REPORTING PERSON (SEE INSTRUCTIONS)  CO	

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**Item 1(a). Name of Issuer:**

AcelRx Pharmaceuticals, Inc. (the "Issuer")

**Item 1(b). Address of Issuer's Principal Executive Offices:**

351 Galveston Drive, Redwood City, CA 94063

**Item 2(a). Names of Persons Filing:**

The names of the persons filing this report (collectively, the "Reporting Persons") are:

Perceptive Advisors LLC ("Perceptive Advisors")

Joseph Edelman ("Mr. Edelman")

Perceptive Life Sciences Master Fund, Ltd. (the "Master Fund")

**Item 2(b). Address of Principal Business Office or, if None, Residence:**

The address of the principal business office of each of the Reporting Persons is:

51 Astor Place, 10th Floor

New York, NY 10003

**Item 2(c). Citizenship:**

Perceptive Advisors is a Delaware limited liability company

Mr. Edelman is a United States citizen

The Master Fund is a Cayman Islands corporation

**Item 2(d). Title of Class of Securities:**

Common Stock, \$0.001 par value ("Common Stock")

**Item 2(e). CUSIP Number:**

00444T 10 0

**Item 3. If this statement is filed pursuant to §§ 240.13d-1(b) or 240.13d-2(b) or (c), check whether the person filing is a:**

Not applicable.

**Item 4. Ownership.**

The information required by this item with respect to each Reporting Person is set forth in Rows 5 through 9 and 11 of the cover page to this Schedule 13G. The ownership percentages reported are based on 45,380,473 outstanding shares of Common Stock as of July 26, 2017, as reported in the Issuer's Form 10-Q filed on August 2, 2017.

The Master Fund directly holds 1,244,608 shares of Common Stock. Perceptive Advisors serves as the investment manager to the Master Fund and may be deemed to beneficially own such shares. Mr. Edelman is the managing member of Perceptive Advisors and may be deemed to beneficially own such shares.

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**Item 5. Ownership of Five Percent or Less of a Class.**

If this statement is being filed to report the fact that as of the date hereof the Reporting Persons have ceased to be the beneficial owner of more than five percent of the class of securities, check the following .

**Item 6. Ownership of More than Five Percent on Behalf of Another Person.**

Not applicable.

**Item 7. Identification and Classification of the Subsidiary Which Acquired the Security Being Reported on by the Parent Holding Company or Control Person.**

Not applicable.

**Item 8. Identification and Classification of Members of the Group.**

Not applicable.

**Item 9. Notice of Dissolution of Group.**

Not applicable.

**Item 10. Certification.**

By signing below I certify that, to the best of my knowledge and belief, the securities referred to above were not acquired and are not held for the purpose of or with the effect of changing or influencing the control of the issuer of the securities and were not acquired and are not held in connection with or as a participant in any transaction having that purpose or effect, other than activities solely in connection with a nomination under § 240.14a-11.

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SIGNATURE

After reasonable inquiry and to the best of its knowledge and belief, each of the undersigned certifies that the information set forth in this statement is true, complete and correct.

Date: August 23, 2017

PERCEPTIVE ADVISORS LLC

By: /s/ Joseph Edelman  
Name: Joseph Edelman  
Title: Managing Member

/s/ Joseph Edelman  
JOSEPH EDELMAN

PERCEPTIVE LIFE SCIENCES MASTER FUND, LTD.

By: Perceptive Advisors LLC

By: /s/ Joseph Edelman  
Name: Joseph Edelman  
Title: Managing Member

AGREEMENT

The persons below hereby agree that the Schedule 13G to which this agreement is attached as an exhibit, as well as all future amendments to such Schedule 13G, shall be filed on behalf of each of them. This agreement is intended to satisfy the requirements of Rule 13d-1(k)(1)(iii) under the Securities Exchange Act of 1934.

Date: August 23, 2017

PERCEPTIVE ADVISORS LLC

By: /s/ Joseph Edelman  
Name: Joseph Edelman  
Title: Managing Member

/s/ Joseph Edelman  
JOSEPH EDELMAN

PERCEPTIVE LIFE SCIENCES MASTER FUND, LTD.

By: Perceptive Advisors LLC

By: /s/ Joseph Edelman  
Name: Joseph Edelman  
Title: Managing Member