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

**FORM S-3
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933**

ARS Pharmaceuticals, Inc.

(Exact name of Registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

81-1489190
(I.R.S. Employer
Identification Number)

11682 El Camino Real, Suite 120
San Diego, California 92130
(858) 771-9307

(Address, including zip code, and telephone number, including area code, of Registrant's principal executive offices)

Richard Lowenthal, M.S., MSEL
President and Chief Executive Officer
11682 El Camino Real, Suite 120
San Diego, California 92130
(858) 771-9307

(Name, address, including zip code, and telephone number, including area code, of agent for service)

Copies to:

Kenneth J. Rollins, Esq.
Asa M. Henin, Esq.
Cooley LLP
10265 Science Center Drive
San Diego, California 92121
(858) 550-6000

Alexander Fitzpatrick, J.D.
Chief Legal Officer and Secretary
11682 El Camino Real, Suite 120
San Diego, California 92130
(858) 771-9307

Approximate date of commencement of proposed sale to the public: From time to time after the effective date of this Registration Statement.

If the only securities being registered on this Form are being offered pursuant to dividend or interest reinvestment plans, please check the following box:

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, as amended, other than securities offered only in connection with dividend or interest reinvestment plans, check the following box:

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering:

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a registration statement pursuant to General Instruction I.D. or a post-effective amendment thereto that shall become effective upon filing with the Commission pursuant to Rule 462(e) under the Securities Act, check the following box.

If this Form is a post-effective amendment to a registration statement filed pursuant to General Instruction I.D. filed to register additional securities or additional classes of securities pursuant to Rule 413(b) under the Securities Act, check the following box.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer

Accelerated filer

Non-accelerated filer

Smaller reporting company

Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 7(a)(2)(B) of the Securities Act.

The Registrant hereby amends this registration statement on such date or dates as may be necessary to delay its effective date until the Registrant shall file a further amendment which specifically states that this registration statement shall thereafter become effective in accordance with section 8(a) of the Securities Act of 1933, as amended, or until the registration statement shall become effective on such date as the Securities and Exchange Commission acting pursuant to said section 8(a), may determine.

The information in this prospectus is not complete and may be changed. The selling stockholders may not sell these securities or accept an offer to buy these securities until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities and it is not soliciting offers to buy these securities in any state where such offer or sale is not permitted.

SUBJECT TO COMPLETION, DATED APRIL 20, 2023

PROSPECTUS



64,779,432 Shares Common Stock

This prospectus relates to the proposed resale from time to time by the selling stockholders named herein, together with any of such stockholders' transferees, pledgees, donees or successors, of 64,779,432 shares of our common stock, par value \$0.0001 per share, consisting of (i) 57,229,022 shares of our common stock acquired from us pursuant to an Agreement and Plan of Merger and Reorganization, dated as of July 21, 2022, as amended on August 11, 2022 and October 25, 2022, by and among Silverback Therapeutics, Inc., Sabre Merger Sub, Inc. and ARS Pharmaceuticals, Inc. and (ii) 7,550,410 shares of our common stock that have certain registration rights pursuant to that certain Amended and Restated Investors' Rights Agreement, dated as of September 22, 2020, by and among Silverback Therapeutics, Inc. and certain of its stockholders party thereto.

We are not selling any of our common stock pursuant to this prospectus, and we will not receive any proceeds from the sale of our common stock offered by this prospectus by the selling stockholders.

The selling stockholders may offer and sell or otherwise dispose of the shares of our common stock described in this prospectus from time to time through public or private transactions at prevailing market prices, at prices related to prevailing market prices or at privately negotiated prices. The selling stockholders will bear all underwriting fees, commissions and discounts, if any, attributable to the sales of shares and any transfer taxes. We will bear all other costs, expenses and fees in connection with the registration of the shares. See "Plan of Distribution" for more information about how the selling stockholders may sell or dispose of their shares of our common stock.

Our common stock is listed on The Nasdaq Global Market under the trading symbol "SPRY". On April 19, 2023, the last reported sales price of our common stock on the Nasdaq Global Market was \$6.60 per share.

Investing in our common stock involves a high degree of risk. You should review carefully the risks and uncertainties described under the heading "[Risk Factors](#)" on page 5 of this prospectus, and under similar headings in any amendment or supplement to this prospectus or in the other documents that are incorporated by reference into this prospectus.

NEITHER THE SECURITIES AND EXCHANGE COMMISSION NOR ANY STATE SECURITIES COMMISSION HAS APPROVED OR DISAPPROVED OF THESE SECURITIES OR DETERMINED IF THIS PROSPECTUS IS TRUTHFUL OR COMPLETE. ANY REPRESENTATION TO THE CONTRARY IS A CRIMINAL OFFENSE.

The date of this prospectus is _____, 2023.

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ABOUT THIS PROSPECTUS

Neither we nor the selling stockholders have authorized anyone to provide you with any information other than that contained in, or incorporated by reference into, this prospectus. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. This prospectus is an offer to sell only the shares of our common stock offered hereby, but only under circumstances and in jurisdictions where it is lawful to do so. You should not assume that the information contained in or incorporated by reference in this prospectus is accurate as of any date other than their respective dates. Our business, financial condition, results of operations and prospects may have changed since those dates.

A prospectus supplement may add to, update or change the information contained in this prospectus. You should read both this prospectus and any applicable prospectus supplement together with additional information described below under the heading “Where You Can Find Additional Information.”

Throughout this prospectus, when we refer to the selling stockholders, we are referring to the selling stockholders identified in this prospectus and, as applicable, their permitted transferees or other successors-in-interest that may be identified in a supplement to this prospectus or, if required, a post-effective amendment to the registration statement of which this prospectus is a part.

This prospectus contains summaries of certain provisions contained in some of the documents described herein, but reference is made to the actual documents for complete information. All of the summaries are qualified in their entirety by the actual documents. Copies of some of the documents referred to herein have been filed, will be filed or will be incorporated by reference as exhibits to the registration statement of which this prospectus is a part, and you may obtain copies of those documents as described below under the section titled “Where You Can Find Additional Information.”

Unless the context indicates otherwise, as used in this prospectus, the terms “Company,” “we,” “us,” and “our” refer to (i) Silverback Therapeutics, Inc., for periods prior to the effectiveness of the Merger (as defined below) and (ii) ARS Pharmaceuticals, Inc. for periods following the effectiveness of the Merger.

PROSPECTUS SUMMARY

This summary highlights selected information contained elsewhere in this prospectus or incorporated by reference in this prospectus, and does not contain all of the information that you need to consider in making your investment decision. You should carefully read the entire prospectus, including the risks of investing in our securities discussed under the heading “Risk Factors” contained in this prospectus and under similar headings in the other documents that are incorporated by reference into this prospectus. You should also carefully read the information incorporated by reference into this prospectus, including our financial statements, and the exhibits to the registration statement of which this prospectus is a part.

Company Overview

We are a biopharmaceutical company focused on the development of our novel, potentially first-in-class product candidate, *neffy*[®] (previously referred to as ARS-1) for the emergency treatment of Type I allergic reactions, including anaphylaxis. *neffy* is a proprietary composition of epinephrine with an innovative absorption enhancer called Intravail[®], which allows *neffy* to provide injection-like absorption of epinephrine at a low dose, in a small, easy-to-carry, easy-to-use, rapidly administered and reliable nasal spray.

Type I severe allergic reactions are serious and potentially life-threatening events that can occur within minutes of exposure to an allergen and require immediate treatment with epinephrine injection, the only U.S. Food and Drug Administration (“FDA”)-approved medication for these reactions. While epinephrine injection devices have been shown to be highly effective, there are well published limitations that result in many patients and caregivers delaying or not administering treatment in an emergency situation. These limitations include fear of the needle, lack of portability, needle-related safety concerns, lack of reliability, and complexity of the devices. Delay in treatment can allow the allergic reaction to progress in severity leading to symptoms that seriously impact patient quality of life, to potential need for emergency services and/or hospitalizations, and to life-threatening symptoms or events.

There are approximately 25 to 40 million people in the United States who experience Type I allergic reactions. Of this group, approximately 16 million people have been diagnosed and experienced severe Type I allergic reactions that may lead to anaphylaxis, but only 3.3 million currently have an active epinephrine autoinjector prescription, and of those, only half consistently carry their prescribed autoinjector. Even if patients or caregivers carry an autoinjector, more than half either delay or do not administer the device when needed in an emergency. In aggregate, we estimate that 90% of patients prescribed an epinephrine device are not achieving an optimal treatment outcome today.

We believe *neffy*’s “no needle, no injection” delivery that eliminates needle-related apprehension and injury concerns, with its small pocket size, ease of use, and high reliability would, if approved, increase prescriptions for epinephrine and make it more likely for patients and caregivers to administer epinephrine sooner, achieve more rapid symptom relief and prevent the allergic reaction from progressing to a level of severity that could lead to hospitalization or even death. Data from our studies of *neffy* in more than 600 subjects demonstrated nasally delivered epinephrine reached blood levels comparable to those of already approved epinephrine injectable products.

Our New Drug Application (“NDA”) was accepted for review by FDA in the fourth quarter of 2022 with an anticipated mid-2023 Prescription Drug User Fee Act (“PDUFA”) target action date, and if our NDA is approved, we believe *neffy* will be the first “no needle, no injection” marketed epinephrine product for the emergency treatment of Type I allergic reactions. However, the timing for regulatory approvals is outside of our control and may be delayed and is uncertain.

Merger Agreement

On November 8, 2022, the Company (f/k/a Silverback Therapeutics, Inc.) completed its previously announced merger transaction in accordance with the terms and conditions of the Agreement and Plan of Merger and Reorganization, dated as of July 21, 2022, as amended on August 11, 2022 and October 25, 2022 (the “Merger Agreement”), by and among Silverback Therapeutics, Inc. (“Silverback”), Sabre Merger Sub, Inc., a wholly owned subsidiary of Silverback (“Merger Sub”), and ARS Pharmaceuticals, Inc. (“Private ARS Pharma”), pursuant to which Merger Sub merged with and into Private ARS Pharma, with Private ARS Pharma surviving the merger as a wholly owned subsidiary of Silverback (the “Merger”). Following the consummation of the Merger, the business previously conducted by Private ARS Pharma became the business conducted by the Company.

At the effective time of the Merger, each outstanding share of Private ARS Pharma capital stock (after giving effect to the automatic conversion of all shares of Private ARS Pharma preferred stock into shares of Private ARS Pharma common stock (“preferred stock conversion”) and excluding any shares held as treasury stock by Private ARS Pharma or held or owned by Silverback or any subsidiary of Silverback or Private ARS Pharma and any dissenting shares) was converted into the right to receive 1.1819 shares of Silverback common stock, which resulted in the issuance by Silverback of an aggregate of 57,229,022 shares of Silverback common stock to the stockholders of Private ARS Pharma in a transaction exempt from registration under the Securities Act of 1933, as amended (the “Securities Act”), in reliance on Section 4(a)(2) of the Securities Act and the rules promulgated thereunder. In addition, Silverback assumed each outstanding and unexercised option to purchase Private ARS Pharma common stock and each outstanding and unexercised warrant to purchase Private ARS Pharma capital stock which became options and warrants to purchase shares of Silverback common stock. Concurrently with the execution of the Merger Agreement, certain officers, directors and stockholders of Private ARS Pharma and Silverback entered into lock-up agreements (the “Lock-Up Agreements”), pursuant to which they accepted certain restrictions on transfers of the shares of the Company for the 180-day period following the effective time of the Merger, or May 7, 2023 (the “Lock-Up Period”).

The Merger was treated as a reverse recapitalization under U.S. generally accepted accounting principles. Private ARS Pharma is considered the accounting acquirer for financial reporting purposes.

In connection with the Merger, Silverback changed its name to ARS Pharmaceuticals, Inc. and Private ARS Pharma changed its name to ARS Pharmaceuticals Operations, Inc. The Company’s common stock commenced trading on The Nasdaq Global Market under the ticker symbol “SPRY” on November 9, 2022.

Use of Proceeds

We will not receive any of the proceeds from the sale of shares of our common stock by the selling stockholders in this offering. The selling stockholders will receive all of the proceeds from the sale of shares of our common stock hereunder.

Implications of Being an Emerging Growth Company and Smaller Reporting Company

We are an “emerging growth company” as defined in the Jumpstart Our Business Startups Act of 2012 (“JOBS Act”). For as long as we continue to be an emerging growth company, we may take advantage of exemptions from various reporting requirements that are applicable to other public companies that are not emerging growth companies, including (1) not being required to comply with the independent auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act of 2002, as amended (the “Sarbanes-Oxley Act”), (2) reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements and (3) exemptions from the requirements of holding nonbinding advisory stockholder votes on executive

compensation and stockholder approval of any golden parachute payments not approved previously. In addition, as an emerging growth company, we are only required to provide two years of audited financial statements and two years of selected financial data in our periodic reports. We may take advantage of these exemptions until December 31, 2025 or until we are no longer an “emerging growth company,” whichever is earlier. We will cease to be an emerging growth company prior to the end of such period if certain earlier events occur, including if we become a “large accelerated filer” as defined in Rule 12b-2 under the Securities Exchange Act of 1934, as amended (the “Exchange Act”), our annual gross revenues exceed \$1.235 billion or we issue more than \$1.0 billion of non-convertible debt in any three-year period.

In addition, the JOBS Act provides that an emerging growth company can take advantage of an extended transition period for complying with new or revised accounting standards. This provision allows an emerging growth company to delay the adoption of accounting standards that have different effective dates for public and private companies until those standards would otherwise apply to private companies. We have elected to use this extended transition under the JOBS Act. As a result, our financial statements may not be comparable to the financial statements of other public companies that are not “emerging growth companies.”

We are also a “smaller reporting company” as defined in the Exchange Act. We may continue to be a smaller reporting company even after we are no longer an emerging growth company. We may take advantage of certain of the scaled disclosures available to smaller reporting companies and will be able to take advantage of these scaled disclosures for so long as our voting and non-voting common stock held by non-affiliates is less than \$250.0 million measured on the last business day of our second fiscal quarter, or our annual revenue is less than \$100.0 million during the most recently completed fiscal year and our voting and non-voting common stock held by non-affiliates is less than \$700.0 million measured on the last business day of our second fiscal quarter.

Company Information

We were originally incorporated under the laws of the State of Delaware on January 4, 2016 under the name Silverback Therapeutics, Inc. We subsequently changed our name to ARS Pharmaceuticals, Inc. on November 8, 2022. Our principal executive offices are located at 11682 El Camino Real, Suite 120, San Diego, California 92130, and our telephone number is (858) 771-9307. Our website is www.ars-pharma.com. The information contained in, or that can be accessed through, our website is not part of, and is not incorporated into, this prospectus and should not be considered part of this prospectus.

The Offering

Common stock offered by the selling stockholders	64,779,432 shares of our common stock, par value \$0.0001 per share, consisting of (i) 57,229,022 shares of our common stock acquired from us pursuant to the Merger Agreement and (ii) 7,550,410 shares (the “IRA Shares”) of our common stock that have certain registration rights pursuant to that certain Amended and Restated Investors’ Rights Agreement, dated as of September 22, 2020, by and among Silverback Therapeutics, Inc. and certain of its stockholders party thereto (the “Silverback IRA”).
Use of Proceeds	We will not receive any proceeds from the sale of the shares of common stock covered by this prospectus.
Nasdaq Global Market symbol	SPRY
Risk Factors	See “Risk Factors” on page 5 of this prospectus, and under similar headings in the other documents that are incorporated by reference into this prospectus for a discussion of the factors you should consider before deciding to invest in shares of our common stock.

RISK FACTORS

Investing in our common stock involves a high degree of risk. Before deciding whether to invest in our common stock, you should consider carefully the risks and uncertainties described under the heading “Risk Factors” contained in our Annual Report on Form 10-K for the fiscal year ended December 31, 2022, filed with the Securities and Exchange Commission (“SEC”) on March 23, 2023, as updated by our other filings we make with the SEC, which are incorporated by reference into this prospectus, together with other information in this prospectus and the documents incorporated by reference. The risks described in these documents are not the only ones we face, but those that we consider to be material. There may be other unknown or unpredictable economic, business, competitive, regulatory or other factors that could have material adverse effects on our future results. Past financial performance may not be a reliable indicator of future performance, and historical trends should not be used to anticipate results or trends in future periods. If any of these risks actually occur, our business, financial condition, results of operations or cash flow could be seriously harmed. This could cause the trading price of our common stock to decline, resulting in a loss of all or part of your investment. Please also read carefully the section below titled “Special Note Regarding Forward-Looking Statements.”

Risks Related to this Offering

The selling stockholders named in this prospectus hold a significant portion of our total outstanding shares of common stock and any sale of such shares into the market in the future could cause the market price of our common stock to drop significantly.

The selling stockholders named in this prospectus may offer and sell up to 64,779,432 shares of our common stock, which represents approximately 68.6% of our total outstanding shares of common stock as of March 31, 2023. Certain of these shares are subject to lock-up restrictions pursuant to the Lock-Up Agreements that will expire on May 7, 2023. Sales of a substantial number of shares of our common stock in the public market by the selling stockholders named in this prospectus, or the perception that these sales might occur, could depress the market price of our common stock and could impair our ability to raise capital through the sale of additional equity securities. We are unable to predict the effect that sales by the selling stockholders may have on the prevailing market price of our common stock.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus and the documents we have filed with the SEC that are incorporated by reference contain “forward-looking statements” within the meaning of Section 27A of the Securities Act and Section 21E of the Exchange Act. These statements relate to future events or to our future operating or financial performance and involve known and unknown risks, uncertainties and other factors that may cause our actual results, performance or achievements to be materially different from any future results, performances or achievements expressed or implied by the forward-looking statements. Forward-looking statements may include, but are not limited to, statements about:

- any statements regarding future economic conditions or performance;
- research and development plans, including planned clinical trials, for *neffy*, including for additional indications;
- the design and potential benefits of *neffy*;
- our plans to submit a supplemental NDA to the FDA and a post approval variation to the European Medicines Agency (“EMA”) for 1.0 mg *neffy* and the timing thereof;
- our expectations regarding the timing for FDA review of our NDA for *neffy*, including the anticipated PDUFA target action date;
- our plans to submit regulatory filings for *neffy* in Japan and China in collaboration with our partners and the timing thereof;
- the expected timing for regulatory review decisions for *neffy*;
- the timing of the commercial launch of *neffy*, if approved;
- the commercial potential of and commercialization strategy for *neffy*;
- the size of the markets for *neffy* and any other product candidates, the projected growth thereof, and our ability to capture and grow those markets;
- the rate and degree of market acceptance of *neffy* and any other product candidates;
- our expected competitive position;
- our expectations regarding our ability to achieve gross profit margins similar to small molecule drugs;
- our potential to become the standard in treatment and transform the treatment of allergic reactions;
- the likelihood of *neffy* attaining favorable coverage;
- the expected intellectual property protection for *neffy*;
- legislative and regulatory developments in the United States and foreign countries;
- estimates regarding anticipated operating losses, capital requirements and needs for additional funds;
- our ability to obtain, maintain and successfully enforce adequate patent and other intellectual property protection for *neffy* or any future product candidate; and
- statements of belief and any statement of assumptions underlying any of the foregoing.

In some cases, you can identify forward-looking statements by terms such as “anticipate,” “believe,” “contemplate,” “continue,” “could,” “estimate,” “expect,” “intend,” “may,” “plan,” “potential,” “predict,” “project,” “seek,” “should,” “target,” “will,” “would,” and similar expressions (including their use in the negative) intended to identify forward-looking statements. These statements reflect our current views with respect to future events and are based on assumptions and subject to risks and uncertainties. In addition, statements that “we believe” and similar statements reflect our beliefs and opinions on the relevant subject. These

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statements are based upon information available to us as of the date of the document containing the applicable statement, and while we believe such information forms a reasonable basis for such statements, such information may be limited or incomplete, and our statements should not be read to indicate that we have conducted an exhaustive inquiry into, or review of, all potentially available relevant information. Given these uncertainties, you should not place undue reliance on these forward-looking statements. We discuss many of these risks in greater detail under the heading “Risk Factors” in our SEC filings, and may provide additional information in any applicable prospectus supplement. Also, these forward-looking statements represent our estimates and assumptions only as of the date of the document containing the applicable statement.

You should read this prospectus, the registration statement of which this prospectus is a part, the documents incorporated by reference herein, and any applicable prospectus supplement completely and with the understanding that our actual future results may be materially different from what we expect. We qualify all of the forward-looking statements in the foregoing documents by these cautionary statements. Unless required by law, we undertake no obligation to update or revise any forward-looking statements to reflect new information or future events or developments. Thus, you should not assume that our silence over time means that actual events are bearing out as expressed or implied in such forward-looking statements.

USE OF PROCEEDS

All the shares of our common stock to be sold pursuant to this prospectus will be sold by the selling stockholders. We will not receive any of the proceeds from such sales.

The selling stockholders will bear all fees, commissions and discounts, if any, attributable to the sales of shares and any transfer taxes. We will bear all other costs, expenses and fees in connection with the registration of shares of our common stock to be sold by the selling stockholders pursuant to this prospectus.

SELLING STOCKHOLDERS

We have prepared this prospectus to allow the selling stockholders to offer and sell from time to time up to 64,779,432 shares of our common stock, consisting of (i) 57,229,022 shares of our common stock acquired from us pursuant to the Merger Agreement and (ii) 7,550,410 shares of our common stock that have certain registration rights pursuant to the Silverback IRA.

The following table sets forth (i) the name of each selling stockholder; (ii) the number of shares beneficially owned by each of the selling stockholders; (iii) the number of shares that may be offered under this prospectus; and (iv) the number of shares of common stock beneficially owned by each of the selling stockholders assuming all of the shares covered hereby are sold. We do not know how long the selling stockholders will hold the shares before selling them. Except as disclosed below in “—Relationships with Selling Stockholders”, we currently have no agreements, arrangements or understandings with the selling stockholders regarding the sale or other disposition of any shares.

The information set forth in the table below is based upon information obtained from the selling stockholders. Beneficial ownership of the selling stockholders is determined in accordance with Rule 13d-3(d) under the Exchange Act. The percentage of shares beneficially owned prior to, and after, the offering is based on 94,448,028 shares of our common stock outstanding as of March 31, 2023.

As used in this prospectus, the term “selling stockholders” includes the selling stockholders listed in the table below, together with any additional selling stockholders listed in a prospectus supplement, and their donees, pledgees, assignees, transferees, distributees and successors-in-interest that receive shares in any non-sale transfer after the date of this prospectus.

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Name of Selling Stockholder ⁽¹⁾	Beneficial Ownership Prior to This Offering		Maximum Number of Shares Being Offered ⁽²⁾	Beneficial Ownership After This Offering	
	Shares	% of Total Voting Power Before This Offering		Shares	% of Total Voting Power After This Offering
Entities or Persons affiliated with OrbiMed Advisors LLC ⁽³⁾	8,812,157	9.3%	7,550,410	1,261,747	1.3%
Entities or Persons affiliated with Baker Bros ⁽⁴⁾	2,006,451	2.1%	2,006,451	—	—
Entities or Persons affiliated with Deerfield Management ⁽⁵⁾	11,077,927	11.7%	11,077,927	—	—
Entities or Persons affiliated with RA Capital Management ⁽⁶⁾	3,009,678	3.2%	3,009,678	—	—
Entities or Persons affiliated with SR One Capital ⁽⁷⁾	4,012,903	4.2%	4,012,903	—	—
Richard Lowenthal, M.S., MSEL ⁽⁸⁾	7,422,432	7.9%	6,949,672	472,760	*
Sarina Tanimoto, M.D., M.B.A. ⁽⁹⁾	6,265,170	6.6%	6,099,704	165,466	*
Robert G. Bell, Ph.D. ⁽¹⁰⁾	8,563,965	9.1%	8,463,504	100,461	*
Justin Chakma ⁽¹¹⁾	840,133	*	236,380	603,753	*
The Pratik Shah Living Trust dated June 15, 2011 ⁽¹²⁾	10,510,774	11.1%	10,156,204	354,570	*
The 2019 Michael Kelly Irrevocable Deed of Trust ⁽¹³⁾	271,837	*	83,225	188,612	*
Dana S. McGowan	385,710	*	385,710	—	—
GC&H Investments, L.P. ⁽¹⁴⁾	20,064	*	20,064	—	—
Alexander T. Lowenthal Irrevocable Trust, UDT 9/23/2019 ⁽¹⁵⁾	945,520	1.0%	945,520	—	—
Hannah C. Lowenthal Irrevocable Trust, UDT 9/23/2019 ⁽¹⁶⁾	945,520	1.0%	945,520	—	—
Rey T. Lowenthal Irrevocable Trust, UDT 9/23/2019 ⁽¹⁷⁾	945,520	1.0%	945,520	—	—
Samuel T. Lowenthal Irrevocable Trust, UDT 9/23/2019 ⁽¹⁸⁾	945,520	1.0%	945,520	—	—
Sarah L. Lowenthal Irrevocable Trust, UDT 9/23/2019 ⁽¹⁹⁾	945,520	1.0%	945,520	—	—

* Denotes less than 1%.

(1) Certain of the selling stockholders are current employees or affiliates of the Company. See “—Relationships with Selling Stockholders” below for more information.

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- (2) The number of shares of our common stock in the column “Maximum Number of Shares Being Offered” represents all of the shares of our common stock that a selling stockholder may offer and sell from time to time under this prospectus.
- (3) Consists of (i) 7,519,187 shares of common stock held by OrbiMed Private Investments VI, LP (“OPI VI”), (ii) 269,323 shares of common stock held by OPI VI – IP Holdco LLC (“HoldCo”), (iii) 952,377 shares of common stock held by OrbiMed Partners Master Fund Limited (“OPM”) and (iv) 71,270 shares of common stock that may be acquired upon exercise of options held by Peter A. Thompson, M.D. OrbiMed Capital GP VI LLC (“GP VI”) is the general partner of OPI VI. OPI VI—IP TopCo LLC (“TopCo”) is the sole member of HoldCo. OrbiMed Private Investments VI—IP, LP (“OPI VI IP”) is the sole member of TopCo. GP VI is the general partner of OPI VI IP. OrbiMed Advisors LLC (“Advisors”) is the managing member of GP VI. By virtue of such relationships, GP VI and Advisors may be deemed to have voting and investment power with respect to the shares held by OPI VI and HoldCo and as a result may be deemed to have beneficial ownership of such shares. Advisors exercises investment and voting power through a management committee comprised of Carl L. Gordon, Sven H. Borho, and W. Carter Neild. OrbiMed Capital LLC (“OrbiMed Capital”) is the investment advisor of OPM. OrbiMed Capital exercises investment and voting power through a management committee comprised of Carl L. Gordon, Sven H. Borho, and W. Carter Neild. Peter A. Thompson, a member of Advisors, is a member of the board of directors of the Company. From time to time, Dr. Thompson may receive stock options or other awards of equity-based compensation pursuant to the Company’s compensation arrangements for non-employee directors. Pursuant to an agreement with Advisors and GP VI, Dr. Thompson is obligated to transfer any securities issued under any such stock options or other awards, or the economic benefit thereof, to Advisors and GP VI, which will in turn ensure that such securities or economic benefits are provided to OPI VI. Each of GP VI, Advisors, OrbiMed Capital, the members of the management committee of Advisors and OrbiMed Capital, and Dr. Thompson disclaims beneficial ownership of the shares held by OPI VI, HoldCo, OPM, and Dr. Thompson, as applicable, except to the extent of its or his pecuniary interest therein if any. The number in the column “Maximum Number of Shares Being Offered” includes (i) 7,281,087 shares held by OPI VI and 269,323 shares held by HoldCo.
- (4) Consists of (i) 147,601 shares held by 667, L.P. and (ii) 1,858,850 shares held by Baker Brothers Life Sciences, L.P. (“Baker Bros Life Sciences”). Baker Bros. Advisors LP (“Baker Bros Advisors”) is the management company and investment advisor to 667, LP and Baker Bros Life Sciences and has sole voting and investment power with respect to the shares held by 667, LP and Baker Bros Life Sciences. Baker Bros. Advisors (GP) LLC (“Baker Bros Advisors GP”) is the sole general partner of Baker Bros Advisors. Julian C. Baker and Felix J. Baker are managing members of Baker Bros Advisors GP. Baker Bros Advisors GP, Felix J. Baker, Julian C. Baker and Baker Bros Advisors may be deemed to be beneficial owners of the securities directly held by 667, LP and Baker Bros Life Sciences.
- (5) Consists of (i) 5,538,964 shares held by Deerfield Private Design Fund III, LP and (ii) 5,538,963 shares held by Deerfield Private Design Fund IV, LP. The general partner of Deerfield Private Design Fund III, L.P. is Deerfield Mgmt III, L.P. The general partner of Deerfield Private Design Fund IV, L.P. is Deerfield Mgmt IV, L.P. Deerfield Management Company, L.P. is an investment manager of each of Deerfield Private Design Fund III, L.P and Deerfield Private Design Fund IV, L.P. James E. Flynn is the sole member of the general partner of each Deerfield Mgmt III, L.P., Deerfield Mgmt IV, L.P. and Deerfield Management Company, L.P. Deerfield Mgmt III, L.P., Deerfield Management Company, L.P. and James E. Flynn may be deemed to beneficially own the securities held by Deerfield Private Design Fund III L.P. Deerfield Mgmt IV, L.P., Deerfield Management Company, L.P. and James E. Flynn may be deemed to beneficially own the securities held by Deerfield Private Design Fund IV L.P.

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- (6) Consists of (i) 2,106,774 shares held by RA Capital Healthcare Fund, L.P. (“RA Healthcare”) and (ii) 902,904 shares held by RA Capital Nexus Fund II, L.P. (“RA Nexus II Fund”). RA Capital Management, L.P. is the investment manager for RA Healthcare and RA Nexus II Fund. The general partner of RA Capital Management, L.P. is RA Capital Management GP, LLC, of which Peter Kolchinsky and Rajeev Shah are the managing members. RA Capital Management, L.P., RA Capital Management GP, LLC, Peter Kolchinsky and Rajeev Shah may be deemed to have voting and investment power over the shares held of record by RA Healthcare and RA Nexus II Fund. RA Capital Management, L.P., RA Capital Management GP, LLC, Peter Kolchinsky and Rajeev Shah disclaim beneficial ownership of such shares, except to the extent of any pecuniary interest therein.
- (7) Consists of (i) 3,009,677 shares held by SR One Capital Fund II Aggregator, LP (“SR One Capital Fund II”) and (ii) 1,003,226 shares held by SR One Co-Invest VI, LLC (“SR One Co-Invest VI”). SR One Capital Partners II, LP (“SR One Capital Fund II GP”) is the general partner of SR One Capital Fund II. SR One Co-Invest VI Manager, LLC (“SR One Co-Invest VI Manager”) is the managing member of SR One Co-Invest VI. SR One Capital Management, LLC (“SR One Capital Management”) is the general partner of SR One Capital Fund II GP and the managing member of SR One Co-Invest VI Manager. Simeon George is the managing member of SR One Capital Management and has voting and dispositive power over the shares held by SR One Capital Fund II and SR One Co-Invest VI. Each of the foregoing indirect holders disclaim beneficial ownership of the shares held by SR One Capital Fund II and SR One Co-Invest VI, except to the extent of their actual pecuniary interest therein.
- (8) Consists of (i) 5,176,822 shares held by Mr. Lowenthal, (ii) 1,772,850 shares held by Richard E. Lowenthal Charitable Remainder UniTrust dtd 1/7/2020 and (iii) 472,760 shares that may be acquired within 60 days of March 31, 2023 pursuant to the exercise of stock options held by Mr. Lowenthal, 192,060 shares of which will be unvested but exercisable as of May 30, 2023 and to the extent such shares are unvested as of a given date, such shares will remain subject to a right of repurchase held by the Company. Mr. Lowenthal is the trustee of the Richard E. Lowenthal Charitable Remainder UniTrust dtd 1/7/2020 and in such capacity has the sole power to vote and dispose of the shares held by such trust. The number in the column “Maximum Number of Shares Being Offered” includes the shares listed in (i) and (ii). Does not include the shares set forth in footnote (9) below. Dr. Tanimoto is Mr. Lowenthal’s spouse and Mr. Lowenthal may be deemed to share voting and dispositive power over the shares beneficially owned by Dr. Tanimoto.
- (9) Consists of (i) 4,326,854 shares held by Dr. Tanimoto (ii) 1,772,850 shares held by Sarina Tanimoto Charitable Remainder UniTrust dtd 1/7/2020 and (iii) 165,466 shares that may be acquired within 60 days of March 31, 2023 pursuant to the exercise of stock options held by Dr. Tanimoto, 67,221 shares of which will be unvested but exercisable as of May 30, 2023 and to the extent such shares are unvested as of a given date, such shares will remain subject to a right of repurchase held by the Company. Dr. Tanimoto is the trustee of the Sarina Tanimoto Charitable Remainder UniTrust dtd 1/7/2020 and in such capacity has the sole power to vote and dispose of the shares held by such trust. The number in the column “Maximum Number of Shares Being Offered” includes the shares listed in (i) and (ii). Does not include the shares set forth in footnote (8) above. Mr. Lowenthal is Dr. Tanimoto’s spouse and Dr. Tanimoto may be deemed to share voting and dispositive power over the shares beneficially owned by Mr. Lowenthal.
- (10) Consists of (i) 8,463,504 shares held by Dr. Bell and (ii) 100,461 shares that may be acquired within 60 days of March 31, 2023 pursuant to the exercise of stock options held by Dr. Bell, 36,566 shares of which will be unvested but exercisable as of May 30, 2023 and to the extent such shares are unvested as of a given date, such shares will remain subject to a right of repurchase held by the Company. The number in the column “Maximum Number of Shares Being Offered” includes the shares listed in (i).
- (11) Consists of (i) 236,380 shares held by Mr. Chakma and (ii) 603,753 shares that may be acquired within 60 days of March 31, 2023 pursuant to the exercise of stock options held by Mr. Chakma, 71,326 shares of which will be unvested but exercisable as of May 30, 2023 and to the extent such shares are unvested as of a given date, such shares will remain subject to a right of repurchase held by the Company. The number in the column “Maximum Number of Shares Being Offered” includes the shares listed in (i).

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- (12) Consists of (i) 10,156,204 shares held by The Pratik Shah Living Trust dated June 15, 2011 and (ii) 354,570 shares that may be acquired within 60 days of March 31, 2023 pursuant to the exercise of stock options held by Pratik Shah, Ph.D., 187,135 shares of which will be unvested but exercisable as of May 30, 2023 and to the extent such shares are unvested as of a given date, such shares will remain subject to a right of repurchase held by the Company. Dr. Shah is the trustee of The Pratik Shah Living Trust dated June 15, 2011 and in such capacity has the sole power to vote and dispose of the shares held by such trust. The number in the column “Maximum Number of Shares Being Offered” includes the shares listed in (i).
- (13) Consists of (i) 83,225 shares held by The 2019 Michael Kelly Irrevocable Deed of Trust and (ii) 188,612 shares that may be acquired within 60 days of March 31, 2023 pursuant to the exercise of stock options held by Michael Kelly, 62,379 shares of which will be unvested but exercisable as of May 30, 2023 and to the extent such shares are unvested as of a given date, such shares will remain subject to a right of repurchase held by the Company. Joan C. Kelly is the trustee of The 2019 Michael Kelly Irrevocable Deed of Trust and in such capacity has the sole power to vote and dispose of the shares held by such trust. The number in the column “Maximum Number of Shares Being Offered” includes the shares listed in (i). Mrs. Kelly is Mr. Kelly’s spouse and Mr. Kelly may be deemed to share voting and dispositive power over the shares held by The 2019 Michael Kelly Irrevocable Deed of Trust.
- (14) Nick Guerere has voting and dispositive power over the shares held by GC&H Investments, L.P.
- (15) Charles Schwab is the trustee of the Alexander T. Lowenthal Irrevocable Trust, UDT 9/23/2019 and in such capacity has voting and dispositive power over the shares held by the Alexander T. Lowenthal Irrevocable Trust, UDT 9/23/2019.
- (16) Charles Schwab is the trustee of the Hannah C. Lowenthal Irrevocable Trust, UDT 9/23/2019 and in such capacity has voting and dispositive power over the shares held by the Hannah C. Lowenthal Irrevocable Trust, UDT 9/23/2019.
- (17) Charles Schwab is the trustee of the Rey T. Lowenthal Irrevocable Trust, UDT 9/23/2019 and in such capacity has voting and dispositive power over the shares held by the Rey T. Lowenthal Irrevocable Trust, UDT 9/23/2019.
- (18) Charles Schwab is the trustee of the Samuel T. Lowenthal Irrevocable Trust, UDT 9/23/2019 and in such capacity has voting and dispositive power over the shares held by the Samuel T. Lowenthal Irrevocable Trust, UDT 9/23/2019.
- (19) Charles Schwab is the trustee of the Sarah L. Lowenthal Irrevocable Trust, UDT 9/23/2019 and in such capacity has voting and dispositive power over the shares held by the Sarah L. Lowenthal Irrevocable Trust, UDT 9/23/2019.

Relationships with Selling Stockholders

Except as described below, none of the selling stockholders has, or within the past three years has had, any position, office or other material relationship with us.

Executive Officers, Directors and Employees

Peter Thompson, M.D., Dr. Thompson is a member at OrbiMed Advisors LLC, an investment firm. Dr. Thompson is the co-founder of Silverback and has served on our board of directors since April 2016, including as the Chair of Silverback from April 2016 to the closing of the Merger in November 2022. In addition, Dr. Thompson served as the Chief Executive Officer of Silverback from April 2016 to April 2020.

Jonathan Leff, Mr. Leff, a partner at Deerfield Management Company, L.P. has served on our board of directors since the closing of the Merger in November 2022 and previously served as a member of the board of directors of Private ARS Pharma from September 2018 to November 2022.

Peter Kolchinsky, Ph.D., Dr. Kolchinsky, a founder and Managing Partner at RA Capital Management, L.P., has served on our board of directors since the closing of the Merger in November 2022 and previously served as a member of the board of directors of Private ARS Pharma from August 2021 to November 2022.

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Rajeev Dadoo, Ph.D., Dr. Dadoo, a managing partner at SR One Capital Management, L.P., has served on our board of directors since the closing of the Merger in November 2022 and previously served as a member of the board of directors of Private ARS Pharma from August 2021 to November 2022.

Richard Lowenthal, M.S., MSEL, Mr. Lowenthal has served as our President, Chief Executive Officer and member of our board of directors since the closing of the Merger in November 2022. He is a co-founder of Private ARS Pharma and served as its President and member of its board of directors since its inception in August 2015 and as its Chief Executive Officer since September 2018.

Sarina Tanimoto, M.D., M.B.A., Dr. Tanimoto has served as our Chief Medical Officer since the closing of the Merger in November 2022. Dr. Tanimoto is a co-founder of Private ARS Pharma and has served as its Chief Medical Officer since September 2018.

Robert Bell, Ph.D., Dr. Bell has served as our Chief Science Officer since the closing of the Merger in November 2022. Dr. Bell is a co-founder of Private ARS Pharma and has served as its Chief Science Officer since February 2019.

Justin Chakma, Mr. Chakma has served as our Chief Business Officer since the closing of the Merger in November 2022. Mr. Chakma has served as the Chief Business Officer of Private ARS Pharma since June 2019.

Pratik Shah, Ph.D., Dr. Shah has served as our Chair and member of our board of directors since the closing of the Merger in November 2022. Dr. Shah previously served on the board of directors of Private ARS Pharma from April 2016 to November 2022 and was appointed as its first Chair of the board of directors in September 2018.

Michael Kelly, Mr. Kelly has served on our board of directors since the closing of the Merger in November 2022 and previously served on the board of directors of Private ARS Pharma from May 2019 to November 2022.

Dana McGowan, Ms. McGowan served as the Chief Financial Officer of Private ARS Pharma from October 2018 to February 2022.

Indemnification Agreements

We have entered into indemnification agreements with certain of our current and former directors and executive officers, including former directors and executive officers of Silverback and Private ARS Pharma. Our amended and restated certificate of incorporation and our amended and restated bylaws provides that we will indemnify our directors and officers to the fullest extent permitted by applicable law.

Silverback Related Party Transactions

Merger Agreement

On November 8, 2022, the Company (f/k/a Silverback) completed its previously announced Merger in accordance with the terms and conditions of the Merger Agreement, pursuant to which Merger Sub merged with and into Private ARS Pharma, with Private ARS Pharma surviving the merger as a wholly owned subsidiary of Silverback (the "Merger"). Following the consummation of the Merger, the business previously conducted by Private ARS Pharma became the business conducted by the Company.

At the effective time of the Merger, each outstanding share of Private ARS Pharma capital stock (after giving effect to the preferred stock conversion and excluding any shares held as treasury stock by Private ARS Pharma or held or owned by Silverback or any subsidiary of Silverback or Private ARS Pharma and any dissenting shares) was converted into the right to receive 1.1819 shares of Silverback common stock, which resulted in the issuance by Silverback of an aggregate of 57,229,022 shares of Silverback common stock to the

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stockholders of Private ARS Pharma in a transaction exempt from registration under the Securities Act in reliance on Section 4(a)(2) of the Securities Act and the rules promulgated thereunder, all of which are registered for resale pursuant to the registration statement of which this prospectus forms a part. In addition, Silverback assumed each outstanding and unexercised option to purchase Private ARS Pharma common stock and each outstanding and unexercised warrant to purchase Private ARS Pharma capital stock which became options and warrants to purchase shares of Silverback common stock. Concurrently with the execution of the Merger Agreement, certain officers, directors and stockholders of Private ARS Pharma and Silverback entered into the Lock-Up Agreements, pursuant to which they accepted certain restrictions on transfers of the shares of the Company for the Lock-Up Period.

Silverback Investors' Rights, Management Rights, Voting and Co-Sale Agreements

In connection with Silverback's redeemable convertible preferred stock financings, Silverback entered into voting and right of first refusal, and co-sale agreements and the Silverback IRA containing registration rights, information rights, rights of first offer, voting rights and rights of first refusal, among other things, with certain holders of our capital stock. Entities or persons affiliated with OrbiMed Advisors LLC, one of the selling stockholders listed above, was a party to these agreements.

These stockholder agreements terminated upon the completion of Silverback's initial public offering, except for the registration rights granted under the Silverback IRA, which will terminate upon the earliest of (i) with respect to any holder who then holds an amount of registrable securities that is equal to less than one percent (1%) of our outstanding securities and may sell all such registrable securities under Rule 144 during any 90 day period, and (ii) December 8, 2024. Entities or persons affiliated with OrbiMed Advisors LLC requested that we register the IRA Shares pursuant to the Silverback IRA.

Silverback Series C Redeemable Convertible Preferred Stock Financing

In September 2020, Silverback entered into a Series C redeemable convertible preferred stock purchase agreement with various investors, pursuant to which Silverback issued and sold an aggregate of 24,926,685 shares of its Series C redeemable convertible preferred stock at a price per share of \$3.41 for gross proceeds of \$84.9 million.

The table below sets forth the number of shares of Silverback's Series C redeemable convertible preferred stock purchased by entities or persons affiliated with certain selling stockholders. Each share of Silverback's Series C redeemable convertible preferred stock in the table below converted into one share of Silverback common stock upon the closing of Silverback's initial public offering.

<u>Name</u>	<u>Series C Redeemable Convertible Preferred Stock (#)</u>	<u>Aggregate Purchase Price (\$)</u>
Entities or Persons Affiliated with Selling Stockholders:		
OrbiMed Private Investments VI, LP	3,918,279	13,361,331

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Private ARS Pharma Related Party Transactions

Private ARS Pharma Series D Convertible Preferred Stock Financing

In August 2021, Private ARS Pharma entered into a Series D preferred stock purchase agreement with various investors, pursuant to which Private ARS Pharma issued and sold an aggregate of 9,337,066 shares of its Series D convertible preferred stock at a price per share of approximately \$5.89 for gross proceeds of approximately \$55 million.

The table below sets forth the number of shares of Private ARS Pharma Series D convertible preferred stock purchased by entities or persons affiliated with certain selling stockholders.

Name	Series D Convertible Preferred Stock (#)	Aggregate Purchase Price (\$)
Entities or Persons affiliated with Deerfield Management ⁽¹⁾	1,680,672	9,899,998.42
Entities or Persons affiliated with SR One Capital ⁽²⁾	3,395,297	19,999,996.98
Entities or Persons affiliated with RA Capital Management. ⁽³⁾	2,546,473	14,999,999.22
Entities or Persons affiliated with Baker Bros ⁽⁴⁾	1,697,648	9,999,995.56
GC&H Investments, L.P.	16,976	99,997.13

(1) Consists of shares of Private ARS Pharma Series D convertible preferred stock purchased by Deerfield Private Design Fund III, L.P. and Deerfield Private Design Fund IV, L.P.

(2) Consists of shares of Private ARS Pharma Series D convertible preferred stock purchased by SR One Capital Fund II Aggregator, L.P. and SR One Co-Invest VI, LLC.

(3) Consists of shares of Private ARS Pharma Series D convertible preferred stock purchased by RA Capital Healthcare Fund, L.P. and RA Capital Nexus Fund II, L.P.

(4) Consists of shares of Private ARS Pharma Series D convertible preferred stock purchased by 667, L.P. and Baker Brothers Life Sciences, L.P.

Private ARS Pharma Investor Rights, Management, Voting and Co-Sale Agreements

In connection with the Private ARS Pharma Series D preferred stock financing, Private ARS Pharma entered into amended and restated investor rights, voting and right of first refusal and co-sale agreements containing registration rights, information rights, rights of first offer, voting rights and rights of first refusal, among other things, with certain holders of Private ARS Pharma capital stock. Certain entities or persons affiliated with our selling stockholders were parties to these agreements including entities or persons affiliated with Baker Bros, entities or persons affiliated with Deerfield Management, entities or persons affiliated with RA Capital Management, entities or persons affiliated with SR One Capital, Mr. Lowenthal, Dr. Tanimoto, Dr. Bell, The Pratik Shah Living Trust dated June 15, 2011 and GC&H Investments, L.P. These agreements terminated immediately prior to the closing of the Merger.

Private ARS Pharma Consulting Arrangements

In September 2018, Private ARS Pharma entered into a consulting agreement (the “Marlinspike Consulting Agreement”) with Marlinspike Group, LLC (“Marlinspike”). Dr. Shah, an affiliate of The Pratik Shah Living Trust dated June 15, 2011, one of the selling stockholders, is the President of Marlinspike, which provides management and business consulting services as well as business development support to us for a monthly fee of \$20,000. Mr. Chakma, a selling stockholder, is a consultant of Marlinspike. The Marlinspike Consulting Agreement had an initial term of one year from the effective date and automatically renews for one-month terms.

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The Marlinspike Consulting Agreement may be terminated by either party upon 14 days' prior written notice. Private ARS Pharma incurred aggregate fees of \$240,000 to Marlinspike for the years ended December 31, 2020 and 2021. For the year ended December 31, 2022, Private ARS Pharma incurred aggregate fees of \$240,000 to Marlinspike pursuant to the Marlinspike Consulting Agreement. For the three months ended March 31, 2023, we incurred aggregate fees \$60,000 to Marlinspike pursuant to the Marlinspike Consulting Agreement.

In September 2015, Private ARS Pharma entered into a consulting agreement (the "2015 PLC Consulting Agreement") with Pacific-Link Consulting LLC ("PLC"). Mr. Lowenthal and Dr. Tanimoto, each a selling stockholder, are the owners of PLC, which provides general advice and assistance to us with respect to the development of current and future drug products. In addition, Sarah Lowenthal, the daughter of Mr. Lowenthal and Dr. Tanimoto and beneficiary of The Sarah L. Lowenthal Irrevocable Trust, UDT 9/23/2019, a selling stockholder, is employed by PLC. Private ARS Pharma incurred aggregate fees of approximately \$1.3 million and \$1.1 million to PLC for the years ended December 31, 2020 and 2021, respectively, pursuant to the 2015 PLC Consulting Agreement. On July 1, 2022, Private ARS Pharma entered into a revised consulting agreement with PLC (the "2022 PLC Consulting Agreement") that superseded the 2015 PLC Consulting Agreement. The 2022 PLC Consulting Agreement has an initial term through July 1, 2023 and automatically renews for one-year terms, unless either party provides notice to the other party that the agreement will be discontinued. The 2022 PLC Consulting Agreement may be terminated by either party upon 60 days' prior written notice. For the year ended December 31, 2022, Private ARS Pharma incurred aggregate fees of \$2.1 million to PLC pursuant to the 2015 PLC Consulting Agreement and the 2022 PLC Consulting Agreement. For the three months ended March 31, 2023, we incurred aggregate fees of \$0.6 million to PLC pursuant to the 2022 PLC Consulting Agreement.

PLAN OF DISTRIBUTION

We are registering the shares of our common stock held by the selling stockholders from time to time after the date of this prospectus. We will not receive any of the proceeds from the sale by the selling stockholders of the shares of our common stock. The selling stockholders will bear all fees, commissions and discounts, if any, attributable to the sales of shares and any transfer taxes. We will bear all other costs, expenses and fees in connection with the registration of shares of our common stock to be sold by the selling stockholders pursuant to this prospectus.

The term “selling stockholder” includes donees, pledgees, transferees or other successors in interest selling securities received after the date of this prospectus from a selling stockholder as a gift, pledge, partnership distribution or other transfer. The selling stockholders will act independently of us in making decisions with respect to the timing, manner and size of each sale. Such sales may be made on the principal trading market for our common stock or any other stock exchange, market or trading facility on which our common stock is traded or in private transactions. These sales may be at fixed or negotiated prices. A selling stockholder may use any one or more of the following methods when selling securities:

- ordinary brokerage transactions and transactions in which the broker dealer solicits purchasers;
- block trades in which the broker dealer will attempt to sell the common stock as agent but may position and resell a portion of the block as principal to facilitate the transaction;
- purchases by a broker dealer as principal and resale by the broker dealer for its account;
- an exchange distribution in accordance with the rules of the applicable exchange;
- privately negotiated transactions;
- settlement of short sales;
- distribution to employees, members, partners, stockholders, or other equityholders of the selling stockholders;
- in transactions through broker dealers that agree with the selling stockholders to sell a specified number of such common stock at a stipulated price per security;
- through the writing or settlement of options or other hedging transactions, whether through an options exchange or otherwise;
- by pledge to secured debts and other obligations;
- delayed delivery arrangements;
- to or through underwriters or broker-dealers;
- in “at the market” offerings, as defined in Rule 415 under the Securities Act, at negotiated prices, at prices prevailing at the time of sale or at prices related to such prevailing market prices, including sales made directly on a national securities exchange or sales made through a market maker other than on an exchange or other similar offerings through sales agents;
- in privately negotiated transactions;
- in options transactions;
- a combination of any such methods of sale; or
- any other method permitted pursuant to applicable law.

The selling stockholders may also sell the shares of our common stock under Rule 144 or any other exemption from registration under the Securities Act, if available, rather than under this prospectus.

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In addition, a selling stockholder that is an entity may elect to make a pro rata in-kind distribution of securities to its members, partners, stockholders, or other equityholders pursuant to the registration statement of which this prospectus is a part by delivering a prospectus with a plan of distribution. Such members, partners, stockholders, or other equityholders would thereby receive freely tradeable securities pursuant to the distribution through a registration statement. To the extent a distributee is our affiliate (or to the extent otherwise required by law), we may, at our option, file a prospectus supplement in order to permit the distributees to use the prospectus to resell the securities acquired in the distribution.

Broker-dealers engaged by the selling stockholders may arrange for other brokers-dealers to participate in sales. Broker-dealers may receive commissions or discounts from the selling stockholders (or, if any broker-dealer acts as agent for the purchaser of our common stock, from the purchaser) in amounts to be negotiated, but, except as set forth in a supplement to this prospectus, in the case of an agency transaction not in excess of a customary brokerage commission in compliance with Financial Industry Regulatory Authority (“FINRA”) Rule 5110; and in the case of a principal transaction a markup or markdown in compliance with FINRA Rule 2121.

To the extent required, this prospectus may be amended or supplemented from time to time to describe a specific plan of distribution. In connection with the sale of our common stock or interests therein, the selling stockholders may enter into hedging transactions with broker-dealers or other financial institutions, which may in turn engage in short sales of our common stock in the course of hedging the positions they assume. The selling stockholders may also sell our common stock short and deliver these shares to close out their short positions, or loan or pledge the securities to broker-dealers that in turn may sell these shares. The selling stockholders may also enter into option or other transactions with broker-dealers or other financial institutions or create one or more derivative securities which require the delivery to such broker-dealer or other financial institution of securities offered by this prospectus, which securities such broker-dealer or other financial institution may resell pursuant to this prospectus (as supplemented or amended to reflect such transaction). The selling stockholders may also pledge securities to a broker-dealer or other financial institution, and, upon a default, such broker-dealer or other financial institution, may effect sales of the pledged securities pursuant to this prospectus (as supplemented or amended to reflect such transaction).

In effecting sales, broker-dealers or agents engaged by the selling stockholders may arrange for other broker-dealers to participate. Broker-dealers or agents may receive commissions, discounts or concessions from the selling stockholders in amounts to be negotiated immediately prior to the sale.

The selling stockholders and any broker-dealers or agents that are involved in selling the securities may be deemed to be “underwriters” within the meaning of the Securities Act in connection with such sales. In such event, any commissions received by such broker-dealers or agents and any profit on the resale of the shares of our common stock purchased by them may be deemed to be underwriting commissions or discounts under the Securities Act. Each selling stockholder has informed us that it does not have any written or oral agreement or understanding, directly or indirectly, with any person to distribute the shares of our common stock.

We will pay certain fees and expenses incurred by us incident to the registration of the shares of our common stock. We and certain of the selling stockholders parties to the Silverback IRA have agreed to indemnify each other against certain losses, claims, damages and liabilities, including liabilities under the Securities Act.

The resale securities will be sold only through registered or licensed brokers or dealers if required under applicable state securities laws. In addition, in certain states, the resale securities covered hereby may not be sold unless they have been registered or qualified for sale in the applicable state or an exemption from the registration or qualification requirement is available and is complied with.

Under applicable rules and regulations under the Exchange Act, any person engaged in the distribution of the resale shares of our common stock may not simultaneously engage in market making activities with respect

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to our common stock for the applicable restricted period, as defined in Regulation M, prior to the commencement of the distribution. In addition, the selling stockholders will be subject to applicable provisions of the Exchange Act and the rules and regulations thereunder, including Regulation M, which may limit the timing of purchases and sales of our common stock by the selling stockholders or any other person. We will make copies of this prospectus available to the selling stockholders and have informed them of the need to deliver a copy of this prospectus to each purchaser at or prior to the time of the sale (including by compliance with Rule 172 under the Securities Act).

At the time a particular offer of securities is made, if required, a prospectus supplement will be distributed that will set forth the number of securities being offered and the terms of the offering, including the name of any underwriter, dealer or agent, the purchase price paid by any underwriter, any discount, commission and other item constituting compensation, any discount, commission or concession allowed or reallocated or paid to any dealer, and the proposed selling price to the public.

LEGAL MATTERS

Cooley LLP, San Diego, California, will pass upon the validity of the shares of our common stock offered by this prospectus.

EXPERTS

Ernst & Young LLP, independent registered public accounting firm, has audited our consolidated financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2022, as set forth in their report, which is incorporated by reference in this prospectus and elsewhere in the registration statement. Our financial statements are incorporated by reference in reliance on Ernst & Young LLP's report, given on their authority as experts in accounting and auditing.

WHERE YOU CAN FIND ADDITIONAL INFORMATION

This prospectus is part of the registration statement on Form S-3 we filed with the SEC under the Securities Act and does not contain all the information set forth in the registration statement. Whenever a reference is made in this prospectus to any of our contracts, agreements or other documents, the reference may not be complete and you should refer to the exhibits that are a part of the registration statement or the exhibits to the reports or other documents incorporated by reference into this prospectus for a copy of such contract, agreement or other document. Because we are subject to the information and reporting requirements of the Exchange Act, we file annual, quarterly and current reports, proxy statements and other information with the SEC. Our SEC filings are available to the public over the Internet at the SEC's website at <http://www.sec.gov>. Our website address is www.ars-pharma.com. Information contained on or accessible through our website is not a part of this prospectus and is not incorporated by reference herein, and the inclusion of our website address in this prospectus is an inactive textual reference only.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to "incorporate by reference" information from other documents that we file with it, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be part of this prospectus. Information in this prospectus supersedes information incorporated by reference that we filed with the SEC prior to the date of this prospectus, while information that we file later with the SEC will automatically update and supersede the information in this prospectus. We incorporate by reference into this prospectus and the registration statement of which this prospectus is a part the information or documents listed below that we have filed with the SEC (other than current reports furnished under Item 2.02 or Item 7.01 of Form 8-K and exhibits filed on such form that are related to such items unless such Form 8-K expressly provides to the contrary, and other portions of documents that are furnished but not filed or are otherwise not incorporated into registration statements pursuant to the applicable rules promulgated by the SEC) and any future filings made by us with the SEC (other than current reports furnished under Item 2.02 or Item 7.01 of Form 8-K and exhibits filed on such form that are related to such items unless such Form 8-K expressly provides to the contrary, and other portions of documents that are furnished but not filed or are otherwise not incorporated into registration statements pursuant to the applicable rules promulgated by the SEC) that are filed by us with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act (i) after the date of the filing of the registration statement of which this prospectus is a part and prior to effectiveness of the registration statement, and (ii) after the effectiveness of the registration statement but prior to the termination of all offerings of securities covered by this prospectus:

- our Annual Report on Form 10-K for the year ended December 31, 2022, filed with the SEC on [March 23, 2023](#);

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- our Current Reports on Form 8-K and Form 8-K/A, which were filed with the SEC on [January 17, 2023](#) and [February 22, 2023](#); and
- the description of our common stock in our registration statement on Form 8-A filed with the SEC on [December 1, 2020](#), including any amendments or reports filed for the purpose of updating such description.

Any statement contained herein or in a document incorporated or deemed to be incorporated by reference into this document will be deemed to be modified or superseded for purposes of the document to the extent that a statement contained in this document or any other subsequently filed document that is deemed to be incorporated by reference into this document modifies or supersedes the statement.

We will provide to each person, including any beneficial owner, to whom a prospectus is delivered, without charge upon written or oral request, a copy of any or all of the documents that are incorporated by reference into this prospectus but not delivered with the prospectus, including exhibits which are specifically incorporated by reference into such documents. You can request a copy of these filings, at no cost, by writing or telephoning us at the following address or telephone number:

ARS Pharmaceuticals, Inc.
11682 El Camino Real, Suite 120
San Diego, California 92130
Attn: Investor Relations
(858) 771-9307

PART II**INFORMATION NOT REQUIRED IN THE PROSPECTUS****Item 14. Other Expenses of Issuance and Distribution**

The following table sets forth an estimate of the fees and expenses, other than the underwriting discounts and commissions, payable by us in connection with the issuance and distribution of the securities being registered. All the amounts shown are estimates, except for the SEC registration fee.

	<u>Amount</u>
SEC registration fee	\$ 43,474.64
Accounting fees and expenses	\$ 15,000.00
Legal fees and expenses	50,000
Miscellaneous fees and expenses	\$ 7,500.36
Total	<u>\$ 115,975.00</u>

Item 15. Indemnification of Directors and Officers

As permitted by Section 102 of the Delaware General Corporation Law, the Registrant has adopted provisions in its amended and restated certificate of incorporation and amended and restated bylaws that limit or eliminate the personal liability of its directors for a breach of their fiduciary duty of care as a director. The duty of care generally requires that, when acting on behalf of the corporation, directors exercise an informed business judgment based on all material information reasonably available to them. Consequently, a director will not be personally liable to the Registrant or its stockholders for monetary damages for breach of fiduciary duty as a director, except for liability for:

- any breach of the director's duty of loyalty to the Registrant or its stockholders;
- any act or omission not in good faith or that involves intentional misconduct or a knowing violation of law;
- any act related to unlawful stock repurchases, redemptions or other distributions or payment of dividends; or
- any transaction from which the director derived an improper personal benefit.

These limitations of liability do not affect the availability of equitable remedies such as injunctive relief or rescission. The Registrant's amended and restated certificate of incorporation also authorizes the Registrant to indemnify its officers, directors and other agents to the fullest extent permitted under Delaware law.

As permitted by Section 145 of the Delaware General Corporation Law, the Registrant's amended and restated bylaws provide that:

- the Registrant may indemnify its directors, officers and employees to the fullest extent permitted by the Delaware General Corporation Law, subject to limited exceptions;
- the Registrant may advance expenses to its directors, officers and employees in connection with a legal proceeding to the fullest extent permitted by the Delaware General Corporation Law, subject to limited exceptions; and
- the rights provided in the Registrant's bylaws are not exclusive.

The Registrant's amended and restated certificate of incorporation and its amended and restated bylaws provide for the indemnification provisions described above and elsewhere herein. The Registrant has entered or

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will enter into, and intends to continue to enter into, separate indemnification agreements with its directors and officers that may be broader than the specific indemnification provisions contained in the Delaware General Corporation Law. These indemnification agreements generally require the Registrant, among other things, to indemnify its officers and directors against certain liabilities that may arise by reason of their status or service as directors or officers, other than liabilities arising from willful misconduct. These indemnification agreements also generally require the Registrant to advance any expenses incurred by the directors or officers as a result of any proceeding against them as to which they could be indemnified. These indemnification provisions and the indemnification agreements may be sufficiently broad to permit indemnification of the Registrant's officers and directors for liabilities, including reimbursement of expenses incurred, arising under the Securities Act.

The Registrant has purchased and currently intends to maintain insurance on behalf of each and every person who is one of its directors or officers against any loss arising from any claim asserted against him or her and incurred by him or her in any such capacity, subject to certain exclusions.

Item 16. Exhibits

Exhibit Number	Description
2.1 ‡	Agreement and Plan of Merger and Reorganization, dated as of July 21, 2022, by and among Silverback Therapeutics, Inc., Sabre Merger Sub, Inc. and ARS Pharmaceuticals, Inc., as amended by the First Amendment, dated August 11, 2022 and the Second Amendment, dated October 25, 2022 (incorporated by reference to Exhibit 2.1 to the registrant's Current Report on Form 8-K, as amended, filed with the SEC on November 8, 2022).
4.1	Amended and Restated Certificate of Incorporation, as amended (incorporated by reference to Exhibit 3.1 to the registrant's Annual Report on Form 10-K, filed with the SEC on March 23, 2023).
4.2	Amended and Restated Bylaws (incorporated by reference to Exhibit 3.2 to the registrant's Current Report on Form 8-K, filed with the SEC on December 8, 2020).
4.3	Amended and Restated Investors' Rights Agreement, by and between the registrant and certain of its stockholders, dated September 22, 2020 (incorporated by reference to Exhibit 4.2 to the registrant's Registration Statement on Form S-1 (File No. 333-250009), as amended, filed with the SEC on November 10, 2020).
5.1	Opinion of Cooley LLP.
23.1	Consent of Independent Registered Public Accounting Firm.
23.2	Consent of Cooley LLP (included in Exhibit 5.1)
24.1	Power of attorney (included in signature page to the registration statement)
107	Filing Fee Table
‡	Schedules have been omitted pursuant to Item 601(a)(5) of Regulation S-K. The registrant undertakes to furnish supplemental copies of any of the omitted schedules upon request by the SEC.

Item 17. Undertakings

The undersigned registrant hereby undertakes:

- (1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:
 - (i) to include any prospectus required by Section 10(a)(3) of the Securities Act of 1933;
 - (ii) to reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement.

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Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than a 20% change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement; and

- (iii) to include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement;

provided, however, that paragraphs (1)(i), (1)(ii) and (1)(iii) do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the Commission by the registrant pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in the registration statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is part of the registration statement.

- (2) That, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.
- (3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.
- (4) That, for the purpose of determining liability under the Securities Act of 1933 to any purchaser:
 - (i) Each prospectus filed by the registrant pursuant to Rule 424(b)(3) shall be deemed to be part of the registration statement as of the date the filed prospectus was deemed part of and included in the registration statement; and
 - (ii) Each prospectus required to be filed pursuant to Rule 424(b)(2), (b)(5), or (b)(7) as part of a registration statement in reliance on Rule 430B relating to an offering made pursuant to Rule 415(a)(1)(i), (vii), or (x) for the purpose of providing the information required by Section 10(a) of the Securities Act of 1933 shall be deemed to be part of and included in the registration statement as of the earlier of the date such form of prospectus is first used after effectiveness or the date of the first contract of sale of securities in the offering described in the prospectus. As provided in Rule 430B, for liability purposes of the issuer and any person that is at that date an underwriter, such date shall be deemed to be a new effective date of the registration statement relating to the securities in the registration statement to which that prospectus relates, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof. *Provided, however,* that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such effective date, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such effective date.
- (5) That, for the purpose of determining liability of the registrant under the Securities Act of 1933 to any purchaser in the initial distribution of the securities, the undersigned registrant undertakes that in a primary offering of securities of the undersigned registrant pursuant to this registration statement, regardless of the underwriting method used to sell the securities to the purchaser, if the securities are offered or sold to such purchaser by means of any of the following communications, the undersigned registrant will be a seller to the purchaser and will be considered to offer or sell such securities to such purchaser: (i) any preliminary prospectus or prospectus of the undersigned registrant relating to the offering required to be filed pursuant to Rule 424; (ii) any free writing prospectus relating to the offering prepared by or on behalf of the undersigned registrant or used or referred to by the undersigned registrant; (iii) the portion of any other free writing prospectus relating to the offering containing material information about the undersigned registrant

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or its securities provided by or on behalf of the undersigned registrant; and (iv) any other communication that is an offer in the offering made by the undersigned registrant to the purchaser.

- (6) That, for the purpose of determining any liability under the Securities Act of 1933, each filing of the registrant's annual report pursuant to Section 13(a) or Section 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act of 1933 and will be governed by the final adjudication of such issue.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of San Diego, State of California, on April 20, 2023.

ARS PHARMACEUTICALS, INC.

By: /s/ Richard Lowenthal
Richard Lowenthal, M.S., MBA
President and Chief Executive Officer

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Richard Lowenthal and Kathy Scott, and each of them, as true and lawful attorneys-in-fact and agents, with full powers of substitution and resubstitution, for them and in their name, place and stead, in any and all capacities, to sign any and all amendments (including post-effective amendments) to this registration statement, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, and generally to do all such things in their names and behalf in their capacities as officers and directors to enable ARS Pharmaceuticals, Inc. to comply with the provisions of the Securities Act of 1933, as amended, and all requirements of the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as he might or could do in person, ratifying and confirming all that said attorneys-in-fact and agents, or any of them, or their or his substitutes or substitute, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, this registration statement has been signed below by the following persons in the capacities and on the dates indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Richard Lowenthal</u> Richard Lowenthal, M.S., MBA	President, Chief Executive Officer and Director <i>(Principal Executive Officer)</i>	April 20, 2023
<u>/s/ Kathy Scott</u> Kathy Scott	Chief Financial Officer <i>(Principal Financial and Accounting Officer)</i>	April 20, 2023
<u>/s/ Pratik Shah</u> Pratik Shah, Ph.D.	Chairman of the Board of Directors	April 20, 2023
<u>/s/ Peter Kolchinsky</u> Peter Kolchinsky, Ph.D.	Director	April 20, 2023
<u>/s/ Rajeev Dadoo</u> Rajeev Dadoo, Ph.D.	Director	April 20, 2023
<u>/s/ Brenton L. Saunders</u> Brenton L. Saunders	Director	April 20, 2023

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<hr/> <i>/s/ Phillip Schneider</i> Phillip Schneider	Director	April 20, 2023
<hr/> <i>/s/ Michael Kelly</i> Michael Kelly	Director	April 20, 2023
<hr/> <i>/s/ Jonathan S. Leff</i> Jonathan S. Leff	Director	April 20, 2023
<hr/> <i>/s/ Laura Shawver</i> Laura Shawver, Ph.D.	Director	April 20, 2023
<hr/> <i>/s/ Peter A. Thompson</i> Peter A. Thompson, M.D.	Director	April 20, 2023
<hr/> <i>/s/ Saqib Islam</i> Saqib Islam, J.D.	Director	April 20, 2023



Kenneth J. Rollins
T: +1 858 550 6136
krollins@cooley.com

April 20, 2023

ARS Pharmaceuticals, Inc.
11682 El Camino Real, Suite 120
San Diego, CA 92130

Re: ARS Pharmaceuticals, Inc. – Registration Statement on Form S-3

Ladies and Gentlemen:

We have acted as counsel to ARS Pharmaceuticals, Inc. (f/k/a Silverback Therapeutics, Inc.), a Delaware corporation (the “*Company*”), in connection with the filing by the Company of a Registration Statement on Form S-3 (the “*Registration Statement*”) with the Securities and Exchange Commission (the “*Commission*”), including the prospectus included in the Registration Statement (the “*Prospectus*”), covering the registration for resale of up to 64,779,432 shares of the Company’s common stock, par value \$0.0001 per share (the “*Common Stock*”), consisting of: (i) 57,229,022 shares (the “*Merger Shares*”) of currently outstanding Common Stock issued to certain securityholders of ARS Pharmaceuticals, Inc. (currently known as ARS Pharmaceuticals Operations, Inc.) (the “*Target*”) pursuant to the Agreement and Plan of Merger by and among Silverback Therapeutics, Inc., Sabre Merger Sub, Inc. and the Target, dated as of July 21, 2022, as amended on August 11, 2022 and October 25, 2022 (“*Merger Agreement*”); and (ii) 7,550,410 shares (together with the Merger Shares, the “*Shares*”) of currently outstanding Common Stock issued (a) to certain investors prior to the Company’s initial public offering pursuant to certain stock purchase agreement (the “*Common Agreements*”) and (b) to certain investors in connection with the Company’s initial public offering upon the conversion of convertible preferred stock of the Company initially issued to those investors prior to the Company’s initial public offering pursuant to certain stock purchase agreements (together with the Common Agreements, the “*Purchase Agreements*”).

In connection with this opinion, we have examined and relied upon (a) the Registration Statement and the Prospectus, (b) the Company’s certificate of incorporation and bylaws, each as currently in effect, (c) the Merger Agreement, (d) the Purchase Agreements and (e) originals, or copies certified to our satisfaction, of such other records, documents, certificates, memoranda and other instruments as in our judgment are necessary or appropriate to enable us to render the opinion expressed below. We have assumed the genuineness of all signatures; the authenticity of all documents submitted to us as originals; the conformity to originals of all documents submitted to us as copies; the accuracy, completeness and authenticity of certificates of public officials and the due authorization, execution and delivery of all documents by all persons other than the Company where authorization, execution and delivery are prerequisites to the effectiveness thereof. As to certain factual matters, we have relied upon a certificate of an officer of the Company and have not independently verified such matters.

Our opinion herein is expressed solely with respect to the General Corporation Law of the State of Delaware and the laws of the State of New York. We express no opinion to the extent that any other laws are applicable to the subject matter hereof and express no opinion and provide no assurance as to compliance with any federal or state securities law, rule or regulation.

Cooley LLP 10265 Science Center Drive San Diego, CA 92121-1117
t: +1 858 550 6000 f: +1 858 550-6420 cooley.com



April 20, 2023

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On the basis of the foregoing, and in reliance thereon, we are of the opinion that the Shares are validly issued, fully paid and nonassessable.

Our opinion is limited to the matters stated herein and no opinion is implied or may be inferred beyond the matters expressly stated. Our opinion is based on these laws as in effect on the date hereof, and we disclaim any obligation to advise you of facts, circumstances, events or developments which hereafter may be brought to our attention and which may alter, affect or modify the opinion expressed herein.

We hereby consent to the reference to our firm under the caption "Legal Matters" in the Prospectus and to the filing of this opinion as an exhibit to the Registration Statement. In giving such consent, we do not thereby admit that we are in the category of persons whose consent is required under Section 7 of the Securities Act of 1933, as amended, or the rules and regulations of the Commission thereunder.

Sincerely,

COOLEY LLP

By: /s/ Kenneth J. Rollins

Kenneth J. Rollins

Cooley LLP 10265 Science Center Drive San Diego, CA 92121-1117
t: +1 858 550 6000 f: +1 858 550-6420 cooley.com

Consent of Independent Registered Public Accounting Firm

We consent to the reference to our firm under the caption “Experts” in the Registration Statement on Form S-3 of ARS Pharmaceuticals, Inc. for the registration of 64,779,432 shares of its common stock and to the incorporation by reference therein of our report dated March 23, 2023, with respect to the consolidated financial statements of ARS Pharmaceuticals, Inc. included in its Annual Report (Form 10-K) for the year ended December 31, 2022, filed with the Securities and Exchange Commission.

/s/ Ernst & Young LLP

San Diego, California
April 20, 2023

Calculation of Filing Fee Tables

Form S-3
(Form Type)

ARS Pharmaceuticals, Inc.
(Exact Name of Registrant as Specified in its Charter)

Table 1: Newly Registered Securities

	Security Type	Security Class Title	Fee Calculation or Carry Forward Rule	Amount Registered(1)	Proposed Maximum Offering Price Per Unit	Maximum Aggregate Offering Price	Fee Rate	Amount of Registration Fee
Fees to Be Paid	Equity	Common stock, par value \$0.0001 per share	Other	64,779,432(2)	\$6.09(3)	\$394,506,740.88	\$0.00011020	\$43,474.64
Total Offering Amounts						\$394,506,740.88		\$43,474.64
Total Fee Offsets								—
Net Fee Due								\$43,474.64

- (1) The shares of common stock will be offered for resale by the selling stockholders pursuant to the prospectus contained herein. Pursuant to Rule 416 under the Securities Act of 1933, as amended (the "Securities Act"), this registration statement also covers any additional number of shares of common stock issuable upon stock splits, stock dividends, or other distribution, recapitalization or similar events with respect to the shares of common stock being registered pursuant to this registration statement.
- (2) This registration statement registers the resale of 64,779,432 outstanding shares of common stock of the Registrant held by the selling stockholders.
- (3) Estimated solely for the purposes of calculating the registration fee pursuant to Rule 457(c) under the Securities Act, based on the average of the high and low price per share of the Registrant's common stock as reported by the Nasdaq Global Market on April 14, 2023.