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

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**FORM S-8**  
**REGISTRATION STATEMENT**  
*UNDER*  
*THE SECURITIES ACT OF 1933*

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**CRISPR THERAPEUTICS AG**  
(Exact name of registrant as specified in its charter)

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Switzerland  
(State or other jurisdiction of  
incorporation or organization)

Not applicable  
(I.R.S. Employer  
Identification Number)

Baarerstrasse 14  
6300 Zug  
Switzerland  
+41 61 228 7800

(Address, including Zip Code, and Telephone Number, including Area Code, of Registrant's Principal Executive Offices)

**CRISPR Therapeutics AG Amended and Restated  
2016 Stock Option and Incentive Plan**  
(Full title of the plan)

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C T Corporation System  
111 Eighth Avenue  
New York, NY 10011  
(212) 894-8800

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

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*Copies to:*

**Mitchell S. Bloom  
Robert E. Puopolo  
Seo Salimi  
Goodwin Procter LLP  
100 Northern Avenue  
Boston, MA 02210  
(617) 570-1000**

**James R. Kasinger  
General Counsel and Secretary  
CRISPR Therapeutics AG  
Baarerstrasse 14  
6300 Zug  
Switzerland  
+41 61 228 7800**

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

Large accelerated filer

Accelerated filer

Non-accelerated filer  (Do not check if a smaller reporting company)

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 13(a) of the Exchange Act.

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**CALCULATION OF REGISTRATION FEE**

<b>Title of Securities to be Registered</b>	<b>Amount to be Registered (1)</b>	<b>Proposed Maximum Offering Price per Share</b>	<b>Proposed Maximum Aggregate Offering Price</b>	<b>Amount of Registration Fee</b>
Common Shares, CHF 0.03 per share:				
Amended and Restated 2016 Stock Option and Incentive Plan	2,012,684(2)	\$18.96(3)	\$38,160,488.60	\$4,750.99
<b>Total</b>	<b>2,012,684</b>		<b>\$38,160,488.60</b>	<b>\$4,750.99</b>

- (1) Pursuant to Rule 416(a) under the Securities Act of 1933, as amended (the "Securities Act"), this Registration Statement shall also cover any additional common shares which become issuable under the above-named plan by reason of any stock dividend, stock split, recapitalization or any other similar transaction effected without the receipt of consideration which results in an increase in the number of our outstanding shares of common stock. Pursuant to Rule 416(c) under the Securities Act, this Registration Statement shall also cover an indeterminate amount of interests to be offered or sold pursuant to the employee benefit plan described herein.
- (2) Represents additional shares available for future issuance under the CRISPR Therapeutics AG Amended and Restated 2016 Stock Option and Incentive Plan as of November 8, 2017.
- (3) Estimated pursuant to Rule 457(c) and Rule 457(h) solely for the purpose of calculating the registration fee. The proposed maximum offering price per share and proposed maximum aggregate offering price are based on the average of the high and low sale prices of the Registrant's common stock as reported on The NASDAQ Global Market on November 2, 2017.

**Part I**  
**EXPLANATORY NOTE**

This Registration Statement on Form S-8 relating to the CRISPR Therapeutics AG Amended and Restated 2016 Stock Option and Incentive Plan (the “Amended Plan”) of CRISPR Therapeutics AG (the “Registrant”) is being filed for the purpose of registering an additional 2,012,684 of the Registrant’s common shares, CHF 0.03 per share, as other securities for which a Registration Statement on Form S-8 has previously been filed and is effective. Accordingly, this Registration Statement on Form S-8 incorporates by reference the contents of the Registration Statement on Form S-8 (File No. 333-214184) filed with the Securities and Exchange Commission on October 20, 2016 by the Registrant, relating to the Amended Plan except for “Item 8. Exhibits.”

**Part II**  
**INFORMATION REQUIRED IN THE REGISTRATION STATEMENT**

**Item 8. Exhibits.**

Exhibit Number	Description
4.1(1)	<a href="#">Amended and Restated Articles of Association of CRISPR Therapeutics AG.</a>
4.2(2)	<a href="#">Subscription Agreement, dated December 19, 2015, by and between CRISPR Therapeutics AG and Bayer Global Investments B.V.</a>
5.1	<a href="#">Opinion of Vischer AG, Swiss counsel of CRISPR Therapeutics AG, as to the validity of the common shares.</a>
23.1	<a href="#">Consent of Ernst &amp; Young LLP, Independent Registered Public Accounting Firm.</a>
23.2	<a href="#">Consent of Ernst &amp; Young LLP, Independent Registered Public Accounting Firm, with respect to the consolidated financial statements of Casebia Therapeutics LLP.</a>
23.3	<a href="#">Consent of Vischer AG (included in Exhibit 5.1).</a>
24.1	<a href="#">Power of Attorney (included on the signature page).</a>
99.1(3)	<a href="#">CRISPR Therapeutics AG Amended and Restated 2016 Stock Option and Incentive Plan.</a>

(1) Filed as Exhibit 3.1 to Registrant’s Current Report on Form 8-K (File No. 001-37923), filed with the U.S. Securities and Exchange Commission on July 25, 2017, and incorporated herein by reference.

(2) Filed as Exhibit 4.1 to Registrant’s Registration Statement on Form S-1 (File No. 333-213577), filed with the U.S. Securities and Exchange Commission on September 9, 2016, and incorporated herein by reference.

(3) Filed as Exhibit 10.1 to Registrant’s Current Report on Form 8-K (File No. 001-37923), filed with the U.S. Securities and Exchange Commission on June 2, 2017, and incorporated herein by reference.

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**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-8 and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in Boston, Commonwealth of Massachusetts on November 8, 2017.

**CRISPR THERAPEUTICS AG**

By: /s/ Rodger Novak, M.D.

Name: Rodger Novak, M.D.

Title: *Chief Executive Officer*

KNOW ALL BY THESE PRESENT, that each individual whose signature appears below hereby constitutes and appoints each of Rodger Novak, M.D. and Samarth Kulkarni, as such person's true and lawful attorney-in-fact and agent with full power of substitution and resubstitution, for such person in such person's name, place and stead, in any and all capacities, to sign any and all amendments (including post-effective amendments) to this Registration Statement on Form S-8, and to file the same, with all exhibits thereto, and all documents in connection therewith, with the Securities and Exchange Commission granting unto each 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 such person might or could do in person, hereby ratifying and confirming all that any said attorney-in-fact and agent, or any substitute or substitutes of any of them, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, as amended, this registration statement has been signed by the following persons on the date indicated below in the capacities indicated:

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Rodger Novak, M.D.</u> Rodger Novak, M.D.	Chief Executive Officer (principal executive officer)	November 8, 2017
<u>/s/ Samarth Kulkarni</u> Samarth Kulkarni	President and Chief and Business Officer (principal financial officer)	November 8, 2017
<u>/s/ N. Anthony Coles, M.D.</u> N. Anthony Coles, M.D.	Chairman and Director	November 8, 2017
<u>/s/ Ali Behbahani, M.D.</u> Ali Behbahani, M.D.	Director	November 8, 2017
<u>/s/ Bradley Bolzon, Ph.D.</u> Bradley Bolzon, Ph.D.	Director	November 8, 2017
<u>/s/ Simeon J. George, M.D.</u> Simeon J. George, M.D.	Director	November 8, 2017
<u>/s/ Kurt von Emster</u> Kurt von Emster	Director	November 8, 2017
<u>/s/ Thomas Woiwode, Ph.D.</u> Thomas Woiwode, Ph.D.	Director	November 8, 2017
<u>/s/ Pablo Cagnoni, M.D.</u> Pablo Cagnoni, M.D.	Director	November 8, 2017
<u>/s/ Samarth Kulkarni</u> Samarth Kulkarni	Authorized Representative in the United States	November 8, 2017

Registered  
CRISPR Therapeutics AG  
Baarerstrasse 14  
6300 Zug  
Switzerland

VISCHER Ltd

Basel, November 8, 2017

**Basel**  
Aeschenvorstadt 4  
CH-4010 Basel  
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Schützengasse 1  
CH-8021 Zurich  
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Civil Law Notaries in  
Basel-City

**CRISPR Therapeutics AG – Registration Statement on Form S-8**

Dear Sir or Madam,

This opinion is being rendered at the request of CRISPR Therapeutics AG (the “**Company**”) in connection with the Registration Statement on Form S-8 filed with the U.S. Securities and Exchange Commission on November 8, 2017 (the “**Form S-8**”), which term does not include any other document or agreement whether or not specifically referred to therein or attached as an exhibit or schedule thereto) relating to the registration under the United States Securities Act of 1933, as amended (the “**Securities Act**”), of common shares in the Company, each share currently having a par value of CHF 0.03 (the “**Shares**”), which may be issued from time to time under the Plan (as defined below). As such counsel, we have been requested to render an opinion as to certain matters of Swiss law.

We understand that the Company is party to the CRISPR Therapeutics AG Amended and Restated 2016 Stock Option and Incentive Plan (the “**Plan**”).

**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 and as currently applied by Swiss courts. In the absence of statutory or established case law, we base our opinion on our independent professional judgement.

This opinion is also confined to the matters stated herein and is not to be read as extending, by implication or otherwise, to any other matter.

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For the purpose of giving this opinion, we have only examined the following documents:

- a) an original excerpt from the register of commerce of the Canton of Zug with regard to the Company certified by such register of commerce as of July 19, 2017 (the “**Excerpt**”);
- b) an original copy of the notarized articles of association (*Statuten*) of the Company dated May 31, 2017 (the “**Articles**”), as filed with the Commercial Register of the Canton of Zug;
- c) a pdf copy of the Plan;
- d) a pdf copy of the resolution the board of directors of the Company (the “**Board**”) held on March 8, 2017 with respect to the increase of the Plan by 2’012’684 additional shares.

The documents referred to above in paragraphs a) to d) are referred to together as the “**Documents**”.

We have further examined such other records, documents and other instruments as we have deemed necessary or advisable for the purposes of rendering this opinion.

## **II. ASSUMPTIONS**

In rendering the opinion below, we have assumed:

- a) the conformity to the Documents of all documents produced to us as copies, fax copies or via e-mail, and that the original was executed in the manner appearing on the copy of the draft;
- b) the genuineness and authenticity of the signatures on all copies of the original Documents thereof which we have examined;
- c) the legal capacity, power and authority of each of the parties (other than the Company) to enter into and perform its obligations under the Plan as well as the due authorization, execution and delivery of the Plan or any document thereunder by each of the parties thereto (including the Company) and that all consents or approvals from and filings, registrations and notifications with or to all governmental authorities (other than in Switzerland) required in connection with the execution, delivery and performance of the Plan have been obtained or made and are in full force and effect;
- d) the Plan is in full force and effect, has not been rescinded, either in whole or in part, by the Board and that there is no matter affecting the authority of the Board to approve the adoption or assumption of the Plan and filing of the registration statement which would have any adverse implication in relation to the opinions expressed herein;
- e) the Plan constitutes legal, valid, binding and enforceable obligations of the Company under the governing law;
- f) all authorizations, approvals, consents, licenses, exemptions and other

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requirements, other than those required under the laws of Switzerland, for the legality, validity and enforceability of the Plan have been duly obtained and are and will remain in full force and effect;

- g) the exercise of the options under the Plan will be conducted in writing in the manner described in the Plan;
- h) the exercise price of any option granted is at least the current par value of CHF 0.03 per Share and is paid by the option holder to the Company;
- i) at the time of any issuance of Shares under the Plan, the Company will have according to article 3c of the Articles of Association sufficient conditional share capital to issue the required number of new Shares to be delivered to option holders exercising options granted under the Plan; and
- j) that (i) the requisite reports of the Company's auditors according to article 653f of the Swiss Code of Obligations (the "SCO"), (ii) the amendments of the Articles of Association according to article 653g SCO, and (iii) the entry of the corresponding share capital increase into the Commercial Register of the Canton of Zug will be given or made.

### **III. OPINION**

Based upon the foregoing and subject to the qualifications set out below, we are of the opinion that:

The Shares when issued and paid for in accordance with the Articles of Association and, provided the issue price for such Shares has been fully paid-in, will be validly issued, fully paid-in and non-assessable (which term means when used herein that no further contributions have to be made by the holders of the Shares).

### **IV. QUALIFICATIONS**

This opinion is subject to the following qualifications:

- a) This opinion is limited to matters of Swiss law as in force on the date hereof and as applied and construed by the courts of Switzerland. We have not investigated the laws of any jurisdiction other than Switzerland, any representations and warranties made by the parties to the Plan or any matters of fact.
- b) The opinion set forth herein is limited to the matters specifically addressed herein, and no other opinion or opinions are expressed or may be implied or inferred. In particular we express no opinion as to any commercial, calculating, auditing or other non-legal matters.

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Further, we express no opinion as to tax law.

c) We express no opinion as to the accuracy or completeness of the information contained in the Form S-8.

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We have rendered this opinion as of the date hereof and we assume no obligation to advise you of changes that may thereafter be brought to our attention.

In this opinion, Swiss legal concepts are expressed in English terms and not in their original terms. The concepts concerned may not be identical to the concepts described by the same English terms as they exist under the laws of other jurisdictions. Each person relying on this opinion agrees, in so relying, that only VISCHER AG shall have any liability in connection with this opinion, that the agreement in this Section IV and all liability and other matters relating to this opinion shall be governed exclusively by Swiss law and that the courts in Zurich, Switzerland shall have exclusive jurisdiction to settle any dispute relating to this opinion.

*[signature page to follow]*

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We hereby consent to the filing of this opinion as an exhibit to the Form S-8. 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.

Very truly yours,  
VISCHER AG

/s/ Dr. Matthias Staehelin

Dr. Matthias Staehelin

**CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM**

We consent to the incorporation by reference in the Registration Statement (Form S-8) pertaining to the Amended and Restated 2016 Stock Option and Incentive Plan of CRISPR Therapeutics AG of our report dated March 10, 2017, with respect to the consolidated financial statements of CRISPR Therapeutics AG included in its Annual Report (Form 10-K) for the year ended December 31, 2016, filed with the Securities and Exchange Commission.

/s/ Ernst & Young LLP

Boston, Massachusetts  
November 8, 2017

**CONSENT OF INDEPENDENT AUDITORS**

We consent to the incorporation by reference in the Registration Statement (Form S-8) pertaining to the Amended and Restated 2016 Stock Option and Incentive Plan of CRISPR Therapeutics AG of our report dated March 10, 2017, with respect to the consolidated financial statements of Casebia Therapeutics LLP, included in the Annual Report (Form 10-K) of CRISPR Therapeutics AG for the year ended December 31, 2016.

/s/ Ernst & Young LLP

Boston, Massachusetts  
November 8, 2017