

**STATEMENT OF CHANGES IN BENEFICIAL OWNERSHIP**

OMB APPROVAL	
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Check this box if no longer subject to Section 16. Form 4 or Form 5 obligations may continue. See Instruction 1(b).

Filed pursuant to Section 16(a) of the Securities Exchange Act of 1934 or Section 30(h) of the Investment Company Act of 1940

1. Name and Address of Reporting Person* <u>ORBIMED ADVISORS LLC</u>  (Last) (First) (Middle) <u>601 LEXINGTON AVE. 54TH FLOOR</u>  (Street) <u>NEW YORK NY 10022</u>  (City) (State) (Zip)	2. Issuer Name and Ticker or Trading Symbol <u>RHYTHM PHARMACEUTICALS, INC. [ RYTM ]</u>	5. Relationship of Reporting Person(s) to Issuer (Check all applicable)  Director <input checked="" type="checkbox"/> 10% Owner  Officer (give title below) Other (specify below)
	3. Date of Earliest Transaction (Month/Day/Year) <u>10/10/2017</u>	
	4. If Amendment, Date of Original Filed (Month/Day/Year)	6. Individual or Joint/Group Filing (Check Applicable Line) Form filed by One Reporting Person <input checked="" type="checkbox"/> Form filed by More than One Reporting Person

**Table I - Non-Derivative Securities Acquired, Disposed of, or Beneficially Owned**

1. Title of Security (Instr. 3)	2. Transaction Date (Month/Day/Year)	2A. Deemed Execution Date, if any (Month/Day/Year)	3. Transaction Code (Instr. 8)		4. Securities Acquired (A) or Disposed Of (D) (Instr. 3, 4 and 5)			5. Amount of Securities Beneficially Owned Following Reported Transaction(s) (Instr. 3 and 4)	6. Ownership Form: Direct (D) or Indirect (I) (Instr. 4)	7. Nature of Indirect Beneficial Ownership (Instr. 4)
			Code	V	Amount	(A) or (D)	Price			
Common Stock	10/10/2017		C		2,546,295	A	(1)	2,546,295	I	See Footnotes <sup>(2)(3)</sup>
Common Stock	10/10/2017		P		355,000	A	\$17	2,901,295	I	See Footnotes <sup>(2)(3)</sup>

**Table II - Derivative Securities Acquired, Disposed of, or Beneficially Owned (e.g., puts, calls, warrants, options, convertible securities)**

1. Title of Derivative Security (Instr. 3)	2. Conversion or Exercise Price of Derivative Security	3. Transaction Date (Month/Day/Year)	3A. Deemed Execution Date, if any (Month/Day/Year)	4. Transaction Code (Instr. 8)		5. Number of Derivative Securities Acquired (A) or Disposed of (D) (Instr. 3, 4 and 5)	6. Date Exercisable and Expiration Date (Month/Day/Year)		7. Title and Amount of Securities Underlying Derivative Security (Instr. 3 and 4)		8. Price of Derivative Security (Instr. 5)	9. Number of derivative Securities Beneficially Owned Following Reported Transaction(s) (Instr. 4)	10. Ownership Form: Direct (D) or Indirect (I) (Instr. 4)	11. Nature of Indirect Beneficial Ownership (Instr. 4)
				Code	V		(A)	(D)	Date Exercisable	Expiration Date				
Series A Convertible Preferred Stock	(1)	10/10/2017		C		2,546,295 <sup>(4)</sup>	(1)	(1)	Common Stock	2,546,295 <sup>(4)</sup>	\$0	0	I	See Footnotes <sup>(2)(3)</sup>

1. Name and Address of Reporting Person\*  
ORBIMED ADVISORS LLC  
 (Last) (First) (Middle)  
601 LEXINGTON AVE. 54TH FLOOR  
 (Street)  
NEW YORK NY 10022  
 (City) (State) (Zip)

1. Name and Address of Reporting Person\*  
OrbiMed Capital GP V LLC  
 (Last) (First) (Middle)  
601 LEXINGTON AVE. 54TH FLOOR  
 (Street)  
NEW YORK NY 10022  
 (City) (State) (Zip)

1. Name and Address of Reporting Person\*  
ISALY SAMUEL D  
 (Last) (First) (Middle)  
601 LEXINGTON AVE. 54TH FLOOR  
 (Street)  
NEW YORK NY 10022  
 (City) (State) (Zip)

**Explanation of Responses:**

1. In connection with the closing of the Issuer's initial public offering, each share of the Issuer's series A convertible preferred stock (the "Series A Preferred") converted into the Issuer's common stock on a 9.17-for-one basis without payment or consideration. The Series A Preferred had no expiration date.
2. The reportable securities are held of record by OrbiMed Private Investments V, LP ("OPI V"). OrbiMed Capital GP V LLC ("GP V") is the sole general partner of OPI V and OrbiMed Advisors LLC ("Advisors"), a registered adviser under the Investment Advisers Act of 1940, as amended, is the sole managing member of GP V. Samuel D. Isaly ("Isaly") a natural person, is the managing member of, and holder of a controlling interest in, Advisors. By virtue of such relationships, GP V, Advisors and Isaly may be deemed to have voting and investment power with respect to the securities held by OPI V and as a result, may be deemed to have beneficial ownership over such shares.
3. This report on Form 4 is jointly filed by GP V, Advisors and Isaly. Each of OPI V, GP V, Advisors and Isaly disclaims beneficial ownership of the securities reported herein for purposes of Rule 16a-1(a) under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), except to the extent of its or his pecuniary interest therein, if any. This report shall not be deemed an admission that any such entity or person is a beneficial owner of such securities for the purpose of Section 16 of the Exchange Act, or for any other purpose.
4. Reflects the number of shares of Series A Preferred held by the Reporting Person on an as-converted to common stock basis.

/s/ Samuel D. Isaly

10/10/2017

\*\* Signature of Reporting Person

Date

Reminder: Report on a separate line for each class of securities beneficially owned directly or indirectly.

\* If the form is filed by more than one reporting person, see Instruction 4 (b)(v).

\*\* Intentional misstatements or omissions of facts constitute Federal Criminal Violations See 18 U.S.C. 1001 and 15 U.S.C. 78ff(a).

Note: File three copies of this Form, one of which must be manually signed. If space is insufficient, see Instruction 6 for procedure.

**Persons who respond to the collection of information contained in this form are not required to respond unless the form displays a currently valid OMB Number.**