

UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
Washington, D.C. 20549

SCHEDULE 13G

Under the Securities Exchange Act of 1934  
(Amendment No. 4)\*

**Rhythm Pharmaceuticals, Inc.**  
(Name of Issuer)

**COM**  
(Title of Class of Securities)

**76243J105**  
(CUSIP Number)

**December 31, 2021**  
(Date of Event which Requires Filing of this Statement)

Check the appropriate box to designate the rule pursuant to which this Schedule is filed:

- Rule 13d-1(b)  
 Rule 13d-1(c)  
 Rule 13d-1(d)

\* The remainder of this cover page shall be filled out for a reporting person's initial filing on this form with respect to the subject class of securities, and for any subsequent amendment containing information which would alter the disclosures provided in a prior cover page.

The information required in the remainder of this cover page shall not be deemed to be "filed" for the purpose of Section 18 of the Securities Exchange Act of 1934 ("Act") or otherwise subject to the liabilities of that section of the Act but shall be subject to all other provisions of the Act (however, see Instructions).

CUSIP No.: 76243J105

1	<b>NAME OF REPORTING PERSON</b> PRIMECAP Management Company <b>I.R.S. IDENTIFICATION NO. OF ABOVE PERSON (ENTITIES ONLY)</b> 95-3868081
2	<b>CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP</b> (a) <input type="checkbox"/> (b) <input type="checkbox"/>
3	<b>SEC USE ONLY</b>
4	<b>CITIZENSHIP OR PLACE OF ORGANIZATION</b> 177 E. Colorado Blvd., 11th Floor, Pasadena, CA 91105
<b>NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH</b>	5 <b>SOLE VOTING POWER</b> 6,256,991
	6 <b>SHARED VOTING POWER</b> 0
	7 <b>SOLE DISPOSITIVE POWER</b> 6,256,991
	8 <b>SHARED DISPOSITIVE POWER</b> 0
9	<b>AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON</b> 6,256,991
10	<b>CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES</b> <input type="checkbox"/>
11	<b>PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)</b> 12.45%
12	<b>TYPE OF REPORTING PERSON</b> IA

CUSIP No.: 76243J105

**ITEM 1(a). NAME OF ISSUER:**

Rhythm Pharmaceuticals, Inc.

**ITEM 1(b). ADDRESS OF ISSUER'S PRINCIPAL EXECUTIVE OFFICES:**

222 Berkeley Street, 12th Floor, Boston, MA 02116

**ITEM 2(a). NAME OF PERSON FILING:**

PRIMECAP Management Company

**ITEM 2(b). ADDRESS OF PRINCIPAL BUSINESS OFFICE OR, IF NONE, RESIDENCE:**

177 E. Colorado Blvd., 11th Floor, Pasadena, CA 91105

**ITEM 2(c). CITIZENSHIP:**

U.S.A.

**ITEM 2(d). TITLE OF CLASS OF SECURITIES:**

COM

**ITEM 2(e). CUSIP NUMBER:**

76243J105

**ITEM 3. IF THIS STATEMENT IS FILED PURSUANT TO SECTION 240.13d-1(b), or 13d-2(b) or (c) CHECK WHETHER THE PERSON FILING IS A:**

- (a)  Broker or dealer registered under Section 15 of the Act (15 U.S.C. 78c);
- (b)  Bank as defined in Section 3(a)(6) of the Act (15 U.S.C. 78c);
- (c)  Insurance company as defined in Section 3(a)(19) of the Act (15 U.S.C. 78c);
- (d)  Investment company registered under Section 8 of the Investment Company Act of 1940 (15 U.S.C. 80a-8);
- (e)  An investment adviser in accordance with 240.13d-1(b)(1)(ii)(E);
- (f)  An employee benefit plan or endowment fund in accordance with 240.13d-1(b)(1)(ii)(F);
- (g)  A parent holding company or control person in accordance with 240.13d-1(b)(1)(ii)(G);
- (h)  A savings associations as defined in Section 3(b) of the Federal Deposit Insurance Act (12 U.S.C. 1813);
- (i)  A church plan that is excluded from the definition of an investment company under Section 3(c)(14) of the Investment Company Act of 1940 (15 U.S.C. 80a-3);
- (j)  A non-U.S. institution in accordance with 240.13d-1(b)(1)(ii)(J);
- (k)  Group, in accordance with 240.13d-1(b)(1)(ii)(K). If filing as a non-U.S. institution in accordance with 240.13d1(b)(1)(ii)(J), please specify the type of institution:

**ITEM 4. OWNERSHIP**

**(a) Amount beneficially owned:**

6,256,991

**(b) Percent of class:**

12.45%

**(c) Number of shares as to which the person has:**

(i) sole power to vote or to direct the vote:

6,256,991

(ii) shared power to vote or to direct the vote:

0

(iii) sole power to dispose or direct the disposition of:

6,256,991

(iv) shared power to dispose or to direct the disposition of:

**ITEM 5. OWNERSHIP OF FIVE PERCENT OR LESS OF A CLASS:**

If this statement is being filed to report the fact that as of the date hereof the reporting person has ceased to be the beneficial owner of more than five percent of the class of securities, check the following [ ].

**ITEM 6. OWNERSHIP OF MORE THAN FIVE PERCENT ON BEHALF OF ANOTHER PERSON:**

Various Persons have the right to receive, or the power to direct the receipt of, dividends from, or proceeds from the sale of, with respect to the securities as to which this Schedule is filed. No one Person here has an interest more than five percent of this class of securities except as follows: PRIMECAP Odyssey Aggressive Growth Fund has an interest of more than five percent of the total outstanding common stock of Rhythm Pharmaceuticals, Inc.

**ITEM 7. IDENTIFICATION AND CLASSIFICATION OF THE SUBSIDIARY WHICH ACQUIRED THE SECURITY BEING REPORTED ON BY THE PARENT HOLDING COMPANY:**

Not Applicable

**ITEM 8. IDENTIFICATION AND CLASSIFICATION OF MEMBERS OF THE GROUP:**

Not Applicable

**ITEM 9. NOTICE OF DISSOLUTION OF GROUP:**

Not Applicable

**ITEM 10. CERTIFICATION:**

By signing below I certify that, to the best of my knowledge and belief, the securities referred to above were acquired and are held in the ordinary course of business and were not acquired and are not held for the purpose of or with the effect of changing or influencing the control of the issuer of the securities and were not acquired and are not held in connection with or as a participant in any transaction having that purpose or effect.

CUSIP No.: 76243J105

## SIGNATURE

After reasonable inquiry and to the best of my knowledge and belief, I certify that the information set forth in this statement is true, complete and correct.

February 10 2022

PRIMECAP Management Company

By: /s/ Jennifer Ottosen

Name: Jennifer Ottosen

Title: CCO

Attention — Intentional misstatements or omissions of fact constitute Federal criminal violations (See 18 U.S.C. 1001).