

**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>Ipsen, S.A.</u> _____ (Last) (First) (Middle) <u>65 QUAI GEORGES GORSE</u> _____ (Street) <u>BOULOGNE- 10 92100</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) <input checked="" type="checkbox"/> Form filed by One Reporting Person 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		45,831	A	(1)	645,161	I	The owner of record of the securities is Sutrepa SAS. Sutrepa SAS is controlled by Ipsen SA
Common Stock	10/10/2017		C		167,938	A	(1)	813,099	I	The owner of record of the securities is Sutrepa SAS. Sutrepa SAS is controlled by Ipsen SA
Common Stock	10/10/2017		P		20,000	A	\$17	833,099	I	The owner of record of the securities is Ipsen Pharma, S.A.S., which is controlled by Ipsen SA

**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)
					(A)	(D)	Date Exercisable	Expiration Date	Title	Amount or Number of Shares				

**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	Amount or Number of Shares				
Series A-1 Junior Preferred Stock	(1)	10/10/2017		C			45,831 <sup>(2)</sup>	(1)	(1)	Common Stock	45,831 <sup>(2)</sup>	\$0	0	I	The owner of record of the securities is Sutrepa SAS. Sutrepa SAS is controlled by Ipsen SA
Series A Convertible Preferred Stock	(1)	10/10/2017		C			167,938 <sup>(2)</sup>	(1)	(1)	Common Stock	167,938 <sup>(2)</sup>	\$0	0	I	The owner of record of the securities is Sutrepa SAS. Sutrepa SAS is controlled by Ipsen SA

**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") and series A-1 junior preferred stock (the "Series A-1 Preferred") converted into the Issuer's common stock on a 9.17-for-one basis without payment or consideration. The Series A Preferred and the Series A-1 Preferred had no expiration date.

2. Reflects the number of shares of Series A Preferred and Series A-1 Preferred, as applicable, held by the Reporting Person on an as-converted to common stock basis.

/s/ Francois Garnier, Executive  
Vice President, General Counsel 10/10/2017  
of Ipsen SA

\*\* 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.**