
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

SCHEDULE 13G

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

Acceleron Pharma Inc.

(Name of Issuer)

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

00434H108
(CUSIP Number)

December 31, 2013
(Date of Event Which Requires Filing of this Statement)

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*).

1	NAME OF REPORTING PERSONS OrbiMed 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 2,272,819
	7	SOLE DISPOSITIVE POWER - 0 -
	8	SHARED DISPOSITIVE POWER 2,272,819
9	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 2,272,819	
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) 8.02%(1)	
12	TYPE OF REPORTING PERSON (SEE INSTRUCTIONS) IA	

(1) This percentage is calculated based upon 28,348,633 shares outstanding as of January 1, 2014, as set forth in the Issuer's prospectus supplement filed pursuant to Rule 424(b)(4) with the Securities and Exchange Commission on January 23, 2014, and includes 155,171 shares issuable upon the exercise of warrants.

1	NAME OF REPORTING PERSONS OrbiMed Capital GP II 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 2,272,819
	7	SOLE DISPOSITIVE POWER - 0 -
	8	SHARED DISPOSITIVE POWER 2,272,819
9	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 2,272,819	
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) 8.02%(1)	
12	TYPE OF REPORTING PERSON (SEE INSTRUCTIONS) OO	

(1) This percentage is calculated based upon 28,348,633 shares outstanding as of January 1, 2014, as set forth in the Issuer's prospectus supplement filed pursuant to Rule 424(b)(4) with the Securities and Exchange Commission on January 23, 2014, and includes 155,171 shares issuable upon the exercise of warrants.

1	NAME OF REPORTING PERSONS Samuel D. Isaly	
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 United States	
NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH	5	SOLE VOTING POWER - 0 -
	6	SHARED VOTING POWER 2,272,819
	7	SOLE DISPOSITIVE POWER - 0 -
	8	SHARED DISPOSITIVE POWER 2,272,819
9	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 2,272,819	
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) 8.02%(1)	
12	TYPE OF REPORTING PERSON (SEE INSTRUCTIONS) IN	

(1) This percentage is calculated based upon 28,348,633 shares outstanding as of January 1, 2014, as set forth in the Issuer's prospectus supplement filed pursuant to Rule 424(b)(4) with the Securities and Exchange Commission on January 23, 2014, and includes 155,171 shares issuable upon the exercise of warrants.

- Item 1** (a). **Name of Issuer:**
- Accelaron Pharma Inc.
- Item 1** (b). **Address of Issuer's Principal Executive Offices:**
- 128 Sidney Street
Cambridge, Massachusetts
02139
- Item 2** (a). **Name of Person Filing:**
- This Schedule 13G is being filed by each of the following persons (each a "Reporting Person" and together, the "Reporting Persons"): (i) OrbiMed Advisors LLC ("Advisors"); (ii) OrbiMed Capital GP II LLC ("GP II"); (iii) Samuel D. Isaly ("Isaly")
- See Exhibit A for the Reporting Persons' agreement for a joint filing of a single statement on their behalf.
- Item 2** (b). **Address of Principal Business Office:**
- The address of the principal business office of each of Advisors, GP II and Isaly is 601 Lexington Avenue, 54th Floor, New York, New York 10022.
- Item 2** (c). **Citizenship:**
- Please refer to Item 4 on each cover sheet for each filing person.
- Item 2** (d). **Title of Class of Securities:**
- Common Stock, par value \$0.001 per share (the "Common Stock").
- Item 2** (e). **CUSIP Number:**
- 00434H108
- 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:**
- Advisors is an investment advisor in accordance with § 240.13d-1(b)(1)(ii)(E) and the Managing Member of GP II. GP II is the General Partner of OrbiMed Private Investments II, LP ("OPI II") and OrbiMed Private Investments II (QP), LP ("OPI II QP"), which beneficially own the shares of Common Stock ("Shares") and warrants to purchase Shares reported herein, as detailed in Item 4. Isaly is the Managing Member of Advisors and a control person in accordance with § 240.13d-1(b)(1)(ii)(G).
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Item 4. Ownership:

GP II is the General Partner of OPI II and OPI II QP, which beneficially own the Shares and warrants to purchase Shares reported herein. OPI II beneficially owns 1,540,759 Shares and warrants to purchase 112,900 Shares and OPI II QP beneficially owns 576,889 Shares and warrants to purchase 42,271 Shares. Advisors is the Managing Member of GP II, and Isaly is the Managing Member of Advisors. On the basis of these relationships, GP II, Advisors and Isaly may be deemed to share beneficial ownership of the Shares and warrants to purchase Shares directly owned by OPI II and OPI II QP.

- (a) Amount beneficially owned: See the response(s) to Item 9 on the attached cover page(s).
- (b) Percent of class: See the response(s) to Item 11 on the attached cover page(s).
- (c) Number of shares as to which such person has:
 - (i) Sole power to vote or to direct the vote: See the response(s) to Item 5 on the attached cover page(s).
 - (ii) Shared power to vote or to direct the vote: See the response(s) to Item 6 on the attached cover page(s).
 - (iii) Sole power to dispose or to direct the disposition of: See the response(s) to Item 7 on the attached cover page(s).
 - (iv) Shared power to dispose or to direct the disposition of: See the response(s) to Item 8 on the attached cover page(s).

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 person has 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.

See Item 4.

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.

Certifications.

By signing below I certify that, to the best of my knowledge and belief, the securities referred to above were acquired and held in the ordinary course of business and 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.

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.

February 13, 2014

ORBIMED ADVISORS LLC

By: /s/ Samuel D. Isaly

Name: Samuel D. Isaly

Title: Managing Member

ORBIMED CAPITAL GP II LLC

By: OrbiMed Advisors LLC, its Managing Member

By: /s/ Samuel D. Isaly

Name: Samuel D. Isaly

Title: Managing Member

SAMUEL D. ISALY

By: /s/ Samuel D. Isaly

EXHIBIT A

JOINT FILING AGREEMENT

Pursuant to Rule 13d-1(k)(1) under the Securities Exchange Act of 1934, as amended, the undersigned hereby consent to the joint filing on their behalf of a single Schedule 13G and any amendments thereto, with respect to the beneficial ownership by each of the undersigned of the Common Stock of Acceleron Pharma Inc. The undersigned hereby further agree that this Joint Filing Agreement be included as an exhibit to such statement and any such amendment. The undersigned acknowledge that each shall be responsible for the timely filing of such amendments, and for the completeness and accuracy of the information concerning it contained herein and therein, but shall not be responsible for the completeness and accuracy of the information concerning the others. The undersigned hereby further agree that this Joint Filing Agreement may be executed in any number of counterparts, each of which when so executed shall be deemed to be an original, but all of which counterparts shall together constitute one and the same instrument.

February 13, 2014

ORBIMED ADVISORS LLC

By: /s/ Samuel D. Isaly
Name: Samuel D. Isaly
Title: Managing Member

ORBIMED CAPITAL GP II LLC

By: OrbiMed Advisors LLC, its Managing Member

By: /s/ Samuel D. Isaly
Name: Samuel D. Isaly
Title: Managing Member

SAMUEL D. ISALY

By: /s/ Samuel D. Isaly
