

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

SCHEDULE 13D

**Under the Securities Exchange Act of 1934
(Amendment No. _____)***

CRISPR THERAPEUTICS AG
(Name of Issuer)

Common Shares, par value CHF 0.03 per share
(Title of Class of Securities)

H17182108
(CUSIP Number)

Ian F. Smith
Vertex Pharmaceuticals Incorporated
50 Northern Avenue
Boston, Massachusetts 02210
(617) 341-6100
(Name, Address and Telephone Number of Person
Authorized to Receive Notices and Communications)

December 20, 2018
(Date of Event which Requires Filing of this Statement)

If the filing person has previously filed a statement on Schedule 13G to report the acquisition that is the subject of this Schedule 13D, and is filing this schedule because of §§240.13d-1(e), 240.13d-1(f) or 240.13d-1(g), check the following box.

Note: Schedules filed in paper format shall include a signed original and five copies of the schedule, including all exhibits. See §240.13d-7 for other parties to whom copies are to be sent.

* The remainder of this cover page shall be filled out for a reporting person's initial filing on this form with respect to the subject class of securities, and for any subsequent amendment containing information which would alter disclosures provided in a prior cover page.

The information required on the remainder of this cover page shall not be deemed to be "filed" for the purpose of Section 18 of the Securities Exchange Act of 1934 ("Act") or otherwise subject to the liabilities of that section of the Act but shall be subject to all other provisions of the Act (however, see the Notes).

1. NAMES OF REPORTING PERSONS I.R.S. IDENTIFICATION NOS. OF ABOVE PERSONS (ENTITIES ONLY)

Vertex Pharmaceuticals Incorporated ("Vertex US")

2. CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP

(see instructions)

(a)

(b)

3. SEC USE ONLY

4. SOURCE OF FUNDS (see instructions)

WC

5. CHECK BOX IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEMS 2(d) or 2(e)

6. CITIZENSHIP OR PLACE OF ORGANIZATION

Massachusetts

7. SOLE VOTING POWER

0

8. SHARED VOTING POWER

NUMBER OF SHARES
BENEFICIALLY OWNED
BY EACH REPORTING
PERSON WITH

5,250,000 (1)

9. SOLE DISPOSITIVE POWER

0

10. SHARED DISPOSITIVE POWER

5,250,000 (1)

11. AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON

5,250,000 (1)

12. CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (11) EXCLUDES CERTAIN SHARES

(see instructions)

13. PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (11)

10.1% (2)

14. TYPE OF REPORTING PERSON (see instructions)

CO

(1) Amount consists of 5,250,000 Common Shares held by Vertex Europe. Vertex US may be deemed to have beneficial ownership over such shares since Vertex Europe is an indirect wholly-owned subsidiary of Vertex US.

(2) The ownership percentage has been calculated on the basis of 51,896,995 Common Shares outstanding as of November 1, 2018 as reported in the Company's Quarterly Report on Form 10-Q, filed with the Securities and Exchange Commission on November 7, 2018.

1. NAMES OF REPORTING PERSONS I.R.S. IDENTIFICATION NOS. OF ABOVE PERSONS (ENTITIES ONLY)

Vertex Pharmaceuticals (Europe) Limited ("Vertex Europe")

2. CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP

(see instructions)

(a) (b)

3. SEC USE ONLY

4. SOURCE OF FUNDS (see instructions)

WC

5. CHECK BOX IF DISCLOSURE OF LEGAL PROCEEDINGS IS REQUIRED PURSUANT TO ITEMS 2(d) or 2(e)

6. CITIZENSHIP OR PLACE OF ORGANIZATION

England and Wales

7. SOLE VOTING POWER

0

8. SHARED VOTING POWER

5,250,000

9. SOLE DISPOSITIVE POWER

0

10. SHARED DISPOSITIVE POWER

5,250,000

NUMBER OF SHARES
BENEFICIALLY OWNED
BY EACH REPORTING
PERSON WITH

11. AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON

5,250,000

12. CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (11) EXCLUDES CERTAIN SHARES

(see instructions)

13. PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (11)

10.1% (1)

14. TYPE OF REPORTING PERSON (see instructions)

OO

(1) The ownership percentage has been calculated on the basis of 51,896,995 Common Shares outstanding as of November 1, 2018 as reported in the Company's Quarterly Report on Form 10-Q, filed with the Securities and Exchange Commission on November 7, 2018.

Item 1. Security and Issuer.

This Schedule 13D relates to the common shares, par value CHF 0.03 per share (the “Shares”), of CRISPR Therapeutics AG, which is organized under the laws of Switzerland (the “Company”). The principal business address of the Company is Baarerstrasse 14, 6300 Zug, Switzerland.

Item 2. Identity and Background.

This Schedule 13D is being filed jointly by the following persons (collectively, “Vertex”):

Vertex Pharmaceuticals Incorporated, a Massachusetts corporation (“Vertex US”) with its principal office located at 50 Northern Avenue, Boston, Massachusetts 02210, United States, with its principal business to discover, develop, manufacture and commercialize medicines for serious diseases. Information as to the executive officers and directors of Vertex US is set forth in Schedule A hereto.

Vertex Pharmaceuticals (Europe) Limited, is a limited liability company organized under the laws of England and Wales (“Vertex Europe”), with its principal business at 2 Kingdom Street, 9th Floor, London W2 6BD, United Kingdom. Vertex Europe is an indirect wholly-owned subsidiary of Vertex US with Vertex Europe’s principal business to discover, develop, manufacture and commercialize medicines for serious disease. Information as to the executive officers and directors of Vertex Europe is set forth in Schedule B hereto.

During the past five years, none of the Reporting Persons, nor, to the knowledge of the Reporting Persons, any of the persons listed on Schedule A and Schedule B hereto, has been (i) convicted in a criminal proceeding (excluding traffic violations and similar misdemeanors), or (ii) a party to a civil proceeding of a judicial or administrative body of competent jurisdiction and as a result of such proceeding was or is subject to a judgment, decree or final order enjoining future violations of, or prohibiting or mandating activities subject to, federal or state securities laws or finding any violation with respect to such laws.

Item 3. Source or Amount of Funds or Other Consideration.

In October 2016, Vertex Europe acquired 2,472,301 Shares issued upon conversion of preferred stock in the Company’s initial public offering and acquired an additional 714,285 Shares from the Company in the initial public offering. Vertex Europe’s private investments in the Company were made in 2015 and 2016 in connection with an ongoing strategic collaboration between the Company, Vertex and Vertex Europe that was established on October 26, 2015. In 2018, Vertex has acquired an aggregate of 2,063,414 Shares for an aggregate of \$66,714,521.65, including Shares purchased from the Company’s underwriters and Shares purchased in the secondary market. Vertex is filing this Schedule 13D in connection with its acquisition of additional Shares in 2018.

Item 4. Purpose of Transaction.

Vertex acquired the Shares for ordinary investment purposes in connection with its ongoing strategic collaboration with the Company. Vertex intends to review its investment on a regular basis and may conduct (or retain advisers to conduct) analyses or due diligence investigations concerning the Shares or the Company, and as a result thereof, may at any time or from time to time determine, either alone or as part of a group, to (a) acquire additional securities of the Company, through open market purchases or privately negotiated transactions or otherwise (including potential additional purchases for the purpose of maintaining an approximately 10% ownership in the Company), (b) engage in discussions with the Company, its board of directors or one or more other Company investors, or (c) take any other available course of action, any of which could relate to or result in one or more of the types of transactions or have one or more of the results described in the next paragraph of this Item 4. Any such acquisition or other transaction would be made in compliance with all applicable laws and regulations. Vertex specifically reserves the right to change its intention with respect to any or all of such matters, including its relationship with the Company. In reaching any decision as to its course of action (as well as to the specific elements thereof), Vertex currently expects that it would take into consideration a variety of factors, including, but

not limited to, the following: the Company's business and prospects; other developments concerning the Company and its businesses generally; other business opportunities available to Vertex; Vertex's tax position; changes in law and government regulations; general economic conditions; and money and stock market conditions, including the market price of the securities of the Company.

Except as set forth above, neither Vertex, nor, to the knowledge of Vertex, any of the persons listed on Schedule A hereto, has any present plans which relate to or would result in:

- (a) the acquisition by any person of additional securities of the Company, or the disposition of securities of the Company;
- (b) an extraordinary corporate transaction, such as a merger, reorganization or liquidation, involving the Company or any of its subsidiaries;
- (c) a sale or transfer of a material amount of assets of the Company or any of its subsidiaries;
- (d) any change in the present Board of Directors or management of the Company, including any plans or proposals to change the number or term of directors or to fill any existing vacancies on the Board of Directors;
- (e) any material change in the present capitalization or dividend policy of the Company;
- (f) any other material change in the Company's business or corporate structure;
- (g) changes in the Company's Articles of Association or instruments corresponding thereto or other actions which may impede the acquisition of control of the Company by any person;
- (h) causing a class of securities of the Company to be delisted from a national securities exchange or to cease to be authorized to be quoted in an inter-dealer quotation system of a registered national securities association;
- (i) a class of equity securities of the Company becoming eligible for termination of registration pursuant to Section 12(g)(4) of the Exchange Act; or
- (j) any action similar to any of those enumerated above.

Item 5. Interest in Securities of the Issuer.

(a) Vertex Europe holds and beneficially owns 5,250,000 Shares. As Vertex Europe is an indirect wholly-owned subsidiary of Vertex US, Vertex US beneficially owns the same 5,250,000 Shares. This number represents approximately 10.1% of the outstanding Shares of the Company, based on 51,896,995 Shares outstanding on November 1, 2018, as reported in the Company's 10-Q filed on November 7, 2018, as calculated under Rule 13d-3 of the Securities Exchange Act of 1934, as amended. To the knowledge of Vertex Europe and Vertex US, no director or officer of either Vertex Europe or Vertex US, respectively, beneficially owns any Shares.

(b) As Vertex Europe is indirectly wholly-owned by Vertex US, Vertex Europe and Vertex US share voting and investment power over the 5,250,000 Shares.

(c) Between December 7, 2018 and December 20, 2018, Vertex Europe acquired 581,760 Shares on the public market using funds from Vertex's working capital. Other than the transactions described in this Item 5, neither Vertex US nor Vertex Europe nor, to the knowledge of Vertex US or Vertex Europe, any director or executive officer of Vertex US or Vertex Europe, respectively, has effected any transaction in the Shares during the past sixty days.

(d) Not applicable.

(e) Not applicable.

Item 6. Contracts, Arrangements, Understandings or Relationships with Respect to Securities of the Issuer.

On October 26, 2015, Vertex US and Vertex Europe entered into a Strategic Collaboration, Option and License Agreement (the “Collaboration Agreement”) with the Company. Although the Collaboration Agreement primarily relates to commercial and licensing matters, in connection with the Collaboration Agreement, Vertex Europe made private investments in the Company in 2015 and 2016 that resulted in Vertex Europe obtaining 2,472,301 Shares upon the conversion of its preferred stock in connection with the Company’s initial public offering.

The Collaboration Agreement was amended by Amendment No. 1 to the Strategic Collaboration, Option and License Agreement on December 12, 2017 (the “Amendment”). The foregoing summaries of the Collaboration Agreement and the Amendment are qualified by reference to those documents. See Item 7.

Item 7. Material to Be Filed as Exhibits.

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|-----------|--|
| Exhibit 1 | Joint Filing Agreement. |
| Exhibit 2 | Strategic Collaboration, Option and License Agreement, dated October 26, 2015, by and between, on the one hand, Vertex Pharmaceuticals Incorporated and Vertex Pharmaceuticals (Europe) Limited, and on the other hand, CRISPR Therapeutics AG, CRISPR Therapeutics, Inc., CRISPR Therapeutics Limited and TRACR Hematology Ltd. (incorporated herein by reference to Exhibit 10.4 to the Company’s Registration Statement on Form S-1 filed on October 7, 2016). |
| Exhibit 3 | Amendment No. 1 to the Strategic Collaboration, Option and License Agreement by and between, on the one hand, Vertex Pharmaceuticals Incorporated and Vertex Pharmaceuticals (Europe) Limited, and on the other hand, CRISPR Therapeutics AG, CRISPR Therapeutics, Inc., CRISPR Therapeutics Limited and TRACR Hematology Ltd., dated as of December 12, 2017 (incorporated herein by reference to Exhibit 10.2 to the Company’s Current Report on Form 8-K filed on December 18, 2017). |
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SIGNATURE

After reasonable inquiry and to the best of my knowledge and belief, I certify that the information set forth in this statement is true, complete and correct.

VERTEX PHARMACEUTICALS INCORPORATED

By: /s/ Ian F. Smith
Ian F. Smith
EVP, Chief Operating Officer and interim Chief Financial Officer
December 21, 2018

VERTEX PHARMACEUTICALS (EUROPE) LIMITED

By: /s/ Ian F. Smith
Ian F. Smith
Director
December 21, 2018

The name, business address and present principal occupation or employment of each of the directors and executive officers of Vertex US are set forth below. The business address of each director and executive officer is c/o Vertex Pharmaceuticals Incorporated, 50 Northern Avenue, Boston, Massachusetts 02210. Each director and executive officer is a citizen of the United States, except for Mr. Smith who is a citizen of the United Kingdom.

Name	Present Principal Occupation or Employment
Jeffrey M. Leiden	Director of Vertex Chairman, Chief Executive Officer and President of Vertex Director of Quest Diagnostics Inc. Director Massachusetts Mutual Life Insurance Company
Sangeeta N. Bhatia	Director of Vertex John J. and Dorothy Wilson Professor of Health Sciences & Technology/Electrical Engineering & Computer Science at the Massachusetts Institute of Technology
Bruce I. Sachs	Director of Vertex General Partner at Charles River Ventures
Terrence C. Kearney	Director of Vertex Director of Acceleron Pharma Inc.
Yuchun Lee	Director of Vertex Executive in Residence and Partner of General Catalyst Partners Chief Executive Officer of Allego Inc. Executive Chairman of Clarabridge
Elaine S. Ullian	Director of Vertex Director of Thermo Fisher Scientific Inc.
Margaret G. McGlynn	Director of Vertex Director of Air Products and Chemicals, Inc. Director of Amicus Therapeutics, Inc. Member of the National Industrial Advisory Committee at the University at Buffalo School of Pharmacy and Pharmaceutical Sciences
William D. Young	Director of Vertex Venture Partner at Clarus Ventures Chairman of the Board of Directors of NanoString Technologies, Inc.
Alan Garber	Director of Vertex Provost of Harvard University Mallinckrodt Professor of Health Care Policy at Harvard Medical School Professor of Economics in the Faculty of Arts and Sciences Professor of Public Policy in the Harvard Kennedy School of Government Professor in the Department of Health Policy and Management in the Harvard T.H. Chan School of Public Health Fellow of the American Association for the Advancement of Science, the American College of Physicians, and the Royal College of Physicians Research Associate with the National Bureau of Economic Research
David M. Altshuler	EVP, Global Research and Chief Scientific Officer of Vertex
Stuart Arbuckle	EVP, Chief Commercial Officer
Reshma Kewalramani	EVP, Global Medicines Development and Medical Affairs and Chief Medical Officer
Michael Parini	EVP, Chief Legal and Administrative Officer of Vertex
Amit Sachdev	EVP, Chief Regulatory Officer of Vertex
Ian F. Smith	EVP, Chief Operating Officer and interim Chief Financial Officer of Vertex

The name, business address and present principal occupation or employment of each of the directors and executive officers of Vertex Europe are set forth below. The business address of each director and executive officer is c/o 2 Vertex Pharmaceuticals (Europe) Limited, Kingdom Street, 9th Floor, London W2 6BD, United Kingdom. Mr. Smith and Mr. Lem are citizens of the United Kingdom and Michele Bellandi is a citizen of Italy.

Name	Present Principal Occupation or Employment
Ian F. Smith	EVP, Chief Operating Officer and interim Chief Financial Officer of Vertex
Michele Bellandi	VP, International Commercial Management
Simon Lem	VP, Regional General Manager UK

JOINT FILING AGREEMENT

Pursuant to Rule 13d-1(k)(1) under the Securities Exchange Act of 1934, the undersigned hereby agree that only one statement containing the information required by Schedule 13D need be filed with respect to the ownership by each of the undersigned of shares of common stock, par value CHF 0.03 per share, of CRISPR Therapeutics AG. The undersigned also agree that all subsequent amendments to this statement on Schedule 13D may be filed on behalf of each of the undersigned without the necessity of filing additional joint filing agreements.

EXECUTED this 21st day of December, 2018.

VERTEX PHARMACEUTICALS INCORPORATED

By: /s/ Ian F. Smith

Ian F. Smith

EVP, Chief Operating Officer and interim Chief Financial Officer

VERTEX PHARMACEUTICALS (EUROPE) LIMITED

By: /s/ Ian F. Smith

Ian F. Smith

Director