

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

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

SALARIUS PHARMACEUTICALS, INC.

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

46-5087339
(I.R.S. Employer
Identification Number)

2450 Holcombe Blvd., Suite X
Houston, TX 77021
(832) 804-9144

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

David J. Arthur
President and Chief Executive Officer
Saliarius Pharmaceuticals, Inc.

2450 Holcombe Blvd., Suite X
Houston, TX 77021
(832) 804-9144

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

Copies to:

Andrew L. Strong, Esq.
Stephen M. Nicolai, Esq.
Hogan Lovells US LLP
609 Main Street, Suite 4200
Houston, TX 77002
(713) 632-1400

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, 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, a 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 contained in this preliminary prospectus is not complete and may be changed. The selling stockholders listed herein may not sell these securities until the registration statement filed with the Securities and Exchange Commission is effective. This preliminary prospectus is not an offer to sell these securities and it is not soliciting an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.

SUBJECT TO COMPLETION, DATED MAY 26, 2023

PRELIMINARY PROSPECTUS



11,163,637 Shares of Common Stock

The selling stockholders named in this prospectus may use this prospectus to offer and resell from time to time up to 11,163,637 shares of our common stock, par value \$0.0001 per share, which are comprised of (i) 330,000 shares (the "**Shares**") of our common stock issued in a private placement on May 16, 2023 (the "**Private Placement**"), pursuant to that certain Securities Purchase Agreement by and between us and Armistice Capital Master Fund Ltd. ("**Armistice**"), dated as of May 11, 2023 (the "**Securities Purchase Agreement**"), (ii) 3,306,364 shares of our common stock (the "**Pre-Funded Warrant Shares**") issuable upon the exercise of the pre-funded warrants (the "**Pre-Funded Warrants**") issued in the Private Placement pursuant to the Securities Purchase Agreement, (iii) 3,636,364 shares of our common stock (the "**Series A-1 Warrant Shares**") issuable upon the exercise of the Series A-1 warrants ("**Series A-1 Warrants**") issued in the Private Placement pursuant to the Securities Purchase Agreement, (iv) 3,636,364 shares of our common stock (the "**Series A-2 Warrant Shares**" and together with the Pre-Funded Warrant Shares and the Series A-1 Warrant Shares, the "**Warrant Shares**") issuable upon the exercise of the Series A-2 warrants ("**Series A-2 Warrants**" and together with the Pre-Funded Warrants and the Series A-1 Warrants, the "**Warrants**") issued in the Private Placement pursuant to the Securities Purchase Agreement, and (v) 254,545 shares of our common stock (the "**Placement Agent Warrant Shares**") issuable upon the exercise of the placement agent warrants (the "**Placement Agent Warrants**") issued to our placement agent, H.C. Wainwright & Co., LLC, in connection with the Private Placement.

The Shares, the Warrant Shares and the Warrants were issued to the investor in reliance upon the exemption from the registration requirements in Section 4(a)(2) of the Securities Act of 1933, as amended (the "**Securities Act**"), and Rule 506 of Regulation D promulgated thereunder. The Placement Agent Warrants and the Placement Agent Warrant Shares were issued to the placement agent in reliance upon the exemption from the registration requirements in Section 4(a)(2) of the Securities Act. We are registering the offer and resale of the Shares and Warrant Shares to satisfy the provisions of that certain registration rights agreement, dated May 11, 2023 (the "**Registration Rights Agreement**"), pursuant to which we agreed to register the resale of the Shares and the Warrant Shares.

We are not selling any shares of our common stock under this prospectus and will not receive any of the proceeds from the sale of shares by the selling stockholders. We will, however, receive the net proceeds of any Warrants or Placement Agent Warrants exercised for cash.

The selling stockholders may sell or otherwise dispose of the shares of common stock covered by this prospectus in a number of different ways and at varying prices. We provide more information about how the selling stockholders may sell or otherwise dispose of the shares of common stock covered by this prospectus in the section entitled "Plan of Distribution" on page 13. Discounts, concessions, commissions and similar selling expenses attributable to the sale of shares of common stock covered by this prospectus will be borne by the selling stockholders. We will pay all expenses (other than discounts, concessions, commissions and similar selling expenses) relating to the registration of the shares of common stock with the Securities and Exchange Commission (the "**SEC**").

Our common stock is listed on The Nasdaq Capital Market under the symbol "SLRX". On May 25, 2023, the last reported sale price of our common stock on The Nasdaq Capital Market was \$1.50 per share.

Investing in our securities involves a high degree of risk. See "Risk Factors" beginning on page 6 of this prospectus and under similar headings in the documents 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 passed on the adequacy or accuracy of this prospectus. Any representation to the contrary is a criminal offense.

The date of this prospectus is , 2023

TABLE OF CONTENTS

	Page
ABOUT THIS PROSPECTUS	<u>i</u>
PROSPECTUS SUMMARY	<u>1</u>
THE OFFERING	<u>4</u>
RISK FACTORS	<u>6</u>
SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS	<u>7</u>
USE OF PROCEEDS	<u>9</u>
DIVIDEND POLICY	<u>10</u>
SELLING STOCKHOLDERS	<u>11</u>
PLAN OF DISTRIBUTION	<u>13</u>
DESCRIPTION OF CAPITAL STOCK	<u>15</u>
LEGAL MATTERS	<u>18</u>
EXPERTS	<u>18</u>
INCORPORATION BY REFERENCE	<u>19</u>
WHERE YOU CAN FIND MORE INFORMATION	<u>20</u>

ABOUT THIS PROSPECTUS

This prospectus relates to the resale by the selling stockholders identified in this prospectus under the caption “Selling Stockholders,” from time to time, of up to an aggregate of 11,163,637 shares of our common stock. We are not selling any shares of our common stock under this prospectus, and we will not receive any proceeds from the sale of shares of common stock offered hereby by the selling stockholders, although we may receive cash from the exercise of the Warrants or Placement Agent Warrants.

You should rely only on the information contained in this prospectus. We have not, and the selling stockholders have not, authorized anyone to provide you with information other than the information that has been provided or incorporated by reference in this prospectus and your reliance on any unauthorized information or representation is at your own risk. This prospectus may be used only in jurisdictions where offers and sales of these securities are permitted. You should assume that the information appearing in this prospectus is accurate only as of the date of this prospectus and that any information incorporated by reference is accurate only as of the date of the document incorporated by reference, regardless of the time of delivery of this prospectus, or any sale of our securities. Our business, financial condition and results of operations may have changed since those dates.

The information appearing in this prospectus, the documents incorporated by reference in this prospectus and any free writing prospectus authorized for use in connection with this offering is accurate only as of its respective date, regardless of the time of delivery of the respective document or of any sale of securities covered by this prospectus. You should not assume that the information contained in or incorporated by reference in this prospectus, or in any free writing prospectus that authorized for use in connection with this offering, is accurate as of any date other than the respective dates thereof.

We further note that the representations, warranties and covenants made by us in any agreement that is filed as an exhibit to any document that is incorporated by reference herein were made solely for the benefit of the parties to such agreement, including, in some cases, for the purpose of allocating risk among the parties to such agreements, and should not be deemed to be a representation, warranty or covenant to you. Moreover, such representations, warranties or covenants were accurate only as of the date when made. Accordingly, such representations, warranties and covenants should not be relied on as accurately representing the current state of our affairs.

To the extent there is a conflict between the information contained in this prospectus, on the one hand, and the information contained in any document incorporated by reference filed with the SEC before the date of this prospectus, on the other hand, you should rely on the information in this prospectus. If any statement in a document incorporated by reference is inconsistent with a statement in another document incorporated by reference having a later date, the statement in the document having the later date modifies or supersedes the earlier statement.

Neither we nor the selling stockholders have done anything that would permit this offering or possession or distribution of this prospectus in any jurisdiction where action for that purpose is required, other than in the United States. Persons who come into possession of this prospectus and any free writing prospectus in jurisdictions outside the United States are required to inform themselves about and to observe any restrictions as to this offering and the distribution of this prospectus and any free writing prospectus applicable to that jurisdiction.

Industry and Market Data

This prospectus and the documents incorporated by reference include statistical and other industry and market data that we obtained from industry publications and research, surveys and studies conducted by third parties. Industry publications and third-party research, surveys and studies generally indicate that their information has been obtained from sources believed to be reliable, although they do not guarantee the accuracy or completeness of such information. While we believe that these industry publications and third-party research, surveys and studies are reliable, we have not independently verified such data and we do not make any representation as to the accuracy of the information.

Note Regarding Trademarks

We own various U.S. federal trademark registrations and applications and unregistered trademarks and service marks, including Salarius, SLRX and the Salarius logo. All other trademarks, servicemarks or trade names referred to in this prospectus are the property of their respective owners. Solely for convenience, the trademarks and trade names in this prospectus are sometimes referred to without the ® and ™ symbols, but such references should not be construed as any indicator that their respective owners will not assert, to the fullest extent under applicable law, their rights thereto. We do not intend the use or display of other companies' trademarks and trade names to imply a relationship with, or endorsement or sponsorship of us by, any other companies, products or services.

PROSPECTUS SUMMARY

This summary highlights information contained in greater detail elsewhere in this prospectus. This summary is not complete and does not contain all of the information you should consider in making your investment decision. You should read the entire prospectus carefully before making an investment in our securities. You should carefully consider, among other things, our financial statements and the related notes and the sections entitled “Risk Factors” and “Management’s Discussion and Analysis of Financial Condition and Results of Operations” included elsewhere in, or incorporated by reference into, this prospectus.

When we refer to Salarius Pharmaceuticals, Inc., and its subsidiaries, we use the terms “Saliarius,” “the Company,” “us,” “we” and “our.”

Overview

We are a clinical-stage biopharmaceutical company focused on developing treatments for cancers with high, unmet medical need. Specifically, we are developing treatments for cancers caused by dysregulated gene expression, i.e., genes which are incorrectly turned on or off. We are developing two classes of drugs that address gene dysregulation: protein inhibitors and targeted protein degraders. Our technologies have the potential to work in both liquid and solid tumors. Our current pipeline consists of: (1) SP-3164, a targeted protein degrader, and (2) seclidemstat (SP-2577), a targeted protein inhibitor.

Our goal is to develop SP-3164 and SP-2577 for treatment of cancers while attempting to maximize return for investors. To achieve this goal, our strategy consists of a two-pronged approach: 1) speed-to-market by developing SP-3164 and SP-2577 in high unmet need indications and 2) expand the market by developing SP-3164 and SP-2577 in larger market indications.

SP-3164 – Targeted Protein Degradation

SP-3164 is a next-generation cereblon-binding molecular glue. Molecular glues are small molecules that commandeer the body’s normal protein degradation processes by causing proteins to stick to one another thereby inducing selective degradation of cancer-causing proteins. Derived from avadomide, SP-3164 is engineered using DECS (deuterium-enabled chiral switching), a process that replaces hydrogen atoms with deuterium to stabilize the molecule’s active enantiomer, resulting in a novel molecular entity with the potential for increased efficacy and improved safety compared to the 1st generation compound. SP-3164 degrades transcription factors Ikaros (IKZF1) and Aiolos (IKZF3), resulting in both direct anti-cancer activity and immune-modulating properties. SP-3164 has potential to treat both hematologic and solid tumors and is currently in IND-enabling studies. We have presented preclinical data of SP-3164 in hematological cancers at several scientific conferences. Last year, we completed the pre-IND meeting process with the FDA and plan to submit an IND application in the first half of 2023.

Seclidemstat - Targeted Protein Inhibition

Our lead compound, seclidemstat (SP-2577), is a small molecule that inhibits the epigenetic enzyme lysine specific demethylase 1 (LSD1). LSD1 is an enzyme that removes mono- and di-methyl marks on histones (core protein of chromatin) to alter gene expression. LSD1’s enzymatic activity can cause genes to turn on or off and thereby affect the cell’s gene expression and overall activity. In addition, LSD1 can act via its scaffolding properties, independently of its enzymatic function, to alter gene expression and modulate cell fate. In healthy cells, LSD1 is necessary for stem cell maintenance and cell development processes. However, in several cancers LSD1 is highly expressed and acts aberrantly to incorrectly silence or activate genes leading to disease progression. High levels of LSD1 expression are often associated with aggressive cancer phenotypes and poor patient prognosis. Hence, development of targeted LSD1 inhibitors is of interest for the treatment of various cancers. SP-2577 uses a novel, reversible mechanism to effectively inhibit LSD1’s enzymatic and scaffolding properties and thereby treat and prevent cancer progression.

SP-2577 is being developed for both solid and liquid tumors. Our lead indication for SP-2577 is a devastating bone and soft-tissue cancer called Ewing sarcoma, which has a median age of diagnosis of 15. We are currently in a Phase 1/2 trial to treat relapsed/refractory Ewing sarcoma patients in combination with topotecan and cyclophosphamide. In addition, as part of our market expansion strategy, in 2021 an Investigator Initiated Trial with the MD Anderson Cancer Center was initiated to study SP-2577 in combination with azacitidine for the treatment of patients with myelodysplastic syndromes (MDS) or chronic myelomonocytic leukemia (CMML). MDS and CMML can progress into Acute Myeloid Leukemia (AML), which the American Cancer Society estimates there were almost 20,000 new cases of AML in the US alone in 2020.

Recent Developments

May 2023 Offering

On May 11, 2023, we entered into the Securities Purchase Agreement with Armistice, pursuant to which we agreed to issue and sell to Armistice in a Private Placement (i) 330,000 Shares, (ii) Pre-Funded Warrants to purchase up to 3,306,364 shares of our common stock, (iii) Series A-1 Warrants to purchase up to 3,636,364 shares of our common stock and (iv) Series A-2 Warrants to purchase up to 3,636,364 shares of our common stock, at a purchase price of (a) \$1.65 per Share and accompanying Warrant and (b) \$1.6499 per Pre-Funded Warrant and accompanying Warrant. The aggregate gross proceeds from the Private Placement were approximately \$6.0 million, exclusive of placement agent fees and expenses and other offering expenses. The closing of the Private Placement occurred on May 16, 2023. Each Series A-1 Warrant is exercisable for a period of five and one-half (5.5) years from the issuance date at an exercise price of \$1.40 per share. Each Series A-2 Warrant is exercisable for a period of eighteen (18) months from the issuance date at an exercise price of \$1.40 per share. Each Pre-Funded Warrant was sold in lieu of shares of common stock, are exercisable immediately upon issuance, have an exercise price of \$0.0001 per share and expire when exercised in full.

Under the terms of the Warrants, Armistice may not exercise the warrants to the extent such exercise would cause Armistice, together with its affiliates and attribution parties, to beneficially own a number of shares of our common stock which would exceed 4.99% (or, at Armistice’s option upon issuance, 9.99%), of our then outstanding common stock following such exercise, excluding for purposes of such determination shares of common stock issuable upon exercise of such warrants which have not been exercised.

In connection with the Private Placement, we also entered into a registration rights agreement (the “**Registration Rights Agreement**”) with Armistice pursuant to which we are required to prepare and file with the SEC a registration statement covering the Shares sold in the Private Placement and the shares of common stock issuable upon exercise of the Warrants on or prior to the date that is 15 calendar days following the date of the Registration Rights Agreement (the “**Filing Date**”). We are required to use best efforts to cause the registration statement covering the securities to be declared effective as promptly as possible after the filing thereof, but in any event no later the 45th calendar day following the date of the Registration Rights Agreement (or in the event of a full review by the SEC, the 75th calendar day following the date of the Registration Rights Agreement) (the “**Effectiveness Date**”). If we fail to meet the specified filing deadlines or keep the registration

statement effective, subject to certain permitted exceptions, the terms of the Registration Rights Agreement provide that we will be required to pay certain liquidated damages to the investor. We also agreed, among other things, to indemnify the investor under

the registration statement from certain liabilities and to pay all fees and expenses incident to our performance of or compliance with the Registration Rights Agreement.

H.C. Wainwright & Co., LLC acted as the exclusive placement agent for the issuance and sale of the Shares and Warrants. We agreed to pay up to an aggregate cash fee equal to 7.0% of the gross proceeds received by us from the Private Placement. We also agreed to pay Wainwright \$65,000 for non-accountable and certain other expenses and a management fee equal to 1.0% of the gross proceeds raised in Private Placement. We also issued to Wainwright unregistered warrants to purchase up to 7.0% of the aggregate number of the Shares and Pre-Funded Warrants sold to the investor, which resulted in the issuance of Placement Agent Warrants to purchase up to 254,545 shares of common stock at an exercise price per share of \$2.0625 and a term of five and one-half (5.5) years.

Risks Associated with Our Business

Our business is subject to a number of risks of which you should be aware before making an investment decision. These risks are discussed more fully in the “Risk Factors” section of this prospectus immediately following this prospectus summary and in Part I, Item 1A “Risk Factors” of our Annual Report on Form 10-K filed with the SEC on March 27, 2023 and our other SEC filings, which are incorporated by reference in this prospectus. These risks include the following:

- We have incurred significant losses since our inception and anticipate that we will continue to incur losses for the foreseeable future which, together with our limited working capital and lack of revenue from product sales, raises substantial doubt about our financial viability and as to whether we will be able to continue as a going concern.
- Our approach to discovering and developing novel oncology therapeutics makes it difficult to predict timing and costs and obtaining regulatory approval may never lead to marketable products.
- Clinical trials are costly, time consuming and inherently risky, and we may fail to demonstrate safety and efficacy to the satisfaction of applicable regulatory authorities or our product candidates may cause undesirable side effects or have other properties that could limit the commercial viability or result in significant negative consequences.
- Product development involves a lengthy and expensive process with an uncertain outcome, and results of earlier pre-clinical and clinical trials may not be predictive of future clinical trial results.
- We cannot give any assurance that our clinical trials will generate positive data for any of our product candidates or indications which we are pursuing.
- We may fail to capitalize on programs or product candidates that may be more profitable.
- We may find it difficult to enroll patients in our clinical trials.
- We may face potential product liability and incur substantial liability and costs and our regulatory approvals, if any, could be revoked or otherwise negatively impacted.
- We have never generated any revenue from product sales and may never generate revenue or be profitable.
- Raising additional capital may cause dilution to our stockholders, restrict our operations or require us to relinquish rights.
- Fast Track designation may not actually lead to a faster development or regulatory review or approval process. Additionally, FDA may rescind the designation if it determines the product candidate no longer meets the qualifying criteria for Fast Track.
- We may fail to obtain the necessary regulatory approvals to market our product candidates and may not be able to commercialize our product candidates.
- Even if we obtain regulatory approval for a product, we will remain subject to ongoing regulatory requirements, we may be subject to penalties if we fail to comply with regulatory requirements.
- Healthcare reform measures may have a material adverse effect on our business, financial condition or results of operations.
- We may be subject to fraud and abuse laws, false claims laws, and health information privacy and security laws under which we could become subject to substantial penalties.
- Reliance on government funding for our programs may add uncertainty to our research and commercialization efforts and may impose requirements that limit our ability to take specified actions.
- We may not be successful in obtaining or maintaining exclusive or other necessary rights to our targets, product compounds and processes for our development pipeline.
- We may not have sufficient patent term protections for our product candidates to protect our business.
- Changes in U.S. patent law could diminish the value of patents in general and could increase the uncertainties and costs surrounding prosecution and enforcement.
- Third-party claims of intellectual property infringement may prevent or delay our development and commercialization efforts.
- The patent protection and patent prosecution for some of our product candidates is dependent on third parties.
- If we fail to comply with obligations in the agreements under which we license intellectual property and other rights from third parties or otherwise experience disruptions to our business relationships with our licensors, we could lose license rights that are important to our business.

- We may be involved in lawsuits to protect or enforce our patents or the patents of our licensors, which could be expensive, time consuming, and unsuccessful.
- If third parties on which we rely fail to obtain or maintain approval of government regulators, fail to comply with applicable regulations, fail to provide us with sufficient quantities of drug product, or fail to do so at acceptable quality levels or prices, we may not be able to successfully complete clinical development, obtain regulatory approval or commercialize our product candidates and our business could be substantially harmed.
- We may be unable to realize the potential benefits of any current or future collaboration.

- We currently have very limited marketing and sales experience. Without the assistance of third parties, we may be unable to generate any revenue.
- We may be unable to form future collaborations with respect to our product candidates, which may cause us to alter our development and commercialization plans.
- If the market opportunities for our product candidates are smaller than we believe they are, we may not meet our future revenue expectations and our business may suffer.
- Our competitors may discover, develop or commercialize products faster or more successfully than us.
- The commercial success of any of our current or future product candidates will depend upon the degree of market acceptance by physicians, patients, third-party payors, and others in the medical community.
- We may not be successful in any efforts to identify, license, discover, develop, or commercialize additional product candidates.
- Our future success depends in part on our ability to retain key personnel and attract, retain, and motivate other qualified personnel.
- We will need to expand our organization and difficulties in managing growth could disrupt our operations.
- The terms of our existing warrants could impede our ability to enter into transactions or obtain additional financing.
- Future sales of a significant number of our shares of common stock in the public markets, or the perception that such sales could occur, could depress the market price of our shares of our common stock.
- We do not currently intend to pay dividends on our common stock.

Corporate Information

We were incorporated as Flex Pharma, Inc. (“**Flex Pharma**”) in Delaware in February 2014. In July 2019, our wholly owned subsidiary, Falcon Acquisition Sub, LLC, merged with and into Salarius Pharmaceuticals, LLC (“**Private Salarius**”), with Private Salarius becoming our wholly owned subsidiary (the “**Merger**”), and we changed our name to Salarius Pharmaceuticals, Inc. Our principal executive offices are located at 2450 Holcombe Blvd., Suite X, Houston, Texas 77021, and our telephone number is (832) 804-9144. Our website address is www.saliariuspharma.com. We do not incorporate the information on, or accessible through, our website into this prospectus, and you should not consider any information on, or accessible through, our website as part of this prospectus.

THE OFFERING

Common Stock to be offered by the selling stockholders	Up to 11,163,637 shares of common stock.
Common Stock outstanding prior to this offering	3,352,069 shares of our Common Stock
Common Stock to be outstanding after this offering	14,185,706 shares of our Common Stock
Use of proceeds	We will not receive any proceeds from the sale of shares of common stock offered hereby by the selling stockholders, although we may receive cash from the exercise of the Warrants or Placement Agent Warrants
Risk Factors	An investment in our securities involves a high degree of risk. See “Risk Factors” beginning on page 6 of this prospectus and the similarly titled sections in the documents incorporated by reference into this prospectus.

Nasdaq Capital Market symbol Our common stock is listed on The Nasdaq Capital Market under the symbol “SLRX.” We do not intend to apply for listing of the Warrants on any securities exchange or nationally recognized trading system.

Outstanding Shares

The number of shares of our common stock to be outstanding after this offering is based on 2,468,297 shares of our common stock outstanding as of March 31, 2023, plus (i) 553,772 shares of our common stock issued pursuant to that certain At the Market Offering Agreement, dated February 5, 2021, with Ladenburg Thalmann & Co. Inc. (the “ATM Agreement”) subsequent to March 31, 2023 through May 12, 2023 and (ii) 330,000 shares of our common stock issued in the Private Placement, and excludes:

- 107,128 shares of our common stock issuable upon the exercise of stock options outstanding as of March 31, 2023 at a weighted-average exercise price of \$23.67 per share;
- 12,220 shares of our common stock issuable upon the settlement of restricted stock units outstanding as of March 31, 2023;
- 597,512 shares of our common stock issuable upon the exercise of warrants outstanding as of March 31, 2023 at a weighted average exercise price of \$24.09 per share;
- 55,365 shares of our common stock available for future issuance under our 2015 Equity Incentive Plan as of March 31, 2023; and
- 4,004 shares of our common stock reserved for future issuance under our Employee Stock Purchase Plan as of March 31, 2023.

RISK FACTORS

An investment in our securities involves a high degree of risk. Before deciding whether to invest in our securities, you should carefully consider the risks discussed under the section captioned “Risk Factors” contained in our Annual Report on Form 10-K for the fiscal year ended December 31, 2022 and our Quarterly Report on Form 10-Q for the quarter ended March 31, 2023 and other documents that we file with the SEC, which are incorporated by reference in this prospectus, together with the information included in this prospectus and documents incorporated by reference herein, and in any free writing prospectus that we have authorized for use in connection with this offering. If any of these risks actually occurs, our business, financial condition, results of operations or cash flow could be harmed. In such case, the trading price of our common stock could decline, and our shareholders may lose all or part of their investment in the shares of our common stock. Additional risks and uncertainties not presently known to us or that we currently believe to be immaterial may also adversely affect our business.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus and the documents incorporated by reference contain forward-looking statements that involve substantial risks and uncertainties. All statements, other than statements of historical facts, included in this prospectus or the documents incorporated herein by reference regarding our strategy, future operations, future product research or development, future financial position, future revenues, projected costs, prospects, plans and objectives of management, are forward-looking statements. The words “anticipate,” “believe,” “goals,” “estimate,” “expect,” “intend,” “may,” “might,” “plan,” “predict,” “project,” “target,” “potential,” “will,” “would,” “could,” “should,” “continue” and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words.

The forward-looking statements in this prospectus and the documents incorporated by reference include, among other things, statements about:

- our ability to continue as a going concern;
- our planned strategy;
- our clinical trials, including expected costs, goals, timing and other expectations related thereto;
- the potential advantages of our lead compound, seclidemstat or SP-2577, as a treatment for Ewing sarcoma, and other cancers and our ability to improve the life of patients;
- the potential for seclidemstat to target the epigenetic dysregulation underlying Ewing sarcoma;
- the potential advantages of protein degraders including the value of SP-3164 as a cancer treatment;
- the expected impact that the addition of new clinical sites will have on the development of our product candidates;
- the commercial or market opportunity and expansion for each therapeutic option, including the availability and value of a pediatric priority review voucher for in-clinic treatments and potential for accelerated approval;
- our expectations as to revenue, cash flow, and expenses;
- our liquidity position, the expected sufficiency of such position for anticipated operating and capital requirements;
- our ability of to access additional financing under the Cancer Research Grant Contract with Cancer Prevention and Research Institute of Texas (CPRIT);
- our use of proceeds from capital financing transactions.

We may not actually achieve the plans, intentions or expectations disclosed in our forward-looking statements, and you should not place undue reliance on our forward-looking statements. Actual results or events could differ materially from the plans, intentions and expectations disclosed in the forward-looking statements we make. We have included important factors in the cautionary statements included in this prospectus, particularly under “Risk Factors” on page 6 of this prospectus and the documents incorporated herein that we believe could cause actual results or events to differ materially from the forward-looking statements that we make. Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, joint ventures, collaborations or investments we may make. The following are some of the factors that could cause actual results to differ materially from the anticipated results or other expectations expressed, anticipated or implied in our forward-looking statements:

- our ability to raise additional capital;
- the effectiveness and timeliness of our preclinical studies and clinical trials, and the usefulness of the data;
- the adequacy of our capital to support our future operations and our ability to successfully initiate and complete clinical trials and regulatory submissions;
- fluctuations in our operating results;
- the success of current and future license and collaboration agreements;
- our dependence on contract research organizations, vendors and investigators;
- effects of competition and other developments affecting development of products;
- market acceptance of our product candidates;
- protection of intellectual property and avoiding intellectual property infringement;
- product liability; and
- other factors described in our filings with the SEC.

You should read this prospectus and the documents that we have filed as exhibits to this prospectus completely and with the understanding that our actual future results may be materially different from what we expect.

Except as required by law, we undertake no obligation to update or revise any forward-looking statements to reflect new information or future events or developments. 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. Before deciding to purchase our securities, you should carefully consider the risk factors discussed and incorporated by reference in this prospectus and the documents incorporated herein.

USE OF PROCEEDS

The net proceeds from any disposition of the shares of common stock covered hereby will be received by the selling stockholders. We will not receive any of the proceeds from any such shares of common stock offered by this prospectus. We will, however, receive the net proceeds of any Warrants or Placement Agent Warrants exercised for cash. We expect to use the proceeds received from the exercise of the Warrants or Placement Agent Warrants, if any, for the development of our product candidates and general working capital purposes.

DIVIDEND POLICY

We have never paid cash dividends on our common stock. Moreover, we do not anticipate paying periodic cash dividends on our common stock for the foreseeable future. We intend to use all available cash and liquid assets in the operation and growth of our business. Any future determination about the payment of dividends will be made at the discretion of our board of directors and will depend upon our earnings, if any, capital requirements, operating and financial conditions and on such other factors as our board of directors deems relevant.

SELLING STOCKHOLDERS

The common stock being offered by the selling stockholders are those previously issued to the selling stockholders, and those issuable to the selling stockholders, upon exercise of the Warrants and Placement Agent Warrants. We are registering the shares of common stock in order to permit the selling stockholders to offer the shares for resale from time to time.

Neither the selling stockholders, nor any persons having control over the selling stockholders, have held any position or office with us or our affiliates within the last three years or have had a material relationship with us or any of our predecessors or affiliates within the past three years, other than as a result of the ownership of our shares or other securities; *provided, however*, Wainwright served as our placement agent in connection with the Private Placement, for which Wainwright received compensation.

The selling stockholders may sell some, all or none of their shares of common stock. We do not know how long the selling stockholders will hold the Warrants or Placement Agent Warrants, whether any will exercise the Warrants or Placement Agent Warrants, and upon such exercise, how long such selling stockholders will hold the shares of common stock before selling them, and we currently have no agreements, arrangements or understandings with the selling stockholders regarding the sale of any of the shares.

The following table presents information regarding the selling stockholders and the shares that each may offer and sell from time to time under this prospectus. The table is prepared based on information supplied to us by the selling stockholders without regard to ownership limitations set forth in the applicable agreements or other documents relating to such shares, Warrants and Placement Agent Warrants, including (i) all of the shares offered hereby, and (ii) to our knowledge, all other securities held by each of the selling stockholders as of the date hereof, and reflects their respective holdings as of May 18, 2023. Except as noted below, beneficial ownership is determined in accordance with Section 13(d) of the Securities and Exchange Act of 1934, as amended (the “**Exchange Act**”), and Rule 13d-3 thereunder.

The percentage of shares beneficially owned prior to the offering is based on 3,352,069 shares of our common stock actually outstanding as of May 18, 2023.

Name of Selling Stockholder	Shares Beneficially Owned Before this Offering ⁽¹⁾	Percentage of Outstanding Shares Beneficially Owned Before this Offering ⁽¹⁾	Shares to be Sold in this Offering	Percentage of Outstanding Shares Beneficially Owned After this Offering ⁽¹⁾
Armistice Capital, LLC. ⁽²⁾	10,943,297	78.4%	10,909,092	*
H.C. Wainwright & Co., LLC ⁽³⁾	254,545	7.1%	254,545	-

*Represents beneficial ownership of less than one percent.

- (1) The ability to exercise the Warrants and Placement Agent Warrants held by the selling stockholders is subject to a beneficial ownership limitation that, at the time of initial issuance of the Warrants and the Placement Agent Warrants, was capped at either 4.99% or 9.99% beneficial ownership of our issued and outstanding common stock (post-exercise). These beneficial ownership limitations may be adjusted up or down (up to 9.99%), subject to providing advanced notice to us. Beneficial ownership as reflected in the selling stockholder table reflects the total number of shares potentially issuable underlying the Warrants and the Placement Agent Warrants and does not give effect to these beneficial ownership limitations. Accordingly, actual beneficial ownership, as calculated in accordance with Section 13(d) and Rule 13d-3 thereunder may be lower than as reflected in the table.
- (2) The securities are directly held by Armistice Capital Master Fund Ltd., a Cayman Islands exempted company (the “**Master Fund**”), and may be deemed to be indirectly beneficially owned by: (i) Armistice Capital, LLC (“**Armistice Capital**”), as the investment manager of the Master Fund; and (ii) Steven Boyd, as the Managing Member of Armistice Capital. The warrants are subject to a beneficial ownership limitation of 4.99% or 9.99%, which such limitation restricts the selling stockholder from exercising that portion of the warrants that would result in the selling stockholder and its affiliates owning, after exercise, a number of shares of common stock in excess of the beneficial ownership limitation. The amounts and percentages in the table do not give effect to the beneficial ownership limitations. The address of the Master Fund is c/o Armistice Capital, LLC, 510 Madison Avenue, 7th Floor, New York, NY 10022.
- (3) H.C. Wainwright & Co., LLC is a registered broker dealer and has a registered address of c/o H.C. Wainwright & Co., LLC, 430 Park Ave, 3rd Floor, New York, NY 10022. H.C. Wainwright & Co., LLC has sole voting and dispositive power over the securities held. The number of shares beneficially owned prior to this offering consist of shares of common stock issuable upon exercise of Placement Agent Warrants, which were received as compensation for the Private Placement. H.C. Wainwright & Co., LLC acquired the Placement Agent Warrants in the ordinary course of business and, at the time the placement agent warrants were acquired, H.C. Wainwright & Co., LLC had no agreement or understanding, directly or indirectly, with any person to distribute such securities.

PLAN OF DISTRIBUTION

Each selling stockholder of the securities and any of their pledgees, assignees and successors-in-interest may, from time to time, sell any or all of their securities covered hereby on the principal Trading Market or any other stock exchange, market or trading facility on which the securities are 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 securities 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;
- in transactions through broker-dealers that agree with the selling stockholders to sell a specified number of such securities at a stipulated price per security;
- through the writing or settlement of options or other hedging transactions, whether through an options exchange or otherwise;
- a combination of any such methods of sale; or
- any other method permitted pursuant to applicable law.

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

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 securities, 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 FINRA Rule 2121; and in the case of a principal transaction a markup or markdown in compliance with FINRA Rule 2121.

In connection with the sale of the securities 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 the securities in the course of hedging the positions they assume. The selling stockholders may also sell securities short and deliver these securities to close out their short positions, or loan or pledge the securities to broker-dealers that in turn may sell these securities. 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 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 securities 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 securities.

We are required to pay certain fees and expenses incurred by us incident to the registration of the securities. We have agreed to indemnify the selling stockholders against certain losses, claims, damages and liabilities, including liabilities under the Securities Act.

We agreed to keep this prospectus effective until the earlier of (i) the date on which the securities may be resold by the selling stockholders without registration and without regard to any volume or manner-of-sale limitations by reason of Rule 144, without the requirement for us to be in compliance with the current public information under Rule 144 under the Securities Act or any other rule of similar effect or (ii) all of the securities have been sold pursuant to this prospectus or Rule 144 under the Securities Act or any other rule of similar effect. 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 securities may not simultaneously engage in market making activities with respect to the 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 the 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).

DESCRIPTION OF CAPITAL STOCK

The summary of general terms and provisions of our capital stock set forth below does not purport to be complete and is subject to and qualified by reference to our Amended and Restated Certificate of Incorporation (the “**Certificate of Incorporation**”) and Amended and Restated Bylaws (the “**Bylaws**,” and together with the Certificate of Incorporation, the “**Charter Documents**”), each of which is included as an exhibit to our most recent Annual Report on Form 10-K filed with the SEC and incorporated by reference herein. For additional information, please read the Charter Documents and the applicable provisions of the Delaware General Corporation Law (the “**DGCL**”).

Authorized Capital Stock

We are authorized to issue up to 110,000,000 shares, of which (i) 100,000,000 have been designated common stock, par value \$0.0001 per share, and (ii) 10,000,000 have been designated preferred stock, par value \$0.0001 per share. As of May 18, 2023, there were 3,352,069 shares of our common stock outstanding, held by 152 stockholders of record. This figure does not reflect the number of beneficial owners of shares of our common stock as a single stockholder of record often holds shares in nominee name (also referred to as, in “street name”) on behalf of multiple beneficial owners.

Common Stock

Voting Rights

The holders of shares of common stock have the exclusive power to vote on all matters presented to our stockholders unless Delaware law or the certificate of designation for an outstanding series of preferred stock gives the holders of that series of preferred stock the right to vote on certain matters. Each holder of shares of common stock is entitled to one vote per share.

When a quorum is present at any meeting, the vote of the holders of a majority of the voting power of the common stock entitled to vote and present in person or represented by proxy shall decide any question brought before such meeting, unless the question is one upon which by express provision of the Charter Documents or by law, a different vote is required in which case such express provision shall govern and control the decision of such question. Directors are elected by a plurality of the voting power of the shares present in person or represented by proxy and entitled to vote on the election of directors at a meeting at which a quorum is present, and stockholders are not entitled to cumulate their votes for the election of directors.

Dividend Rights

Subject to any prior rights of any preferred stock then outstanding, the holders of shares of common stock are entitled to receive dividends ratably out of funds legally available, when and if declared by our board of directors.

No Preemptive or Similar Rights

The common stock is not entitled to preemptive rights and is not subject to conversion, redemption or sinking fund provisions.

Right to Receive Liquidation Distributions

If we become subject to a liquidation, dissolution or winding-up, the assets legally available for distribution to our stockholders would be distributable ratably among the holders of the common stock and any participating preferred stock outstanding at that time, subject to prior satisfaction of all outstanding debt and liabilities and the preferential rights and payment of liquidation preferences, if any, on any outstanding shares of preferred stock.

Outstanding Stock Options and Restricted Stock Units

As of March 31, 2023, we had outstanding options to purchase 107,128 shares of our common stock at a weighted-average exercise price of \$23.67 per share, pursuant to our 2015 Equity Incentive Plan. As of March 31, 2023, we had outstanding restricted stock units to acquire 12,220 shares of our common stock pursuant to our 2015 Equity Incentive Plan. As of March 31, 2023, there were 55,365 shares of our common stock reserved for future issuance under our 2015 Equity Incentive Plan.

2015 Employee Stock Purchase Plan

As of March 31, 2023, there were 4,004 shares of our common stock reserved for future issuance under the Employee Stock Purchase Plan.

Outstanding Warrants

As of March 31, 2023, there were the following warrants to purchase shares of our common stock outstanding:

- warrants to purchase 1,717 shares of our common stock issued to Wedbush Securities Inc., with an exercise price of \$472.50 per share;

- warrants to purchase 151,341 shares of our common stock issued in connection with our public offering completed on February 11, 2020, with an exercise price of \$28.75 per share;
- warrants to purchase 158,563 shares of our common stock issued in a private placement completed on December 11, 2020, with an exercise price of \$29.55 per share;
- warrants to purchase 5,708 shares of common stock that were distributed to holders of rights that were granted under that certain merger agreement that we entered into with Salius Pharmaceuticals, LLC on January 3, 2019, with an exercise price of \$379.25 per share; and
- warrants to purchase 280,183 shares of our common stock issued in connection with that certain offering completed on April 26, 2022, with an exercise price of \$8.50 per share.

On May 16, 2018, we issued (i) Pre-Funded Warrants to purchase up to 3,306,364 shares of our common stock, (ii) Series A-1 Warrants to purchase up to 3,636,364 shares of our common stock, (iii) Series A-2 Warrants to purchase up to 3,636,364 shares of our common stock, and (i) Placement Agent Warrants to purchase up to 254,545 shares of our common stock. Each Series A-1 Warrant is exercisable for a period of five and one-half (5.5) years from the issuance date at an exercise price of \$1.40 per share. Each Series A-2 Warrant is exercisable for a period of eighteen (18) months from the issuance date at an exercise price of \$1.40 per share. Each Pre-Funded Warrant was sold in lieu of shares of common stock, are exercisable immediately upon issuance, have an exercise price of \$0.0001 per share and expire when exercised in full. Under the terms of the Warrants and the Placement Agent Warrants, the investor may not exercise the warrants to the extent such exercise would cause the investor, together with its affiliates and attribution parties, to beneficially own a number of shares of our common stock which would exceed 4.99% (or, at such investor's option upon issuance, 9.99%), of our then outstanding common stock following such exercise, excluding for purposes of such determination shares of common stock issuable upon exercise of such warrants which have not been exercised.

Anti-Takeover Provisions in Charter Documents

Certain provisions of the Charter Documents, which are summarized below, may have the effect of delaying, deferring or preventing another person from acquiring control of us. These provisions may discourage takeovers, coercive or otherwise, and are also designed, in part, to encourage persons seeking to acquire control of our company to negotiate first with our board of directors. We believe that the benefits of increased protection of our potential ability to negotiate with an unfriendly or unsolicited acquirer outweigh the disadvantages of discouraging a proposal to acquire us because negotiation of these proposals could result in an improvement of their terms. These provisions include the following:

Board of Directors Vacancies. Pursuant to the Charter Documents, our board of directors may fill vacant directorships. In addition, directors may only be removed for cause and only upon the affirmative vote of at least sixty-six and two-thirds percent of the voting power of outstanding voting stock. In addition, the number of directors constituting the board of directors may be set only by a resolution adopted by a majority vote of the board of directors. These provisions may have the effect of deferring, delaying or discouraging hostile takeovers, or changes in control or management of our company and will make it more difficult to change the composition of the board of directors, which will promote continuity of management.

Classified Board. The Charter Documents provide that our board of directors is classified into three classes of directors, with each class serving three-year staggered terms. A third-party may be discouraged from making a tender offer or otherwise attempting to obtain control of our company as it is more difficult and time-consuming for stockholders to replace a majority of the directors on a classified board of directors.

Stockholder Action; Special Meeting of Stockholders. Pursuant to Section 228 of the DGCL, any action required to be taken at any annual or special meeting of the stockholders may be taken without a meeting, without prior notice and without a vote if a consent or consents in writing, setting forth the action so taken, is signed by the holders of outstanding stock having not less than the minimum number of votes that would be necessary to authorize or take such action at a meeting at which all shares of stock entitled to vote thereon were present and voted, unless the Certificate of Incorporation provides otherwise. The Certificate of Incorporation provides that stockholders may not take action by written consent but may only take action at annual or special meetings of stockholders. As a result, a holder controlling a majority of our capital stock would not be able to amend the Bylaws or remove directors without holding a meeting of stockholders called in accordance with the Charter Documents. The Bylaws provides that special meetings of the stockholders may be called only upon a resolution approved by a majority of the total number of directors that we would have if there were no vacancies. These provisions might delay the ability of our stockholders to force consideration of a proposal or for stockholders controlling a majority of our capital stock to take any action, including the removal of directors.

Advance Notice Requirements for Stockholder Proposals and Director Nominations. The Bylaws provide advance notice procedures for stockholders seeking to bring business before our annual meeting of stockholders or to nominate candidates for election as directors at our annual meeting of stockholders. The Bylaws specify certain requirements regarding the form and content of a stockholder's notice and prohibit the conduct of any business at a special meeting other than as specified in the notice for such meeting. These provisions might preclude stockholders from bringing matters before our annual meeting of stockholders or from making nominations for directors at our annual meeting of stockholders if the proper procedures are not followed. These provisions may also discourage or deter a potential acquirer from conducting a solicitation of proxies to elect the acquirer's own slate of directors or otherwise attempting to obtain control of our company.

No Cumulative Voting. The DGCL provides that stockholders are not entitled to cumulate votes in the election of directors unless a corporation's certificate of incorporation provides otherwise. The Certificate of Incorporation does not provide for cumulative voting.

Amendment of Charter Provisions and Bylaws. The Charter Documents provides that the Bylaws may be adopted, amended, altered or repealed by either (i) a vote of a majority of the total number of directors of the board of directors or (ii) in addition to any other vote otherwise required by law, the affirmative vote of the holders of at least sixty-six and two-thirds percent of the voting power of all of the then outstanding shares of capital stock entitled to vote generally in the election of directors.

Our Charter Documents also provide that the provisions of the Certificate of Incorporation relating to provisions relating to the management of the business, board of directors, director liability, indemnification and forum selection., may only be amended, altered, changed or repealed by the affirmative vote of the holders of at least sixty-six and two-thirds percent of the voting power of all of our outstanding shares of capital stock entitled to vote generally in the election of directors, voting together as a single class.

Issuance of Undesignated Preferred Stock. The board of directors has the authority, without further action by our stockholders, to designate and issue shares of preferred stock with rights and preferences, including super voting, special approval, dividend or other rights or preferences on a discriminatory basis. The existence of authorized but unissued shares of undesignated preferred stock would enable the board of directors to render more difficult or to discourage an attempt to obtain control of our company by means of a merger, tender offer, proxy contest or other means.

Business Combinations with Interested Stockholders. We are subject to the provisions of Section 203 of the DGCL. In general, Section 203 prohibits a publicly held Delaware corporation from engaging in a business combination, such as a merger, with an interested stockholder (i.e., subject to certain exceptions, a person or group owning 15% or more of the corporation's voting stock) for a period of three years following the date the person became an interested stockholder, unless (with certain exceptions) the business combination or the transaction in which the person became an interested stockholder is approved in a prescribed manner.

Forum Selection. The Charter Documents provide that unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware will, to the fullest extent permitted by applicable law, be the sole and exclusive forum for:

- any derivative action or proceeding brought on behalf of our company;
- any action asserting a claim of breach of a fiduciary duty owed by any director, officer, or other employee of our company to us or our stockholders;
- any action asserting a claim of breach of a fiduciary duty owed by any director, officer, or other employee of our company to us or our stockholders; and
- any action asserting a claim against us governed by the internal affairs doctrine.

in each such case, subject to such Court of Chancery of the State of Delaware having personal jurisdiction over the indispensable parties named as defendants therein. The Charter Documents also provides that any person or entity purchasing or otherwise acquiring any interest in shares of our capital stock will be deemed to have notice of, and to have consented to, this forum selection provision.

Although these provisions benefit us by providing increased consistency in the application of Delaware law for the specified types of actions and proceedings, the provisions may have the effect of increasing the costs of and discouraging lawsuits against our directors, officers, employees and agents. The enforceability of similar exclusive forum provisions in other companies' charters has been challenged in legal proceedings, and it is possible that, in connection with one or more actions or proceedings described above, a court could rule that this provision in the Certificate of Incorporation is inapplicable or unenforceable. For example, the choice of forum provisions summarized above are not intended to, and would not, apply to suits brought to enforce any liability or duty created by the Exchange Act, or other claim for which the federal courts have exclusive jurisdiction. Additionally, there is uncertainty as to whether our choice of forum provisions would be enforceable with respect to suits brought to enforce any liability or duty created by the Securities Act, or other claims for which the federal courts have concurrent jurisdiction, and in any event stockholders will not be deemed to have waived our compliance with federal securities laws and rules and regulations thereunder.

Listing

The common stock is listed on the Nasdaq Capital Market under the symbol "SLRX."

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is American Stock Transfer & Trust Company, LLC.

LEGAL MATTERS

Certain legal matters relating to the issuance of the securities offered hereby will be passed upon for us by Hogan Lovells US LLP.

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 contains an explanatory paragraph describing conditions that raise substantial doubt about our ability to continue as a going concern as described in Note 1 to the consolidated financial statements), 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.

INCORPORATION BY REFERENCE

The SEC allows us to “incorporate by reference” information into this prospectus, which means that we can disclose important information to you by referring you to another document filed separately with the SEC. The SEC file number for the documents incorporated by reference in this prospectus is 001-36812. The documents incorporated by reference into this prospectus contain important information that you should read about us.

The following documents are incorporated by reference into this document:

- our Annual Report on Form 10-K for the year ended December 31, 2022, filed on March 27, 2023;
- our Quarterly Report on Form 10-Q for the quarter ended March 31, 2023 filed on May 11, 2023;
- those portions of our Definitive Proxy Statement on Schedule 14A filed on May 1, 2023 that are deemed “filed” with the SEC;
- our Current Reports on Form 8-K (other than portions thereof furnished under Item 2.02 or Item 7.01 of Form 8-K and exhibits accompanying such reports that relate to such items) filed with the SEC on January 10, 2023 and March 13, 2023 and May 16, 2023; and
- the description of our common stock contained in our Registration Statement on [Form 8-A](#) filed on January 23, 2015, as updated by [Exhibit 4.11](#) to our Annual Report on [Form 10-K](#) for the fiscal year ended December 31, 2021, including any amendments or reports filed for the purpose of updating such description.

We also incorporate by reference into this prospectus all documents (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) that are filed by us with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of the initial registration statement of which this prospectus is a part and prior to the effectiveness of such registration statement and all documents that are filed by us with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of this prospectus but prior to the termination of the offering. These documents include periodic reports, such as Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K, as well as proxy statements.

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.

You may request, orally or in writing, a copy of any or all of the documents incorporated herein by reference. These documents will be provided to you at no cost, by contacting: Salarius Pharmaceuticals, Inc., Chief Financial Officer, at 2450 Holcombe Blvd., Suite X, Houston, TX 77021. In addition, copies of any or all of the documents incorporated herein by reference may be accessed at our website at www.saliariuspharma.com. The information on such website is not incorporated by reference and is not a part of this prospectus.

WHERE YOU CAN FIND MORE INFORMATION

We filed with the SEC a registration statement under the Securities Act for the securities offered by this prospectus. This prospectus does not contain all of the information in the registration statement and the exhibits and schedule that were filed with the registration statement. For further information with respect to us and our securities, we refer you to the registration statement and the exhibits and schedule that were filed with the registration statement. Statements contained in this prospectus about the contents of any contract or any other document that is filed as an exhibit to the registration statement are not necessarily complete, and we refer you to the full text of the contract or other document filed as an exhibit to the registration statement. The SEC maintains a website that contains reports, proxy and information statements, and other information regarding registrants that file electronically with the SEC. The address of the website is www.sec.gov.

We file periodic reports under the Exchange Act, including annual, quarterly and special reports, and other information with the SEC. These periodic reports and other information are available for inspection and copying at the SEC regional offices, public reference facilities and on the website of the SEC referred to above.

We make available free of charge on or through our internet website our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC. The information found on our website, www.salariuspharma.com, other than as specifically incorporated by reference in this prospectus, is not part of this prospectus.



11,163,637 Shares of Common Stock

PROSPECTUS

, 2023

PART II

INFORMATION NOT REQUIRED IN THE PROSPECTUS

Item 14. Other Expenses of Issuance and Distribution.

The following table sets forth the expenses to be incurred in connection with the offering described in this Registration Statement, other than underwriting discounts and commissions, all of which will be paid by us. All amounts are estimates except the SEC registration fee.

	<u>Amount</u>
SEC registration fee	\$1,778
Accountant's fees and expenses	10,000
Legal fees and expenses	50,000
Pricing and miscellaneous expenses	3,000
Total expenses	<u>\$ 64,778</u>

Item 15. Indemnification of Directors and Officers.

Section 102 of the Delaware General Corporation Law (the “**DGCL**”) permits a corporation to eliminate the personal liability of its directors or its stockholders for monetary damages for a breach of fiduciary duty as a director, except where the director breached his or her duty of loyalty, failed to act in good faith, engaged in intentional misconduct or knowingly violated a law, authorized the payment of a dividend or approved a stock repurchase in violation of Delaware corporate law or obtained an improper personal benefit. Our certificate of incorporation provides that no director shall be personally liable to us or our stockholders for monetary damages for any breach of fiduciary duty as a director, notwithstanding any provision of law imposing such liability, except to the extent that the DGCL prohibits the elimination or limitation of liability of directors for breaches of fiduciary duty.

Section 145 of the DGCL provides that a corporation has the power to indemnify a director, officer, employee or agent of the corporation and certain other persons serving at the request of the corporation in related capacities against expenses (including attorneys’ fees), judgments, fines and amounts paid in settlements actually and reasonably incurred by the person in connection with an action, suit or proceeding to which he or she is or is threatened to be made a party by reason of such position, if such person acted in good faith and in a manner he or she reasonably believed to be in or not opposed to the best interests of the corporation, and, in any criminal action or proceeding, had no reasonable cause to believe his or her conduct was unlawful, except that, in the case of actions brought by or in the right of the corporation, no indemnification shall be made with respect to any claim, issue or matter as to which such person shall have been adjudged to be liable to the corporation unless and only to the extent that the Court of Chancery or other adjudicating court determines that, despite the adjudication of liability but in view of all of the circumstances of the case, such person is fairly and reasonably entitled to indemnification for such expenses which the Court of Chancery or such other court shall deem proper.

Our certificate of incorporation provides that we will indemnify each person who was or is a party or threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (other than an action by or in the right of us), by reason of the fact that he or she is or was, or has agreed to become, our director or officer, or is or was serving, or has agreed to serve, at our request as a director, officer, partner, employee or trustee of, or in a similar capacity with, another corporation, partnership, joint venture, trust or other enterprise (all such persons being referred to as an Indemnitee), or by reason of any action alleged to have been taken or omitted in such capacity, against all expenses (including attorneys’ fees), judgments, fines and amounts paid in settlement actually and reasonably incurred in connection with such action, suit or proceeding and any appeal therefrom if such Indemnitee acted in good faith and in a manner he or she reasonably believed to be in, or not opposed to, our best interests, and, with respect to any criminal action or proceeding, he or she had no reasonable cause to believe his or her conduct was unlawful.

Our certificate of incorporation also provides that we will indemnify any Indemnitee who was or is a party to an action or suit by or in the right of us to procure a judgment in our favor by reason of the fact that the Indemnitee is or was, or has agreed to become, our director or officer, or is or was serving, or has agreed to serve, at our request as a director, officer, partner, employee or trustee or, or in a similar capacity with, another corporation, partnership, joint venture, trust or other enterprise, or by reason of any action alleged to have been taken or omitted in such capacity, against all expenses (including attorneys’ fees) and, to the extent permitted by law, amounts paid in settlement actually and reasonably incurred in connection with such action, suit or proceeding, and any appeal therefrom, if the Indemnitee acted in good faith and in a manner he or she reasonably believed to be in, or not opposed to, our best interests, except that no indemnification shall be made with respect to any claim, issue or matter as to which such person shall have been adjudged to be liable to us, unless a court determines that, despite such adjudication but in view of all of the circumstances, he or she is entitled to indemnification of such expenses. Notwithstanding the foregoing, to the extent that any Indemnitee has been successful, on the merits or otherwise, he or she will be indemnified by us against all expenses (including attorneys’ fees) actually and reasonably incurred by him or her or on his or her behalf in connection therewith. If we do not assume the defense, expenses must be advanced to an Indemnitee under certain circumstances.

We maintain a general liability insurance policy that covers certain liabilities of our directors and officers arising out of claims based on acts or omissions in their capacities as directors or officers.

Insofar as the foregoing provisions permit indemnification of directors, executive officers, or persons controlling us for liability arising under the Securities Act, we have been informed that, in the opinion of the SEC, such indemnification is against public policy as expressed in the Securities Act and is therefore unenforceable.

Item 16. Exhibits and Financial Statement Schedules.

(a) Exhibits

See the Exhibit Index List below, which is incorporated by reference herein.

Incorporated by Reference

Exhibit Number	Exhibit Title	Filed with this Form S-3	Form	File No.	Date Filed
3.1	<u>Amended and Restated Certificate of Incorporation of the Registrant</u>		8-K	001-36812 Exhibit 3.1	02/09/2015
3.2	<u>Certificate of Amendment of Certificate of Incorporation of the Registrant filed with the Secretary of State of Delaware on July 18, 2019</u>		8-K	001-36812 Exhibit 3.1	07/22/2019
3.3	<u>Certificate of Amendment of Certificate of Incorporation of the Registrant filed with the Secretary of State of Delaware on October 14, 2022</u>		8-K	001-36812 Exhibit 3.2	07/22/2019
3.4	<u>Amended and Restated Bylaws of the Registrant, effective July 19, 2019</u>		8-K	001-36812 Exhibit 3.2	07/22/2019
3.5	<u>Amendment to Amended and Restated Bylaws of the Registrant, effective April 1, 2022</u>		8-K	001-36813 Exhibit 3.1	04/01/2022
4.1	<u>Form of Common Stock Certificate of Registrant</u>		S-1	333-201276 Exhibit 4.1	12/29/2014
4.2	<u>Form of Common Stock Purchase Warrant</u>		S-1/A	333-235879 Exhibit 4.8	02/06/2020
4.3	<u>Common Stock Purchase Warrant dated February 11, 2020</u>		8-K	001-36812 Exhibit 4.1	02/12/2020
4.4	<u>Form of Inducement Warrant dated December 11, 2020</u>		8-K/A	001-36812 Exhibit 4.1	12/11/2020
4.5	<u>Form of 2021 Flex Warrants</u>		8-K	001-36812 Exhibit 4.1	07/01/2021
4.6	<u>Form of Common Stock Purchase Warrant dated April 26, 2022</u>		8-K	001-36812 Exhibit 4.1	04/22/2022
4.7	<u>Form of Common Stock Warrants</u>		8-K	001-36812 Exhibit 4.1	05/16/2023
4.8	<u>Form of Pre-Funded Warrant</u>		8-K	001-36812 Exhibit 4.2	05/16/2023
4.9	<u>Form of Placement Agent Warrant</u>		8-K	001-36812 Exhibit 4.3	05/16/2023

5.1	<u>Opinion of Hogan Lovells US LLP</u>	X			
10.1	<u>Form of Securities Purchase Agreement</u>		8-K	001-36812 Exhibit 10.1	05/16/2023
10.2	<u>Form of Registration Rights Agreement</u>		8-K	001-36812 Exhibit 10.2	05/16/2023
23.1	<u>Consent of Ernst & Young LLP</u>	X			
23.2	<u>Consent of Hogan Lovells US LLP (included in Exhibit 5.1)</u>	X			
24.1	Power of attorney (included on Signature Page)	X			
107	Filing Fee Table	X			

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;

(ii) To reflect in the prospectus any facts or events arising after the effective date of this 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. 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 and of the estimated maximum offering range may be reflected in the form of prospectus filed with the Securities and Exchange Commission (the "Commission") pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than 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 this registration statement or any material change to such information in this registration statement;

provided, however, that paragraphs (1)(i), (1)(ii) and (1)(iii) above 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 Section 15(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), 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, 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 of the registrant under the Securities Act 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;

The undersigned registrant hereby undertakes that, for purposes 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 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 SEC such indemnification is against public policy as expressed in the 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 Act 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 Houston, State of Texas, on this 26th day of May, 2023.

SALARIUS PHARMACEUTICALS, INC.

By: /s/ David J. Arthur
Name: David J. Arthur
Title: President and Chief
Executive Officer

POWER OF ATTORNEY

KNOW ALL BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints David J. Arthur and Mark J. Rosenblum as his or her true and lawful attorney-in-fact and agent, with the full power of substitution, for him or her and in his or her name, place or stead, in any and all capacities, to sign any and all amendments to this registration statement (including post-effective amendments), and any other registration statements for the same offering pursuant to Rule 462(b) of the Securities Act of 1933, as amended, and to file the same, with exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorney-in-fact and agent full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorney-in-fact and agent, or his substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

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

Signature	Title	Date
<u>/s/ William K. McVicar</u> William K. McVicar	Chairman of the Board	May 26, 2023
<u>/s/ David J. Arthur</u> David J. Arthur	Director, President and Chief Executive Officer (<i>Principal Executive Officer</i>)	May 26, 2023
<u>/s/ Mark J. Rosenblum</u> Mark J. Rosenblum	Chief Financial Officer (<i>Principal Financial and Accounting Officer</i>)	May 26, 2023
<u>/s/ Tess Burleson</u> Tess Burleson	Director	May 26, 2023
<u>/s/ Arnold Hanish</u> Arnold Hanish	Director	May 26, 2023
<u>/s/ Paul Lammers</u> Paul Lammers	Director	May 26, 2023
<u>/s/ Jon Lieber</u> Jon Lieber	Director	May 26, 2023
<u>/s/ Bruce McCreedy</u> Bruce McCreedy	Director	May 26, 2023

Exhibit 107

Calculation of Filing Fee Tables

Form S-3
(Form Type)

Salarius Pharmaceuticals, Inc.
(Exact Name of Registrant as Specified in Its Charter)

Table 1: Newly Registered and Carry Forward Securities

	Security Type	Security Class Title	Fee Calculation or Carry Forward Rule	Amount Registered (1)	Proposed Maximum Offering Price per Share (2)	Maximum Aggregate Offering Price (1)	Fee Rate	Amount of Registration Fee	Carry Forward Form Type	Carry Forward File Number	Carry Forward Initial Effective Date	Filing Fee Previously Paid in Connection with Unsold Securities to be Carried Forward
Newly Registered Securities												
Fees to be Paid	Equity	Common Stock, par value \$0.0001 per share	Rule 457(c)	11,163,637 (3)	\$1.445	\$16,131,455.50	0.00011020	\$1,778.00	-	-	-	-
Fees Previously Paid	-	-	-	-	-	-	-	-	-	-	-	-
Carry Forward Securities												
Carry Forward Securities	-	-	-	-	-	-	-	-	-	-	-	-
	Total Offering Amounts					\$16,131,455.50		\$1,778.00				
	Total Fees Previously Paid							-				
	Total Fee Offsets							-				
	Net Fee Due							\$1,778.00				

- (1) Pursuant to Rule 416 under the Securities Act of 1933, as amended (the “Securities Act”), this registration statement also covers any additional securities that may be offered, issued or become issuable in connection with any stock split, stock dividend or similar transaction or pursuant to anti-dilution provisions of any of the securities.
- (2) Estimated solely for the purpose of calculation of the registration fee pursuant to Rule 457(c) under the Securities Act based on a per share price of \$1.445, the average of the high and low reported sales prices of Salarius Pharmaceuticals, Inc.’s (the “Company”) common stock, par value \$0.0001 per share (“Common Stock”), on the Nasdaq Capital Market on May 22, 2023.
- (3) Consists of (i) 330,000 shares of Common Stock issued in a private placement on May 16, 2023 (the “Private Placement”), pursuant to that certain Securities Purchase Agreement by and between the Company and an accredited investor, dated as of May 11, 2023 (the “Securities Purchase Agreement”), (ii) 3,306,364 shares of Common Stock issuable upon the exercise of the pre-funded warrants issued in the Private Placement pursuant to the Securities Purchase Agreement, (iii) 3,636,364 shares of Common Stock issuable upon the exercise of the Series A-1 warrants issued in the Private Placement pursuant to the Securities Purchase Agreement, (iv) 3,636,364 shares of Common Stock issuable upon the exercise of the Series A-2 warrants issued in the Private Placement pursuant to the Securities Purchase Agreement, and (v) 254,545 shares of Common Stock issuable upon the exercise of the placement agent warrants issued to the Company’s placement agent in connection with the Private Placement.

Consent of Independent Registered Public Accounting Firm

We consent to the reference to our firm under the caption “Experts” in the Registration Statement (Form S-3 No. 333-XXXXX) and related Prospectus of Salariaus Pharmaceuticals, Inc. for the registration of 11,163,637 shares of its common stock and to the incorporation by reference therein of our report dated March 27, 2023, with respect to the consolidated financial statements of Salariaus 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

Houston, Texas May 24, 2023

The logo for Hogan Lovells, featuring the name "Hogan Lovells" in a white serif font on a yellow square background.

Hogan Lovells US LLP
609 Main Street
Suite 4200
Houston, TX 77002
T +1 713 632 1400
F +1 713 632 1401
www.hoganlovells.com

May 26, 2023

Board of Directors
Saliarius Pharmaceuticals, Inc.
2450 Holcombe Blvd., Suite X
Houston, TX 77021

Ladies and Gentlemen:

We are acting as counsel to Saliarius Pharmaceuticals, Inc., a Delaware corporation (the "**Company**"), in connection with its registration statement on Form S-3 (the "**Registration Statement**"), filed with the Securities and Exchange Commission under the Securities Act of 1933, as amended (the "**Act**"), relating to the resale, from time to time, by the selling stockholders listed in the Registration Statement of up to 11,163,637 shares of common stock, par value \$0.0001 per share, of the Company ("**Common Stock**"), comprised of (a) 330,000 shares of Common Stock (the "**Shares**") issued in a private placement on May 16, 2023 (the "**Private Placement**"), pursuant to that certain Securities Purchase Agreement by and between the Company and an accredited investor, dated as of May 11, 2023 (the "**Securities Purchase Agreement**"), (b) 3,306,364 shares of Common Stock (the "**Pre-Funded Warrant Shares**") issuable upon the exercise of the pre-funded warrants (the "**Pre-Funded Warrants**") issued in the Private Placement pursuant to the Securities Purchase Agreement, (c) 3,636,364 shares of Common Stock (the "**Series A-1 Warrant Shares**") issuable upon the exercise of the Series A-1 warrants ("**Series A-1 Warrants**") issued in the Private Placement pursuant to the Securities Purchase Agreement, (d) 3,636,364 shares of Common Stock (the "**Series A-2 Warrant Shares**") issuable upon the exercise of the Series A-2 warrants ("**Series A-2 Warrants**") issued in the Private Placement pursuant to the Securities Purchase Agreement, and (e) 254,545 shares of Common Stock (collectively, with the Pre-Funded Warrant Shares, the Series A-1 Warrant Shares, and the Series A-2 Warrant Shares the "**Warrant Shares**") issuable upon the exercise of the placement agent warrants (collectively with the Pre-Funded Warrants, the Series A-1 Warrants, and the Series A-2 Warrants, the "**Warrants**") issued to the Company's placement agent in connection with the Private Placement, each as described in the prospectus that forms a part of the Registration Statement (the "**Prospectus**"). This opinion letter is furnished to you at your request to enable you to fulfill the requirements of Item 601(b)(5) of Regulation S-K, 17 C.F.R. § 229.601(b)(5), in connection with the Registration Statement.

For purposes of this opinion letter, we have examined copies of such agreements, instruments and documents as we have deemed an appropriate basis on which to render the opinions hereinafter

expressed, including the Securities Purchase Agreement and the Warrants. In our examination of the aforesaid documents, we have assumed the genuineness of all signatures, the legal capacity of all natural persons, the accuracy and completeness of all documents submitted to us, the authenticity of all original documents, and the conformity to authentic original documents of all documents submitted to us as copies (including pdfs). As to all matters of fact, we have relied on the representations and statements of fact made in the documents so reviewed, and we have not independently established the facts so relied on. This opinion letter is given, and all statements herein are made, in the context of the foregoing.

This opinion letter is based as to matters of law solely on the Delaware General Corporation Law, as amended. We express no opinion herein as to any other statutes, rules or regulations.

Based upon, subject to and limited by the foregoing, we are of the opinion that, as of the date hereof, (a) the Shares have been validly issued, fully paid, and nonassessable, and (b) the Warrant Shares have been duly authorized by all necessary corporate action on the part of the Company and, following (i) the exercise of the Warrants in accordance with their terms, (ii) the receipt by the Company of the exercise price for the Warrant Shares as specified in the applicable Warrants, and (iii) the issuance of the Warrant Shares thereunder, the Warrant Shares will be validly issued, fully paid, and nonassessable.

This opinion letter has been prepared for use in connection with the Registration Statement. We assume no obligation to advise of any changes in the foregoing subsequent to the effective date of the Registration Statement.

We hereby consent to the filing of this opinion letter as Exhibit 5.1 to the Registration Statement and to the reference to this firm under the caption "Legal Matters" in the Prospectus. In giving this consent, we do not thereby admit that we are an "expert" within the meaning of the Act.

Very truly yours,

/s/ HOGAN LOVELLS US LLP

HOGAN LOVELLS US LLP