

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

☒ Check this box to indicate that a transaction was made pursuant to a contract, instruction or written plan for the purchase or sale of equity securities of the issuer that is intended to satisfy the affirmative defense conditions of Rule 10b5-1(c). See Instruction 10.

STATEMENT OF CHANGES IN BENEFICIAL OWNERSHIP

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

OMB APPROVAL	
OMB Number:	3235-0287
Estimated average burden hours per response:	0.5

1. Name and Address of Reporting Person * <u>Smith Hunter C</u> (Last) (First) (Middle) <u>C/O RHYTHM PHARMACEUTICALS, INC.</u> <u>222 BERKELEY STREET, 12TH FLOOR</u> (Street) <u>BOSTON</u> <u>MA</u> <u>02116</u> (City) (State) (Zip)	2. Issuer Name and Ticker or Trading Symbol <u>RHYTHM PHARMACEUTICALS, INC.</u> [<u>RYTM</u>] Foreign Trading Symbol	5. Relationship of Reporting Person(s) to Issuer (Check all applicable) Director 10% Owner ☒ Officer (give title below) Other (specify below) <u>Chief Financial Officer</u>
	3. Date of Earliest Transaction (Month/Day/Year) <u>08/31/2026</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	08/31/2026		M ⁽¹⁾		57,187	A	\$25.79	176,798	D	
Common Stock	08/31/2026		S ⁽¹⁾		23,072	D	\$104.5871 ⁽²⁾	153,726	D	
Common Stock	08/31/2026		S ⁽¹⁾		11,514	D	\$105.3702 ⁽³⁾	142,212	D	
Common Stock	08/31/2026		S ⁽¹⁾		28,188	D	\$106.2029 ⁽⁴⁾	114,024	D	

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		Date Exercisable	Expiration Date	Title	Amount or Number of Shares				
Employee Stock Option (Right to Buy)	\$25.79	08/31/2026		M ⁽¹⁾		57,187	(5)	02/13/2028	Common Stock	57,187	\$0	3,813	D	

Explanation of Responses:

1. The exercise and sales reported in this form 4 were effected pursuant to a Rule 10b5-1 trading plan adopted by the reporting person on May 13, 2026.
2. The price reported in Column 4 is a weighted average price. The securities were sold in multiple transactions at prices ranging from \$104.04 to \$105.03 per common stock. The Reporting Person undertakes to provide to the Issuer, any security holder of the Issuer or the staff of the Securities and Exchange Commission, upon request, full information regarding the number of shares sold at each separate price within the range set forth in this footnote.
3. The price reported in Column 4 is a weighted average price. The securities were sold in multiple transactions at prices ranging from \$105.04 to \$106.01 per common stock. The Reporting Person undertakes to provide to the Issuer, any security holder of the Issuer or the staff of the Securities and Exchange Commission, upon request, full information regarding the number of shares sold at each separate price within the range set forth in this footnote.
4. The price reported in Column 4 is a weighted average price. The securities were sold in multiple transactions at prices ranging from \$106.05 to \$106.88 per common stock. The Reporting Person undertakes to provide to the Issuer, any security holder of the Issuer or the staff of the Securities and Exchange Commission, upon request, full information regarding the number of shares sold at each separate price within the range set forth in this footnote.
5. This option was granted on February 14, 2018 and the shares underlying this option vested in sixteen equal quarterly installments.

/s/ Stephen Vander Stoep,
attorney-in-fact for Hunder
Smith

09/01/2026

** 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.