

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>THIRD ROCK VENTURES LP</u> (Last) (First) (Middle) <u>C/O THIRD ROCK VENTURES, LLC,</u> <u>29 NEWBURY STREET, 3RD FLOOR</u> (Street) <u>BOSTON MA 02116</u> (City) (State) (Zip)	2. Issuer Name and Ticker or Trading Symbol <u>RHYTHM PHARMACEUTICALS, INC. [</u> <u>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)		

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		3,963,810 ⁽¹⁾	A	(2)	3,981,437	D ⁽³⁾	

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						Title
Series A Convertible Preferred Stock	(2)	10/10/2017		C		9,479,502		(2)	(2)	Common Stock	1,033,751	\$0.00	0	D ⁽³⁾	
Series A-1 Junior Preferred Stock	(2)	10/10/2017		C		26,868,642		(2)	(2)	Common Stock	2,930,059	\$0.00	0	D ⁽³⁾	

1. Name and Address of Reporting Person*
THIRD ROCK VENTURES LP

 (Last) (First) (Middle)
C/O THIRD ROCK VENTURES, LLC,
29 NEWBURY STREET, 3RD FLOOR

 (Street)
BOSTON MA 02116

 (City) (State) (Zip)

1. Name and Address of Reporting Person*
Third Rock Ventures GP, L.P.

 (Last) (First) (Middle)
29 NEWBURY STREET, 3RD FLOOR

 (Street)
BOSTON MA 02116

 (City) (State) (Zip)

1. Name and Address of Reporting Person*
TRV GP, LLC

 (Last) (First) (Middle)
29 NEWBURY STREET, 3RD FLOOR

 (Street)
BOSTON MA 02116

 (City) (State) (Zip)

(Street)	BOSTON	MA	02116
(City)	(State)	(Zip)	
1. Name and Address of Reporting Person *			
<u>LEVIN MARK J</u>			
(Last)	(First)	(Middle)	
29 NEWBURY STREET, 3RD FLOOR			
(Street)	BOSTON	MA	02116
(City)	(State)	(Zip)	
1. Name and Address of Reporting Person *			
<u>STARR KEVIN P</u>			
(Last)	(First)	(Middle)	
29 NEWBURY STREET, 3RD FLOOR			
(Street)	BOSTON	MA	02116
(City)	(State)	(Zip)	
1. Name and Address of Reporting Person *			
<u>TEPPER ROBERT I</u>			
(Last)	(First)	(Middle)	
29 NEWBURY STREET, 3RD FLOOR			
(Street)	BOSTON	MA	02116
(City)	(State)	(Zip)	

Explanation of Responses:

1. Represents the total number of shares of Common Stock received by Third Rock Ventures, L.P. ("TRV") upon conversion of the Series A Convertible Preferred Stock and Series A-1 Junior Preferred Stock of the Issuer in connection with the closing of the Issuer's initial public offering.
2. The Series A Convertible Preferred Stock and Series A-1 Junior Preferred Stock converted into Common Stock on a 9.17-for-one basis upon the closing of the Issuer's initial public offering without payment of consideration. The Series A Convertible Preferred Stock and Series A-1 Junior Preferred Stock were convertible at any time at the holder's election and automatically upon the closing of the Issuer's initial public offering. The Preferred Stock had no expiration date.
3. These shares are directly held by TRV. The general partner of TRV is Third Rock Ventures GP, L.P. ("TRV GP"). The general partner of TRV GP is TRV GP, LLC ("TRV GP LLC"). The individual managers of TRV GP LLC are Mark Levin ("Levin"), Kevin Starr ("Starr") and Dr. Robert Tepper ("Tepper"). Each of TRV GP, TRV GP LLC, Levin, Starr and Tepper disclaims beneficial ownership of these shares except to the extent of its or his pecuniary interest therein, if any, and this report shall not be deemed an admission that it or he is the beneficial owner of such shares.

Remarks:

/s/ Kevin Gillis, Chief Financial Officer of TRV GP, LLC, general partner of Third Rock Ventures GP, L.P., general partner of Third Rock Ventures, L.P. 10/11/2017

/s/ Kevin Gillis, Chief Financial Officer of TRV GP, LLC, general partner of Third Rock Ventures GP, L.P. 10/11/2017

/s/ Kevin Gillis, Chief Financial Officer of TRV GP, LLC 10/11/2017

/s/ Kevin Gillis by power of attorney for Mark Levin 10/11/2017

/s/ Kevin Gillis by power of attorney for Kevin Starr 10/11/2017

/s/ Kevin Gillis by power of attorney for Dr. Robert Tepper 10/11/2017

** 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.