

INITIAL STATEMENT OF BENEFICIAL OWNERSHIP OF SECURITIES

OMB APPROVAL	
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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>BAKER BROS. ADVISORS LP</u> (Last) (First) (Middle) 860 WASHINGTON STREET 3RD FLOOR (Street) NEW YORK NY 10014 (City) (State) (Zip)	2. Date of Event Requiring Statement (Month/Day/Year) 10/04/2017	3. Issuer Name and Ticker or Trading Symbol <u>RHYTHM PHARMACEUTICALS, INC.</u> [RYTM]	
		4. Relationship of Reporting Person(s) to Issuer (Check all applicable) Director <input checked="" type="checkbox"/> 10% Owner Officer (give title below) Other (specify below)	5. 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 Beneficially Owned

1. Title of Security (Instr. 4)	2. Amount of Securities Beneficially Owned (Instr. 4)	3. Ownership Form: Direct (D) or Indirect (I) (Instr. 5)	4. Nature of Indirect Beneficial Ownership (Instr. 5)
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Table II - Derivative Securities Beneficially Owned (e.g., puts, calls, warrants, options, convertible securities)

1. Title of Derivative Security (Instr. 4)	2. Date Exercisable and Expiration Date (Month/Day/Year)		3. Title and Amount of Securities Underlying Derivative Security (Instr. 4)		4. Conversion or Exercise Price of Derivative Security	5. Ownership Form: Direct (D) or Indirect (I) (Instr. 5)	6. Nature of Indirect Beneficial Ownership (Instr. 5)
	Date Exercisable	Expiration Date	Title	Amount or Number of Shares			
Series A Convertible Preferred	(1)	(1)	Common Stock	82,969	(1)	I	See footnotes ⁽²⁾⁽⁴⁾⁽⁵⁾
Series A Convertible Preferred	(1)	(1)	Common Stock	1,081,051	(1)	I	See footnotes ⁽³⁾⁽⁴⁾⁽⁵⁾

1. Name and Address of Reporting Person* <u>BAKER BROS. ADVISORS LP</u> (Last) (First) (Middle) 860 WASHINGTON STREET 3RD FLOOR (Street) NEW YORK NY 10014 (City) (State) (Zip)		
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1. Name and Address of Reporting Person* <u>Baker Bros. Advisors (GP) LLC</u> (Last) (First) (Middle) 860 WASHINGTON STREET 3RD FLOOR (Street) NEW YORK NY 10014 (City) (State) (Zip)		
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1. Name and Address of Reporting Person* <u>BAKER FELIX</u> (Last) (First) (Middle) 860 WASHINGTON STREET 3RD FLOOR (Street) NEW YORK NY 10014		
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(City)	(State)	(Zip)
1. Name and Address of Reporting Person *		
BAKER JULIAN		
(Last)	(First)	(Middle)
860 WASHINGTON STREET, 3RD FLOOR		
(Street)		
NEW YORK	NY	10014
(City)	(State)	(Zip)

Explanation of Responses:

1. These securities consist of Series A Convertible Preferred Stock ("Series A Preferred") of Rhythm Pharmaceuticals, Inc. (the "Issuer") which are convertible into the Issuer's common stock on a 9.17 for 1 basis (the "Conversion Ratio") at any time at the election of the holder and will automatically convert into common stock of the Issuer at the Conversion Ratio into the number of shares of the Issuer's common stock shown in column 3 without payment or further consideration upon closing of the initial public offering of the Issuer. The Series A Preferred have no expiration date.
2. As a result of Felix J. Baker's and Julian C. Baker's ownership interest in Baker Biotech Capital (GP), LLC, Felix J. Baker and Julian C. Baker may be deemed to have an indirect pecuniary interest in 760,829 shares of Series A Preferred held directly by 667, L.P. ("667"), a limited partnership of which the sole general partner is Baker Biotech Capital, L.P., a limited partnership of which the sole general partner is Baker Biotech Capital (GP), LLC, due to Baker Biotech Capital, L.P.'s right to receive an allocation of a portion of the profits from 667.
3. As a result of Felix J. Baker's and Julian C. Baker's ownership interest in Baker Brothers Life Sciences Capital (GP), LLC, Felix J. Baker and Julian C. Baker may be deemed to have an indirect pecuniary interest in 9,913,242 shares of Series A Preferred held directly by Baker Brothers Life Sciences, L.P. ("Life Sciences" and together with "667", the "Funds") a limited partnership of which the sole general partner is Baker Brothers Life Sciences Capital, L.P., a limited partnership of which the sole general partner is Baker Brothers Life Sciences Capital (GP), LLC, due to Baker Brothers Life Sciences Capital, L.P.'s right to receive an allocation of a portion of the profits from Life Sciences.
4. Baker Bros. Advisors LP (the "Adviser") serves as the Investment Adviser to the Funds. In connection with the services provided by the Adviser, the Adviser receives an asset-based management fee that does not confer any pecuniary interest in the securities held by the Funds. Baker Bros. Advisors (GP) LLC (the "Adviser GP") is the Adviser's sole general partner. Julian C. Baker and Felix J. Baker are principals of the Adviser GP. The Adviser has complete and unlimited discretion and authority with respect to the investment and voting power of the securities held by the Funds.
5. The general partners of the Funds relinquished to the Adviser all discretion and authority with respect to the investment and voting power of the securities held by the Funds. Julian C. Baker, Felix J. Baker, the Adviser GP and the Adviser disclaim beneficial ownership of the securities held directly by the Funds except to the extent of their pecuniary interest therein, and this report shall not be deemed an admission that any of Julian C. Baker, Felix J. Baker, the Adviser GP or the Adviser is a beneficial owner of such securities for purposes of Section 16 or any other purpose.

Remarks:

By: Baker Bros. Advisors LP,
Name: Scott L. Lessing, Title: 10/04/2017
President /s/ Scott L. Lessing
By: Baker Bros. Advisors (GP),
LLC, Name: Scott L. Lessing, 10/04/2017
Title: President /s/ Scott L.
Lessing
/s/ Felix J. Baker 10/04/2017
/s/ Julian C. Baker 10/04/2017
 ** 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 5 (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.