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

FORM S-8
REGISTRATION STATEMENT UNDER
THE SECURITIES ACT OF 1933
SOPHiA GENETICS SA
(Exact name of registrant as specified in its charter)

Switzerland
(State or other jurisdiction of incorporation or organization)

Not Applicable
(I.R.S. Employer Identification No.)

Rue du Centre 172, CH-1025 Saint-Sulpice, Switzerland
(Address of Principal Executive Offices)

SOPHiA GENETICS SA 2021 Equity Incentive Plan
(Full title of the plan)

SOPHiA GENETICS, Inc.
185 Dartmouth Street, Suite 502
Boston, MA 02116
(Name and Address of Agent For Service)

(617) 982-1210
(Telephone number, Including Area Code, of Agent For Service)

Copies of all communications, including all communications sent to the agent for service, should be sent to:

Kyoko Takahashi Lin
Davis Polk & Wardwell LLP
450 Lexington Avenue
New York, NY 10017
(212) 450-4000

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 o Accelerated filer o
Non-accelerated filer o Smaller reporting company o
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.

**CALCULATION OF REGISTRATION FEE**

<table>
<thead>
<tr>
<th>Title of Securities to be Registered</th>
<th>Amount to be Registered</th>
<th>Proposed Maximum Offering Price Per Share</th>
<th>Proposed Maximum Aggregate Offering Price</th>
<th>Amount of Registration Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ordinary shares, par value CHF 0.05 per share, to be issued pursuant to the SOPHiA GENETICS SA 2021 Equity Incentive Plan</td>
<td>7,800,740</td>
<td>$18.00</td>
<td>$140,413,320</td>
<td>$15,319.10</td>
</tr>
</tbody>
</table>

(1)This Registration Statement on Form S-8 (this “Registration Statement”) covers ordinary shares, par value CHF 0.05 per share (“Shares”), of SOPHiA GENETICS SA (the “Registrant”) issuable pursuant to the SOPHiA GENETICS SA 2021 Equity Incentive Plan (the “2021 Equity Incentive Plan”). Pursuant to Rule 416(a) under the Securities Act of 1933, as amended (the “Securities Act”), this Registration Statement shall also cover any additional Shares that become issuable under the 2021 Equity Incentive Plan by reason of any share dividend, share split or other similar transaction.

(2)Estimated solely for the purpose of calculating the registration fee pursuant to Rule 457(h) and Rule 457(c) under the Securities Act. The Proposed Maximum Offering Price Per Share is based on the initial public offering price per share of the Registrant’s common stock in its proposed initial public offering.

(3)Rounded up to the nearest penny.
PART I

INFORMATION REQUIRED IN THE SECTION 10(a) PROSPECTUS

The documents containing the information specified in Item 1 and Item 2 of Part I of Form S-8 will be sent or given to participants as specified by Rule 428(b)(1) under the Securities Act. In accordance with the rules and regulations of the U.S. Securities and Exchange Commission (the "Commission") and the instructions to Form S-8, such documents are not being filed with the Commission either as part of this Registration Statement or as prospectuses or prospectus supplements pursuant to Rule 424 under the Securities Act.

PART II

INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

Item 3. Incorporation of Documents by Reference.

The following documents are incorporated herein by reference:

(a) Amendment No. 1 to the Registrant’s Registration Statement on Form F-1 filed with the Commission on July 19, 2021 (Registration No. 333-257646), which contains the Registrant’s audited financial statements for the latest fiscal year for which such statements have been filed.

(b) The Registrant’s prospectus to be filed with the Commission pursuant to Rule 424(b) under the Securities Act, relating to the Registrant’s Registration Statement on Form F-1, as amended (Registration No. 333-257646).

(c) The description of the Registrant’s share capital which is contained in the Registrant’s Registration Statement Form 8-A (Registration No. 001-40627), dated July 19, 2021, including any amendments or supplements thereto.

In addition, all documents subsequently filed by the Registrant with the Commission pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), prior to the filing of a post-effective amendment to this Registration Statement which indicates that all securities offered have been sold or which deregisters all securities then remaining unsold, including any Reports of Foreign Private Issuers on Form 6-K submitted during such period (or portion thereof) that is identified in such form as being incorporated by reference into this Registration Statement, shall be deemed to be incorporated by reference in this Registration Statement and to be a part hereof from the date of the filing of such documents. The Registrant is not incorporating by reference any documents or portions thereof, whether specifically listed above or filed in the future, that are not deemed “filed” with the Commission.

Any statement contained in a document incorporated or deemed to be incorporated by reference herein shall be deemed to be modified or superseded for purposes of this Registration Statement to the extent that a statement contained herein, (or in any other subsequently filed document which also is incorporated or deemed to be incorporated by reference herein), modifies or supersedes such statement. Any such statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this Registration Statement.

Item 4. Description of Securities.

Not applicable.

Item 5. Interests of Named Experts and Counsel.

Not applicable.

Item 6. Indemnification of Directors and Officers.

Under Swiss law, a corporation may indemnify its directors or officers against losses and expenses (except for
such losses and expenses arising from willful misconduct or negligence, although legal scholars advocate that at least gross negligence be required, including attorneys’ fees, judgments, fines and settlement amounts actually and reasonably incurred in a civil or criminal action, suit or proceeding by reason of having been the representative of, or serving at the request of, the corporation.

Subject to Swiss law, the Registrant’s amended and restated articles of association will provide for indemnification of the existing and former members of its board of directors and executive committee as well as their heirs, executors and administrators, against liabilities arising in connection with the performance of their duties in such capacity, and the Registrant’s amended and restated articles of association will require it to advance the expenses of defending any action, suit or proceeding to existing and former members of the Registrant’s board of directors and executive committee to the extent not included in insurance coverage or advanced by third parties.

In addition, under general principles of Swiss employment law, an employer may be required to indemnify an employee against losses and expenses incurred by such employee in the proper execution of their duties under the employment agreement with the Registrant.

The Registrant entered into indemnification agreements with each of the members of its board of directors and executive officers, the form of which has been filed as an exhibit to the Registrant’s Registration Statement on Form F-1, as amended, filed with the Commission.

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the Registrant, the Registrant has been advised that, in the opinion of the Commission, such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable.

Item 7. Exemption from Registration Claimed.

Not applicable.

Item 8. Exhibits.

<table>
<thead>
<tr>
<th>Exhibit Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Form of Amended and Restated Articles of Association of SOPHiA GENETICS SA (incorporated herein by reference to Exhibit 3.1 to Amendment No. 1 to the Registrant’s Registration Statement on Form F-1, filed on July 19, 2021)</td>
</tr>
<tr>
<td>5</td>
<td>Opinion of Homburger AG, Swiss counsel of SOPHiA GENETICS SA (filed herewith)</td>
</tr>
<tr>
<td>23.1</td>
<td>Consent of PricewaterhouseCoopers SA, independent registered public accounting firm (filed herewith)</td>
</tr>
<tr>
<td>23.2</td>
<td>Consent of Homburger AG, Swiss counsel of SOPHiA GENETICS SA (included in Exhibit 5)</td>
</tr>
<tr>
<td>24</td>
<td>Powers of Attorney (included in the signature pages hereto)</td>
</tr>
<tr>
<td>99.1</td>
<td>SOPHiA GENETICS SA 2021 Equity Incentive Plan (incorporated herein by reference to Exhibit 10.13 to Amendment No. 1 to the Registrant’s Registration Statement on Form F-1, filed on July 19, 2021)</td>
</tr>
</tbody>
</table>

Item 9. Undertakings.

(a) 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 this 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 end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than a 20 percent change in the maximum aggregate offering price set forth in the “Calculation of Registration Fee” table in the effective Registration Statement;

(iii) To include any material information with respect to the 2021 Equity Incentive Plan not previously disclosed in this Registration Statement or any material change to such information in this Registration Statement;

provided, however, that paragraphs (a)(1)(i) and (a)(1)(ii) do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in periodic reports filed with or furnished to the Commission by the Registrant pursuant to Section 13 or 15(d) of the Exchange Act that are incorporated by reference in this 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.

(b) The undersigned Registrant hereby undertakes that, for purposes of determining any liability under the Securities Act, each filing of the Registrant’s annual report pursuant to Section 13(a) or 15(d) of the Exchange Act (and, where applicable, each filing of an employee benefit plan’s annual report pursuant to Section 15(d) of the Exchange Act) that is incorporated by reference in this 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.

(c) 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 Commission such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the Registrant of expenses incurred or paid by a director, officer or controlling person of the Registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the Registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act and will be governed by the final adjudication of such issue.
Pursuant to the requirements of the Securities Act, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing this Registration Statement and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the municipality of Saint-Sulpice, Switzerland on July 23, 2021.

SOPHiA GENETICS SA

By:   /s/ Jurgi Camblong
Name: Jurgi Camblong
Title: Chief Executive Officer
POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below hereby constitutes and appoints Jurgi Camblong, Ross Muken and Daan van Well and each of them, individually, as his or her true and lawful attorneys-in-fact and agents, with full power of substitution and re substitution, for him or her and in his or her name, place and stead, in any and all capacities, in connection with this registration statement, including to sign in the name and on behalf of the undersigned, this Registration Statement and any and all amendments thereto, including post-effective amendments and registrations filed pursuant to Rule 462 under the Securities Act, as amended, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the U.S. Securities and Exchange Commission, granting unto each such attorney-in-fact and agent full power and authority to do and perform each and every act in person, hereby ratifying and confirming all that each said attorney-in-fact and agent, or his or her 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.

<table>
<thead>
<tr>
<th>Signature</th>
<th>Title</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>/s/ Jurgi Camblong</td>
<td>Chief Executive Officer and Director</td>
<td>July 23, 2021</td>
</tr>
<tr>
<td></td>
<td>(Principal Executive Officer)</td>
<td></td>
</tr>
<tr>
<td>/s/ Ross Muken</td>
<td>Chief Financial Officer</td>
<td>July 23, 2021</td>
</tr>
<tr>
<td></td>
<td>(Principal Financial and Accounting Officer)</td>
<td></td>
</tr>
<tr>
<td>/s/ Troy Cox</td>
<td>Chairman of the Board of Directors</td>
<td>July 23, 2021</td>
</tr>
<tr>
<td>/s/ Tomer Berkovitz</td>
<td>Director</td>
<td>July 23, 2021</td>
</tr>
<tr>
<td>/s/ Kathy Hibbs</td>
<td>Director</td>
<td>July 23, 2021</td>
</tr>
<tr>
<td>/s/ Didier Hirsch</td>
<td>Director</td>
<td>July 23, 2021</td>
</tr>
<tr>
<td>/s/ Vincent Ossipow</td>
<td>Director</td>
<td>July 23, 2021</td>
</tr>
<tr>
<td>/s/ Milton Silva-Craig</td>
<td>Director</td>
<td>July 23, 2021</td>
</tr>
<tr>
<td>/s/ Ross Muken</td>
<td>Authorized Representative in the United States</td>
<td>July 23, 2021</td>
</tr>
<tr>
<td></td>
<td>SOPHIA GENETICS, Inc.</td>
<td></td>
</tr>
</tbody>
</table>
July 23, 2021

SOPHiA GENETICS SA – Registration Statement on Form S-8

Ladies and Gentlemen

We have acted as special Swiss counsel to SOPHiA GENETICS SA, a stock corporation incorporated under the laws of Switzerland (the Company), in connection with the filing of a registration statement on Form S-8 (the Registration Statement), to be filed with the United States Securities and Exchange Commission (the SEC) on the date hereof for the purpose of registering under the United States Securities Act of 1933, as amended (the Securities Act), 7,800,740 ordinary shares of the Company, each with a nominal value of CHF 0.05 (the Ordinary Shares). As such counsel, we have been requested to give our opinion as to certain legal matters of Swiss law.

Capitalized terms used but not defined herein shall have the meaning ascribed to them in the Documents (as defined below).

I. Basis of Opinion

This opinion is confined to and given on the basis of the laws of Switzerland in force at the date hereof. Such laws and the interpretation thereof are subject to change. In the absence of explicit statutory law, we base our opinion solely on our independent professional judgment. This opinion is also confined to the matters stated herein and is not to be read as extending, by implication or otherwise, to any document referred to in the Documents (other than listed below) or any other matter.

For purposes of this opinion we have not conducted any due diligence or similar investigation as to factual circumstances, which are or may be referred to in the Documents, and we express no opinion as to the accuracy of representations and warranties of facts set out in the Documents or the factual background assumed therein.
For purposes of this opinion, we have only reviewed originals or copies of the following documents we have deemed necessary or advisable for the purpose of rendering this opinion (collectively the Documents):

(i) an electronic copy of the Registration Statement;

(ii) an electronic copy of the 2021 Equity Incentive Plan, dated June 29, 2021 (the 2021 EIP);

(iii) an electronic copy of a written resolution of the board of directors of the Company, dated June 29, 2021, approving, inter alia, the 2021 EIP (the Board Resolution);

(iv) electronic copies of the notarized and non-notarized minutes of the Company’s extraordinary general meeting held on June 29, 2021 (the Shareholders’ Resolution), resolving on, inter alia, contingent upon the completion of the initial public offering of the shares on the Nasdaq Stock Market (NASDAQ), (1) the creation of a conditional share capital in the amount of CHF 580,000 destined for employee participation (capital-actions conditionnel pour la participation des employés) (the Conditional Share Capital), (2) a one-for-one conversion of all existing preferred shares into ordinary shares, (3) a revision and restatement of the Articles of Association (as defined below), and (4) the approval of the 2021 EIP;

(v) an electronic copy of the articles of association (statuts) of the Company, the form of which was filed as Exhibit 3.1 to the Company’s registration statement on Form F-1, filed with the SEC on July 2, 2021 (the Articles of Association); and

(vi) an electronic copy of a certified preliminary excerpt from the Commercial Register of the Canton of Vaud, Switzerland, dated July 13, 2021, relating to the Company (the Excerpt).

No documents, other than the Documents, have been reviewed by us in connection with this opinion. Accordingly, we shall limit our opinion to the Documents and their legal implications under Swiss law.

In this opinion, Swiss legal concepts are expressed in English terms and not in their original language. These concepts may not be identical to the concepts described by the same English terms as they exist under the laws of other jurisdictions.

II. Assumptions

In rendering the opinion below, we have assumed the following:

(a) all documents produced to us as originals are authentic and complete, and all documents produced to us as copies (including, without limitation, electronic copies) conform to the original;

(b) all documents produced to us as originals and the originals of all documents produced to us as copies were duly executed and certified, as applicable, by the individuals purported to have executed or certified, as the case may be, such documents;

(c) all documents produced to us in draft form will be executed in the form of the draft submitted to us;
(d) all signatures appearing on all original documents or copies thereof which we have examined are genuine;

(e) each party to the Documents is a corporation or other legal entity duly organized and validly existing and in good standing (if applicable) under the laws of the jurisdiction of its incorporation and/or establishment and none of the parties to the Documents (other than the Company) has passed or, until the issuance of all Ordinary Shares, will have passed a voluntary winding-up resolution; no petition has been, or, until the issuance of all Ordinary Shares, will be presented or order made by a court for the winding-up, dissolution, bankruptcy or administration of any party (other than the Company); and no receiver, trustee in bankruptcy, administrator or similar officer has been or, until the issuance of all Ordinary Shares, will have been appointed in relation to any of the parties (other than the Company) or any of their assets or revenues;

(f) to the extent relevant for purposes of this opinion, any and all information contained in the Documents is and will be true, complete and accurate at all relevant times;

(g) no laws (other than those of Switzerland) affect any of the conclusions stated in this opinion;

(h) the Registration Statement has been filed by the Company;

(i) the filing of the Registration Statement with the SEC has been authorized by all necessary actions under all applicable laws other than Swiss law;

(j) the Registration Statement, the Excerpt and the Articles of Association are unchanged, correct, complete and up-to-date and in full force and effect as of the date hereof and no changes have been made which should have been or should be reflected in the Registration Statement, the Excerpt or the Articles of Association, as the case may be, as of the date hereof;

(k) the Shareholders' Resolution and the Board Resolution (i) have been duly resolved in meetings duly convened and otherwise in the manner set forth therein, (ii) have not been amended and (iii) are in full force and effect;

(l) the 2021 EIP has not been rescinded or amended and is in full force and effect;

(m) prior to the issuance of any Ordinary Shares, the board of directors of the Company will have duly authorized the issuance of any rights to receive Ordinary Shares and will have validly excluded the pre-emptive rights of the existing shareholders for purposes of the offering of Ordinary Shares under the 2021 EIP as contemplated in the Registration Statement, and such authorization and exclusion will not have been amended and will be in full force and effect until the issuance of all Ordinary Shares;

(n) any Ordinary Shares issued out of the Conditional Share Capital will be listed on NASDAQ in accordance with applicable laws and regulations;
all exercise notices with respect to Ordinary Shares issued out of Conditional Share Capital will be duly delivered in accordance with Swiss law, the 2021 EIP and any applicable contractual arrangements;

to the extent the Company issues Ordinary Shares out of Conditional Share Capital against cash, the performance of the contribution in money shall be made at a banking institution subject to the Swiss Federal Act on Banks and Savings Banks of November 8, 1934, as amended;

the Company has not entered and will not enter into any transaction which could be construed as repayment of share capital (restitution des versements) and has not undertaken and will not undertake an acquisition in kind (reprise de biens) or intended acquisition in kind (reprise de biens envisagée) without complying with the formal procedure set forth in article 628 of the Swiss Code of Obligations; and

all authorizations, approvals, consents, licenses, exemptions, other than as required by mandatory Swiss law applicable to the Company or the Articles of Association, and other requirements for the filing of the Registration Statement or for any other activities carried on in view of, or in connection with, the performance of the obligations expressed to be undertaken by the Company in the Registration Statement have been duly obtained or fulfilled in due time and are and will remain in full force and effect, and any related conditions to which the parties thereto are subject have been satisfied.

III. Opinion

Based on the foregoing and subject to the qualifications set out below, we are of the opinion that as of the date hereof:

1. The Company is a corporation (société anonyme) duly incorporated and validly existing under the laws of Switzerland with all requisite corporate power and authority to enter into, to perform and to conduct its business as described in the Articles of Association.

2. The Ordinary Shares that may be issued from the Conditional Share Capital, if and when such Ordinary Shares are issued pursuant to the Articles of Association, the 2021 EIP, any applicable contractual arrangements and Swiss law, and after the subscription amount for such Ordinary Shares has been paid-in in cash or by way of set-off, and when such Shares have been entered into the Company's book of uncertificated securities, will be validly issued, fully paid as to their nominal value and non-assessable.

IV. Qualifications
The above opinions are subject to the following qualifications:

(a) The lawyers of our firm are members of the Zurich bar and do not hold themselves out to be experts in any laws other than the laws of Switzerland. Accordingly, we are opining herein as to Swiss law only and we express no opinion with respect to the applicability or the effect of the laws of any other jurisdiction to or on the matters covered herein.

(b) The exercise of voting rights and rights related thereto with respect to any Ordinary Shares is only permissible if and when such Ordinary Shares have been validly issued and in any case after registration in the Company's share register as a shareholder with voting rights in accordance with the provisions of, and subject to the limitations provided in, the Articles of Association.

(c) We have not investigated or verified the truth or accuracy of the information contained in the Registration Statement, nor have we been responsible for ensuring that no material information has been omitted from it.

(d) Notwithstanding or irrespective of registration of the capital increase with the Commercial Register of the Canton of Vaud, the underlying shareholders' resolutions may be challenged by a dissenting shareholder of the Company or others in court or otherwise. However, we believe that a challenge of the underlying shareholders' resolution by a dissenting shareholder of the Company after registration of the Ordinary Shares with the Commercial Register of the Canton of Vaud, even if successful, would not in itself void such Ordinary Shares.

(e) We express no opinion as to regulatory matters or as to any commercial, accounting, calculating, auditing or other non-legal matter.

We have issued this opinion as of the date hereof and we assume no obligation to advise you of any changes in fact or in law that are made or brought to our attention hereafter.

We hereby consent to the filing of this opinion as an exhibit to the Registration Statement and further consent to the reference to our name under the caption “Legal Matters” in the Prospectus. In giving such consent, we do not thereby admit that we are in the category of persons whose consent is required under Section 7 of the Securities Act.

This opinion is governed by and shall be construed in accordance with the laws of Switzerland.

[Signature page follows]
Sincerely yours
Homburger AG
/s/ Daniel Häusermann
Daniel Häusermann
CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in this Registration Statement on Form S-8 of SOPHiA GENETICS SA of our report dated May 24, 2021, except for the effects of the share split discussed in Note 35 “Significant accounting policies—Basis of preparation—Share split” to the consolidated financial statements, as to which the date is July 2, 2021, relating to the consolidated financial statements of SOPHiA GENETICS SA, which appears in SOPHiA GENETICS SA’s Registration Statement on Form F-1 (No. 333-257646).

/s/ PricewaterhouseCoopers SA
Lausanne, Switzerland
July 23, 2021