

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, DC 20549

SCHEDULE 13G

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

Xenon Pharmaceuticals Inc.

(Name of Issuer)

Common Stock

(Title of Class of Securities)

98420N105

(CUSIP Number)

December 31, 2016

(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 Capital GP VI LLC	
2	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) <input type="radio"/> (b) <input type="radio"/>	
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 1,000,000
	7	SOLE DISPOSITIVE POWER 0
	8	SHARED DISPOSITIVE POWER 1,000,000
9	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 1,000,000	
10	CHECK IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES <input type="radio"/>	
11	PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9) 5.59%*	
12	TYPE OF REPORTING PERSON OO	

* This percentage is based upon 17,893,304 shares outstanding as of October 28, 2016, as set forth in Issuer's Form 10-Q filed with the Securities and Exchange Commission on November 3, 2016.

1	NAME OF REPORTING PERSONS OrbiMed Advisors LLC	
2	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) <input type="radio"/> (b) <input type="radio"/>	
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 1,000,000
	7	SOLE DISPOSITIVE POWER 0
	8	SHARED DISPOSITIVE POWER 1,000,000
9	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 1,000,000	
10	CHECK IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES <input type="radio"/>	
11	PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9) 5.59%*	
12	TYPE OF REPORTING PERSON IA	

* This percentage is based upon 17,893,304 shares outstanding as of October 28, 2016, as set forth in Issuer's Form 10-Q filed with the Securities and Exchange Commission on November 3, 2016.

1	NAME OF REPORTING PERSONS Samuel D. Isaly	
2	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) <input type="radio"/> (b) <input type="radio"/>	
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 1,000,000
	7	SOLE DISPOSITIVE POWER 0
	8	SHARED DISPOSITIVE POWER 1,000,000
9	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 1,000,000	
10	CHECK IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES <input type="radio"/>	
11	PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9) 5.59%*	
12	TYPE OF REPORTING PERSON IN	

* This percentage is based upon 17,893,304 shares outstanding as of October 28, 2016, as set forth in Issuer's Form 10-Q filed with the Securities and Exchange Commission on November 3, 2016.

Item 1. (a) Name of Issuer:

Xenon Pharmaceuticals Inc. (the "Company").

(b) Address of Issuer's Principal Executive Offices:

200-3650 Gilmore Way
Burnaby, British Columbia V5G 4W8
Canada

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"):

OrbiMed Capital GP VI LLC ("GP VI")

OrbiMed Advisors LLC ("Advisors")

Samuel D. Isaly ("Isaly")

(b) Address of Principal Business Office:

601 Lexington Avenue, 54th Floor
New York, NY 10022

(c) Citizenship:

Please refer to Item 4 on each cover sheet for each filing person.

(d) Title of Class of Securities:

Common Stock, without par value.

(e) CUSIP No.:

98420N105

Item 3. Not Applicable

Item 4. Ownership:

GP VI is the sole general partner of OrbiMed Private Investments VI, LP ("OPI VI"), which holds 1,000,000 shares of Common Stock, without par value, of the Company ("Shares"). Advisors is an investment advisor in accordance with Rule 13d-1(b)(1)(ii)(E) under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and is the Managing Member of GP VI. Isaly is the Managing Member of Advisors and a control person in accordance with Rule 13d-1(b)(1)(ii)(G) under the Exchange Act. On the basis of these relationships, GP VI, Advisors and Isaly may be deemed to share beneficial ownership of the Shares held by OPI VI.

(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 the 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.

Not Applicable.

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. Certification.

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.

Dated: February 13, 2017

OrbiMed Advisors LLC

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

OrbiMed Capital GP VI LLC
By: OrbiMed Advisors LLC, Its Managing Member

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

Samuel D. Isaly
Samuel D. Isaly
Name: Samuel D. Isaly

**EXHIBIT A
JOINT FILING AGREEMENT**

The undersigned hereby agree that the Statement on this Schedule 13G dated February 13, 2017 (the "Schedule 13G"), with respect to the Common Stock, without par value, of Xenon Pharmaceuticals Inc. is filed on behalf of each of us pursuant to and in accordance with the provisions of Rule 13d-1(k) under the Securities Exchange Act of 1934, as amended, and that this Agreement shall be included as an Exhibit to this Schedule 13G. Each of the undersigned agrees to be responsible for the timely filing of the Schedule 13G, and for the completeness and accuracy of the information concerning itself contained therein. This Agreement may be executed in any number of counterparts, all of which taken together shall constitute one and the same instrument.

IN WITNESS WHEREOF, the undersigned have executed this Agreement as of February 13, 2017.

OrbiMed Advisors LLC

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

OrbiMed Capital GP VI LLC
By: OrbiMed Advisors LLC, Its Managing Member

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

Samuel D. Isaly

Samuel D. Isaly
Name: Samuel D. Isaly