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

SCHEDULE 13D/A

Under the Securities Exchange Act of 1934

(Amendment No. 1)*

ARS PHARMACEUTICALS, INC.

(Name of Issuer)

Common Stock, par value \$0.0001 per share

(Title of Class of Securities)

82835W 10 8

(CUSIP Number)

RA Capital Management, L.P.

200 Berkeley Street, 18th Floor

Boston, MA 02116

Telephone: 617.778.2500

Attn: Peter Kolchinsky

(Name, Address and Telephone Number of Person Authorized to

Receive Notices and Communications)

September 21, 2023

(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 Rule 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 ("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 shares**

Number
of Shares
Beneficially
Owned by
Each
Reporting
Person With

8 Shared Voting Power **9,459,678 shares**

9 Sole Dispositive Power **0 shares**

10 Shared Dispositive Power **9,459,678 shares**

11 Aggregate Amount Beneficially Owned by Each Reporting Person

9,459,678 shares

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

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

9.9%¹

14 Type of Reporting Person (See Instructions)

IA, PN

¹ The Reporting Person is the beneficial owner of 9,459,678 shares of the Issuer's Common Stock. The percentage calculation assumes that there are 95,568,307 outstanding shares of Common Stock of the Issuer based on the Issuer's Form 10-Q filed with Securities and Exchange Commission ("SEC") on August 10, 2023.

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 shares**

Number
of Shares
Beneficially
Owned by
Each
Reporting
Person With

8 Shared Voting Power **9,459,678 shares**

9 Sole Dispositive Power **0 shares**

10 Shared Dispositive Power **9,459,678 shares**

11 Aggregate Amount Beneficially Owned by Each Reporting Person

9,459,678 shares

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

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

9.9%²

14 Type of Reporting Person (See Instructions)

HC, IN

² The Reporting Person is the beneficial owner of 9,459,678 shares of the Issuer's Common Stock. The percentage calculation assumes that there are 95,568,307 outstanding shares of Common Stock of the Issuer based on the Issuer's Form 10-Q filed with Securities and Exchange Commission ("SEC") on August 10, 2023.

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 shares**

Number
of Shares
Beneficially
Owned by
Each
Reporting
Person With

8 Shared Voting Power **9,459,678 shares**

9 Sole Dispositive Power **0 shares**

10 Shared Dispositive Power **9,459,678 shares**

11 Aggregate Amount Beneficially Owned by Each Reporting Person

9,459,678 shares

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

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

9.9%³

14 Type of Reporting Person (See Instructions)

HC, IN

³ The Reporting Person is the beneficial owner of 9,459,678 shares of the Issuer's Common Stock. The percentage calculation assumes that there are 95,568,307 outstanding shares of Common Stock of the Issuer based on the Issuer's Form 10-Q filed with Securities and Exchange Commission ("SEC") on August 10, 2023.

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):

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 shares**

Number
of Shares
Beneficially
Owned by
Each
Reporting
Person With

8 Shared Voting Power **8,556,774 shares**

9 Sole Dispositive Power **0 shares**

10 Shared Dispositive Power **8,556,774 shares**

11 Aggregate Amount Beneficially Owned by Each Reporting Person

8,556,774 shares

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

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

9%⁴

14 Type of Reporting Person (See Instructions)

HC, IN

⁴ The Reporting Person is the beneficial owner of 8,556,774 shares of the Issuer's Common Stock. The percentage calculation assumes that there are 95,568,307 outstanding shares of Common Stock of the Issuer based on the Issuer's Form 10-Q filed with Securities and Exchange Commission ("SEC") on August 10, 2023.

SCHEDULE 13D

Item 1. Security and Issuer

Item 1 of the Statement is hereby amended and supplemented as follows:

This Amendment No. 1 (this “Amendment No. 1” or this “13D/A”) amends and supplements the statement on the Schedule 13D originally filed with the Securities and Exchange Commission (the “SEC”) on August 31, 2023 (the “Statement”), filed by RA Capital Management, L.P., Dr. Kolchinsky, Mr. Shah, and RA Capital Healthcare Fund, L.P. with respect to the common stock, \$0.001 par value per share (the “Common Stock”), of ARS Pharmaceuticals, Inc., a Delaware corporation (the “Issuer”). Unless otherwise defined herein, capitalized terms used in this Amendment No. 1 shall have the meanings ascribed to them in the Statement. Unless amended or supplemented below, the information in the Statement remains unchanged.

Item 2. Identity and Background

Item 2 of the Statement is hereby amended and supplemented as follows:

(a) This 13D/A is being filed on behalf of RA Capital Management, L.P. (“RA Capital”), Peter Kolchinsky, and Rajeev Shah. RA Capital, Dr. Kolchinsky, Mr. Shah, and RA Capital Healthcare Fund, L.P. (the “Fund”) are collectively referred to herein as the “Reporting Persons.”

The Reporting Persons ownership of the Issuer’s securities includes (1) 8,556,774 shares of Common Stock directly held by the RA Capital Healthcare Fund, L.P. (the “Fund”) and (2) 902,904 shares of Common Stock directly held by the RA Capital Nexus Fund II, L.P (the “Nexus Fund II”).

RA Capital Healthcare Fund GP, LLC is the general partner of the Fund and RA Capital Nexus Fund II GP, LLC is the general partner of the Nexus Fund II. 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 II and may be deemed a beneficial owner, for purposes of Section 13(d) of the Securities Exchange Act of 1934 (the “Act”), of any securities of the Issuer held by the Fund or the Nexus Fund II. The Fund and the Nexus Fund II 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 II’s portfolio, including the shares of the Issuer’s Common Stock reported herein. Because the Fund and the Nexus Fund II 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 II 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 13D/A 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.

(b) The address of the principal business office of each of the Reporting Persons is 200 Berkeley Street, 18th Floor, Boston, MA 02116.

(c) The Fund is a private investment vehicle. RA Capital provides investment management services to the Fund and the Nexus Fund II. The principal occupation of Dr. Kolchinsky and Mr. Shah is investment management.

(d) During the last five years, none of the Reporting Persons has been convicted in a criminal proceeding (excluding traffic violations or similar misdemeanors).

(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.

(f) See Item 6 of the cover pages.

Item 5. Interest in Securities of the Issuer

Item 5 of the Statement is hereby amended and restated in its entirety to read as follows:

(a) and (b) See Items 7-11 of the cover pages above and Item 2.

(c) The following table lists the Reporting Persons' transactions in Common Stock that were effected during the sixty day period prior to the filing of this 13D/A:

| Transaction | Purchaser | Date | No. Shares | Price |
|-------------|-----------|--------------|------------|------------|
| Purchase | The Fund | 21-Sept-2023 | 2,508,691 | \$2.97 (1) |
| Purchase | The Fund | 21-Sept-2023 | 191,309 | \$3.83 (2) |

(1) This transaction was executed in multiple trades at prices ranging from \$2.75 to \$3.74; the price reported above reflects the weighted average purchase price. The reporting person hereby undertakes, upon request, to provide full information to the staff of the Securities and Exchange Commission, the Issuer, or a security holder of the Issuer regarding the number of shares and prices at which these transactions, and all other transactions reported in this 13D/A, were effected.

(2) This transaction was executed in multiple trades at prices ranging from \$3.74 to \$3.9; the price reported above reflects the weighted average purchase price. The reporting person hereby undertakes, upon request, to provide full information to the staff of the Securities and Exchange Commission, the Issuer, or a security holder of the Issuer regarding the number of shares and prices at which these transactions, and all other transactions reported in this 13D/A, were effected.

(d) Not applicable.

(e) Not applicable.

Item 7. Material to Be Filed as Exhibits

Item 7 of the Statement is hereby amended and supplemented as follows:

Exhibit 1 Joint Filing Agreement

Cusip No. 82835W 10 8

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.

Date: September 25, 2023

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 September 25, 2023, 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 ARS Pharmaceuticals, 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
