
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

SCHEDULE 13D/A

Under the Securities Exchange Act of 1934
(Amendment No. 2)*

VOR BIOPHARMA INC.

(Name of Issuer)

Common Stock, par value \$0.0001 per share

(Title of Class of Securities)

929033108

(CUSIP Number)

RA Capital Management, L.P.
200 Berkeley Street, 18th Floor
Boston, MA 02116
Attn: Peter Kolchinsky
Telephone: 617.778.2500

(Name, Address and Telephone Number of Person
Authorized to Receive Notices and Communications)

December 7, 2022

(Date of Event Which Requires Filing of this Statement)

If the filing person has previously filed a statement on Schedule 13G to report the acquisition that is the subject of this Schedule 13D, and is filing this schedule because of §§ 240.13d-1(e), 240.13d-1(f) or 240.13d-1(g), check the following box.

Note: Schedules filed in paper format shall include a signed original and five copies of the schedule, including all exhibits. See Section 240.13d-7 for other parties to whom copies are to be sent.

* 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 disclosures provided in a prior cover page.

The information required on 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, as amended ("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 the Notes).

1. Names of Reporting Persons.

RA Capital Management, L.P.

2. Check the Appropriate Box if a Member of a Group (See Instructions)

(a)

(b)

3. SEC Use Only

4. Source of Funds (See Instructions)

AF

5. Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 2(d) or 2(e)

6. Citizenship or Place of Organization

Delaware

7. Sole Voting Power

0

Number of
Shares
Beneficially
Owned by
Each
Reporting
Person With

8. Shared Voting Power

22,760,145

9. Sole Dispositive Power

0

10. Shared Dispositive Power

22,760,145

11. Aggregate Amount Beneficially Owned by Each Reporting Person

22,760,145

12. Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions)

13. Percent of Class Represented by Amount in Row (11)

34.8%¹

14. Type of Reporting Person (See Instructions)

IA, PN

¹ The Reporting Person is the beneficial owner of 22,748,880 shares of the Issuer's Common Stock as well as shares underlying each of 10,327 vested stock options (right to buy) and 938 stock options (right to buy) which will vest within 60 days held by Dr. Joshua Resnick for the benefit of RA Capital. The percentage calculation assumes that there are 65,323,385 outstanding shares of Common Stock of the Issuer as reported in the Issuer's prospectus supplement filed on December 8, 2022, assuming the completion of the Issuer's registered public offering and concurrent Private Placement (as defined below) and giving effect to stock options referenced above.

1. Names of Reporting Persons.

Peter Kolchinsky

2. Check the Appropriate Box if a Member of a Group (See Instructions)

(a)

(b)

3. SEC Use Only

4. Source of Funds (See Instructions)

AF

5. Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 2(d) or 2(e)

6. Citizenship or Place of Organization

United States

7. Sole Voting Power

0

Number of
Shares
Beneficially
Owned by
Each
Reporting
Person With

8. Shared Voting Power

22,760,145

9. Sole Dispositive Power

0

10. Shared Dispositive Power

22,760,145

11. Aggregate Amount Beneficially Owned by Each Reporting Person

22,760,145

12. Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions)

13. Percent of Class Represented by Amount in Row (11)

34.8%²

14. Type of Reporting Person (See Instructions)

HC, IN

² The Reporting Person is the beneficial owner of 22,748,880 shares of the Issuer's Common Stock as well as shares underlying each of 10,327 vested stock options (right to buy) and 938 stock options (right to buy) which will vest within 60 days held by Dr. Joshua Resnick for the benefit of RA Capital. The percentage calculation assumes that there are 65,323,385 outstanding shares of Common Stock of the Issuer as reported in the Issuer's prospectus supplement filed on December 8, 2022, assuming the completion of the Issuer's registered public offering and concurrent Private Placement (as defined below) and giving effect to stock options referenced above.

1. Names of Reporting Persons.

Rajeev Shah

2. Check the Appropriate Box if a Member of a Group (See Instructions)

(a)

(b)

3. SEC Use Only

4. Source of Funds (See Instructions)

AF

5. Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 2(d) or 2(e)

6. Citizenship or Place of Organization

United States

7. Sole Voting Power

0

Number of
Shares
Beneficially
Owned by
Each
Reporting
Person With

8. Shared Voting Power

22,760,145

9. Sole Dispositive Power

0

10. Shared Dispositive Power

22,760,145

11. Aggregate Amount Beneficially Owned by Each Reporting Person

22,760,145

12. Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions)

13. Percent of Class Represented by Amount in Row (11)

34.8%³

14. Type of Reporting Person (See Instructions)

HC, IN

³ The Reporting Person is the beneficial owner of 22,748,880 shares of the Issuer's Common Stock as well as shares underlying each of 10,327 vested stock options (right to buy) and 938 stock options (right to buy) which will vest within 60 days held by Dr. Joshua Resnick for the benefit of RA Capital. The percentage calculation assumes that there are 65,323,385 outstanding shares of Common Stock of the Issuer as reported in the Issuer's prospectus supplement filed on December 8, 2022 assuming the completion of the Issuer's registered public offering and concurrent Private Placement (as defined below) and giving effect to stock options referenced above.

1. Names of Reporting Persons.

RA Capital Healthcare Fund, L.P.

2. Check the Appropriate Box if a Member of a Group (See Instructions)

(a)

(b)

3. SEC Use Only

4. Source of Funds (See Instructions)

WC

5. Check if Disclosure of Legal Proceedings Is Required Pursuant to Items 2(d) or 2(e)

6. Citizenship or Place of Organization

Delaware

7. Sole Voting Power

0

Number of
Shares
Beneficially
Owned by
Each
Reporting
Person With

8. Shared Voting Power

20,923,554

9. Sole Dispositive Power

0

10. Shared Dispositive Power

20,923,554

11. Aggregate Amount Beneficially Owned by Each Reporting Person

20,923,554

12. Check if the Aggregate Amount in Row (11) Excludes Certain Shares (See Instructions)

13. Percent of Class Represented by Amount in Row (11)

32.0%⁴

14. Type of Reporting Person (See Instructions)

PN

⁴ The Reporting Person is the beneficial owner of 20,923,554 shares of the Issuer's Common Stock. The percentage calculation assumes that there are 65,323,385 outstanding shares of Common Stock of the Issuer as reported in the Issuer's prospectus supplement filed on December 8, 2022 assuming the completion of the Issuer's registered public offering and concurrent Private Placement (as defined below).

Item 1.	Security and Issuer
<p>Item 1 of the Statement is hereby amended and supplemented as follows:</p> <p>This Amendment No. 2 amends and supplements the statement on Schedule 13D originally filed with the Securities and Exchange Commission on February 19, 2021, as amended by Amendment No. 1 filed on November 14, 2022 (as so amended, the “<u>Statement</u>”) by the Reporting Persons with respect to the Common Stock, \$0.0001 par value per share (the “<u>Common Stock</u>”), of Vor Biopharma Inc., a Delaware Corporation (the “<u>Issuer</u>”), which has its principal executive offices at 100 Cambridgepark Drive, Suite 101, Cambridge, MA 02140. Unless otherwise defined herein, capitalized terms used in this Amendment No. 2 shall have the meanings ascribed to them in the Statement. Unless amended or supplemented below, the information in the Statement remains unchanged.</p>	
Item 2.	Identity and Background
<p>Item 2 of the Statement is hereby amended and restated as follows:</p>	
<p>(a) This Schedule 13D is being filed on behalf of RA Capital Management, L.P. (“<u>RA Capital</u>”), Peter Kolchinsky, Rajeev Shah, and RA Capital Healthcare Fund, L.P. (the “<u>Fund</u>”) who are collectively referred to herein as the “<u>Reporting Persons</u>”.</p>	
<p>The Reporting Persons ownership of the Issuer’s securities include (1) 20,923,554 shares of Common Stock held by the Fund, (2) 1,825,326 shares of Common Stock held by the RA Capital Nexus Fund, L.P. (the “<u>Nexus Fund</u>”), (3) a total of 10,327 vested stock options (right to buy), and (4) 938 stock options (right to buy) which shall vest within 60 days of this filing.</p>	
<p>RA Capital Healthcare Fund GP, LLC is the general partner of the Fund and RA Capital Nexus Fund GP, LLC is the general partner of the Nexus Fund. The general partner of RA Capital is RA Capital Management GP, LLC, of which Dr. Kolchinsky and Mr. Shah are the controlling persons. RA Capital serves as investment adviser for the Fund and the Nexus Fund and may be deemed a beneficial owner, for purposes of Section 13(d) of the Securities Exchange Act of 1934 (the “<u>Act</u>”), of any securities of the Issuer held by the Fund or the Nexus Fund. The Fund and the Nexus Fund have delegated to RA Capital the sole power to vote and the sole power to dispose of all securities held in the Fund’s and the Nexus Fund’s portfolio, including the shares of the Issuer’s Common Stock reported herein. Because the Fund and the Nexus Fund have divested themselves of voting and investment power over the reported securities they hold and may not revoke that delegation on less than 61 days’ notice, the Fund and the Nexus Fund disclaim beneficial ownership of the securities they hold for purposes of Section 13(d) of the Act and therefore disclaim any obligation to report ownership of the reported securities under Section 13(d) of the Act. As managers of RA Capital, Dr. Kolchinsky and Mr. Shah may be deemed beneficial owners, for purposes of Section 13(d) of the Act, of any securities of the Issuer beneficially owned by RA Capital. RA Capital, Dr. Kolchinsky, and Mr. Shah disclaim beneficial ownership of the securities reported in this Statement other than for the purpose of determining their obligations under Section 13(d) of the Act, and the filing of the Statement shall not be deemed an admission that either RA Capital, Dr. Kolchinsky, or Mr. Shah is the beneficial owner of such securities for any other purpose.</p>	
<p>(b) The address of the principal business office of each of the Reporting Persons is 200 Berkeley Street, 18th Floor, Boston, MA 02116.</p>	
<p>(c) The Fund is a private investment vehicle. RA Capital provides investment management services to the Fund and the Nexus Fund. The principal occupation of Dr. Kolchinsky and Mr. Shah is investment management.</p>	
<p>(d) During the last five years, none of the Reporting Persons has been convicted in a criminal proceeding (excluding traffic violations or similar misdemeanors).</p>	
<p>(e) During the last five years, none of the Reporting Persons has been a party to a civil proceeding of a judicial or administrative body of competent jurisdiction and as a result of such proceeding was or is subject to a judgment, decree of final order enjoining future violations of, or prohibiting or mandating activities subject to, federal or state securities laws or finding any violation with respect to such laws.</p>	
<p>(f) See Item 6 of the cover pages.</p>	

Item 3.	Source and Amount of Funds or Other Consideration
<p>Item 3 of the Statement is hereby amended and supplemented as follows:</p> <p>In connection with the Securities Purchase Agreement (as defined in Item 6 below), the Fund acquired 11,627,907 shares of Common Stock of the Issuer's Common Stock pursuant to the Securities Purchase Agreement for total consideration of \$50,000,000 in a transaction that closed on December 9, 2022.</p>	
Item 4.	Purpose of Transaction
<p>Item 4 of the Statement is amended and supplemented as follows:</p> <p>Item 6 below is incorporated by reference into this Item 4.</p>	
Item 5.	Interest in Securities of the Issuer
<p>Item 5 of the Statement is hereby amended and supplemented as follows:</p> <p>(a) and (b) See items 7 – 11 of the cover pages above.</p> <p>(c) The information set forth above in Item 4 of the Statement is incorporated by reference into this Item 5(c).</p>	
Item 6.	Contracts, Arrangements, Understandings or Relationships with Respect to Securities of the Issuer
<p>Item 6 of the Statement is hereby amended and supplemented as follows:</p> <p>Securities Purchase Agreement</p> <p>On December 7, 2022, the Issuer entered into a securities purchase agreement (the "Securities Purchase Agreement") with the Fund.</p> <p>Pursuant to the Securities Purchase Agreement, the Fund agreed to purchase, and the Issuer agreed to issue to the Fund 11,627,907 shares of Common Stock at a price of \$4.30 per share (the "Private Placement"). The total purchase price shall be equal to approximately \$50.0 million. The transaction closed on December 9, 2022, subject to customary closing conditions.</p> <p>Pursuant to the Securities Purchase Agreement, the Issuer has also agreed to prepare and file a registration statement with the Securities and Exchange Commission on or before January 8, 2023 to register the resale of the shares of Common Stock sold in the Private Placement. In the event the registration statement has not become effective by December 31, 2022, the Issuer has agreed to issue to the Fund warrants to purchase an aggregate of 116,279 shares of Common Stock with an exercise price of \$4.30 per share. The term of the warrants, if issued, will be one year.</p> <p>References to and the description of the Securities Purchase Agreement set forth above in this Item 6 do not purport to be complete and are qualified in their entirety by reference to the full text of the Securities Purchase Agreement, which is attached hereto as Exhibit 3 and incorporated by reference herein.</p>	
Item 7.	Material to be Filed as Exhibits
<p>Item 7 of the Statement is hereby amended and restated as follows:</p> <p>Exhibit 1 Joint Filing Agreement</p> <p>Exhibit 2 Investor Rights Agreement (incorporated by reference to Exhibit 4.2 to the Issuer's registration statement on Form S-1 (File No. 333-252175))</p> <p>Exhibit 3 Stock Purchase Agreement (incorporated by reference to Exhibit 10.1 to the Issuer's Form 8-K filed on December 7, 2022 (File No. 001-39979))</p>	

SIGNATURES

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.

Date: December 9, 2022

RA CAPITAL MANAGEMENT, L.P.

By: /s/ Peter Kolchinsky
Name: Peter Kolchinsky
Title: Authorized Signatory

PETER KOLCHINSKY

/s/ Peter Kolchinsky

RAJEEV SHAH

/s/ Rajeev Shah

RA CAPITAL HEALTHCARE FUND, L.P.

By: RA Capital Healthcare Fund GP, LLC
Its: General Partner

By: /s/ Peter Kolchinsky
Name: Peter Kolchinsky
Title: Manager

JOINT FILING AGREEMENT

This Joint Filing Agreement, dated as of December 9, 2022, is by and among RA Capital Management, L.P., Peter Kolchinsky, Rajeev Shah, and RA Capital Healthcare Fund, L.P. (the foregoing are collectively referred to herein as the "Filers").

Each of the Filers may be required to file with the United States Securities and Exchange Commission a statement on Schedule 13G and/or 13D with respect to Common Stock, par value \$0.0001 per share of Vor Biopharma, Inc. beneficially owned by them from time to time.

Pursuant to and in accordance with Rule 13(d)(1)(k) promulgated under the Securities Exchange Act of 1934, as amended, the Filers hereby agree to file a single statement on Schedule 13G and/or 13D (and any amendments thereto) on behalf of each of such parties, and hereby further agree to file this Joint Filing Agreement as an exhibit to such statement, as required by such rule.

This Joint Filing Agreement may be terminated by any of the Filers upon one week's prior written notice or such lesser period of notice as the Filers may mutually agree.

Executed and delivered as of the date first above written.

RA CAPITAL MANAGEMENT, L.P.

By: /s/ Peter Kolchinsky

Name: Peter Kolchinsky

Title: Authorized Signatory

PETER KOLCHINSKY

/s/ Peter Kolchinsky

RAJEEV SHAH

/s/ Rajeev Shah

RA CAPITAL HEALTHCARE FUND, L.P.

By: RA Capital Healthcare Fund GP, LLC

Its: General Partner

By: /s/ Peter Kolchinsky

Name: Peter Kolchinsky

Title: Manager
