

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

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

X4 Pharmaceuticals, Inc.
(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of
incorporation or organization)

**61 North Beacon Street, 4th Floor
Boston, Massachusetts**

(Address of Principal Executive Offices)

27-3181608

(I.R.S. Employer
Identification No.)

02134

(Zip Code)

X4 Pharmaceuticals, Inc. Amended and Restated 2017 Equity Incentive Plan
(Full title of the plan)

**Paula Ragan, Ph.D.
President and Chief Executive Officer
X4 Pharmaceuticals, Inc.
61 North Beacon Street, 4th Floor
Boston, Massachusetts 02134
(857) 529-8300**

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

Copy to:

**Gabriela Morales-Rivera
William D. Collins
Goodwin Procter LLP
100 Northern Avenue
Boston, MA 02210
(617) 570-1000**

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	<input type="checkbox"/>	Accelerated filer	<input type="checkbox"/>
Non-accelerated filer	<input checked="" type="checkbox"/>	Smaller reporting company	<input checked="" type="checkbox"/>
		Emerging growth company	<input type="checkbox"/>

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.

INCORPORATION OF DOCUMENTS BY REFERENCE

This Registration Statement on Form S-8 is being filed for the purpose of increasing the number of securities of the same class as other securities for which a Registration Statement on Form S-8 of the Registrant relating to the same employee benefit plans is effective. Accordingly, pursuant to General Instruction E to Form S-8, this Registration Statement incorporates by reference the contents of (i) the Registration Statement on Form S-8 (File No. 333-221622) filed with the Securities and Exchange Commission (“SEC”) on [November 16, 2017](#) relating to the Registrant’s Amended and Restated 2017 Equity Incentive Plan (the “**2017 Plan**”) and certain other employee benefit plans of the Registrant; (ii) the Registration Statement on Form S-8 (File No. 333-223539) filed with the SEC on [March 9, 2018](#) relating to the 2017 Plan; (iii) the Registration Statement on Form S-8 (File No. 333-230181) filed with the SEC on [March 11, 2019](#) relating to the 2017 Plan and certain other employee benefit plans of the Registrant; (iv) the Registration Statement on Form S-8 (File No. 333-237164) filed with the SEC on [March 13, 2020](#) relating to the 2017 Plan and certain other employee benefit plans of the Registrant; (v) the Registration Statement on Form S-8 (File No 333-239082) filed with the SEC on [June 10, 2020](#) relating to the 2017 Plan; (vi) the Registration Statement on Form S-8 (File No 333-254618) filed with the SEC on [March 23, 2021](#) relating to the 2017 Plan and certain other employee benefit plans of the Registrant; (vii) the Registration Statement on Form S-8 (File No 333-263430) filed with the SEC on [March 10, 2022](#) relating to the 2017 Plan and certain other employee benefit plans of the Registrant; (viii) the Registration Statement on Form S-8 (File No 333-269335) filed with the SEC on [January 20, 2023](#) relating to the 2017 Plan and certain other employee benefit plans of the Registrant; and (xi) the Registration Statement on Form S-8 (File No 333-273960) filed with the SEC on [August 14, 2023](#) relating to the 2017 Plan and certain other employee benefit plans of the Registrant, in each case except for Item 8, Exhibits, with respect to which the Exhibit Index below is incorporated herein by reference.

PART II
INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

Item 8. Exhibits

The exhibits to this Registration Statement are listed in the Exhibit Index attached hereto and incorporated by reference herein.

Exhibit Number	Exhibit Description	Filed Herewith	Incorporated Reference herein from Form or Schedule	Filing Date	SEC File/Reg. Number
4.1	Restated Certificate of Incorporation, as amended, as of September 1, 2022		8-K (Exhibit 3.1)	9/1/2022	001-38295
4.2	Amended and Restated By-laws of the Registrant		8-K (Exhibit 3.2)	11/20/2017	001-38295
4.3	Form of Common Stock Certificate		8-K (Exhibit 4.1)	03/13/2019	001-38295
5.1	Opinion of Goodwin Procter LLP with respect to the legality of the securities being registered.	X			
23.1	Consent of PricewaterhouseCoopers LLP, independent registered public accounting firm to X4 Pharmaceuticals, Inc.	X			
23.2	Consent of Goodwin Procter LLP (included in Exhibit 5.1)	X			
24.1	Power of Attorney to file future amendments (set forth on the signature page of this Registration Statement)	X			
99.1	X4 Pharmaceuticals Inc. Amended and Restated 2017 Equity Incentive Plan		S-8 (Exhibit 99.1)	6/10/2020	333-239082
99.2	Form of Incentive Stock Option Agreement under the Amended and Restated 2017 Equity Incentive Plan		S-1 (Exhibit 10.8)	10/20/2017	001-38295
99.3	Form of Nonstatutory Stock Option Agreement under the Amended and Restated 2017 Equity Incentive Plan		S-1 (Exhibit 10.9)	10/20/2017	001-38295
99.4	Form of Restricted Stock Agreement under the Amended and Restated 2017 Equity Incentive Plan		8-K (Exhibit 10.6)	11/27/2018	001-38295
99.5	Form of Restricted Stock Unit Agreement under the Amended and Restated 2017 Equity Incentive Plan		8-K (Exhibit 10.5)	06/19/2019	001-38295
99.6	Form of Performance-Based Restricted Stock Unit Agreement under the Amended and Restated 2017 Equity Incentive Plan		S-8 (Exhibit 99.6)	6/10/2020	333-239082
107	Filing Fee Table	X			

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 the City of Boston, Commonwealth of Massachusetts, on January 25, 2024.

X4 PHARMACEUTICALS, INC.

By: /s/ Paula Ragan, Ph.D

Paula Ragan, Ph.D.

President and Chief Executive Officer

SIGNATURES AND POWER OF ATTORNEY

We, the undersigned officers and directors of X4 Pharmaceuticals, Inc., hereby severally constitute and appoint Paula Ragan, Ph.D. and Adam S. Mostafa, and each of them singly (with full power to each of them to act alone), our true and lawful attorneys-in-fact and agents, with full power of substitution and resubstitution in each of them for him or her and in his or her name, place and stead, and in any and all capacities, to sign any and all amendments (including post-effective amendments) to this Registration Statement on Form S-8 of X4 Pharmaceuticals, Inc., and to file the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite or necessary to be done in and about the premises, as full to all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents or any of them or their or his or her substitute or substitutes may lawfully do or cause to be done by virtue hereof.

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

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Paula Ragan</u> Paula Ragan, Ph.D.	President, Chief Executive Officer and Director (principal executive officer)	January 25, 2024
<u>/s/ Adam S. Mostafa</u> Adam S. Mostafa	Chief Financial Officer and Treasurer (principal financial officer and principal accounting officer)	January 25, 2024
<u>/s/ Michael S. Wyzga</u> Michael S. Wyzga	Chairman of the Board of Directors, Director	January 25, 2024
<u>/s/ William E. Aliski</u> William E. Aliski	Director	January 25, 2024
<u>/s/ Gary J. Bridger</u> Gary J. Bridger, Ph.D.	Director	January 25, 2024
<u>/s/ Françoise De Craecker</u> Françoise De Craecker	Director	January 25, 2024
<u>/s/ Alison F. Lawton</u> Alison F. Lawton	Director	January 25, 2024
<u>/s/ David McGirr</u> David McGirr, M.B.A.	Director	January 25, 2024
<u>/s/ Murray W. Stewart, M.D.</u> Murray W. Stewart, M.D.	Director	January 25, 2024
<u>/s/ Keith Woods</u> Keith Woods	Director	January 25, 2024

Calculation of Filing Fee Table
Form S-8
 (Form Type)
X4 Pharmaceuticals, Inc.
 (Exact Name of Registrant as Specified in its Charter)

Table 1: Newly Registered

Security Type	Security Class Title	Fee Calculation Rule	Amount to be Registered (1)	Proposed Maximum Offering Price Per Unit	Maximum Aggregate Offering Price	Fee Rate	Amount of registration fee
Equity	Common Stock, \$0.001 par value per share, X4 Pharmaceuticals Inc. 2017 Equity Incentive Plan	Other ⁽²⁾	6,697,383 ⁽³⁾	\$0.751 ⁽²⁾	\$5,029,734.63	\$0.0001476	\$742.39
Total Offering Amounts					\$5,029,734.63		
Total Fees Previously Paid							
Total Fee Offsets							
Net Fee Due							\$742.39

(1) Pursuant to Rule 416 of the Securities Act of 1933, as amended (the “*Securities Act*”), this Registration Statement shall also cover any additional shares of the Registrant’s common stock, par value \$0.001 per share (the “*Common Stock*”), that become issuable under the X4 Pharmaceuticals, Inc. Amended and Restated 2017 Equity Incentive Plan (as amended from time to time, the “*2017 Plan*”) by reason of any stock dividend, stock split, recapitalization or other similar transaction effected without receipt of consideration that increases the number of the Registrant’s outstanding shares of Common Stock.

(2) This calculation is made solely for the purpose of determining the registration fee pursuant to the provisions of Rule 457(c) and (h) under the Securities Act. The offering price per share and the aggregate offering price are calculated based on the average of the high and low sale prices per share of the Common Stock as reported on The Nasdaq Capital Market on January 19, 2024.

(3) Consists of 6,697,383 shares of Common Stock that were automatically added to the shares authorized for issuance under the 2017 Plan on January 1, 2024, pursuant to an “evergreen” provision contained in the 2017 Plan. Pursuant to such “evergreen” provision contained in the 2017 Plan, on January 1 of each year from 2021 until (and including) 2027, the number of shares authorized for issuance under the 2017 Plan is automatically increased by a number equal to the amount equal to the least of (1) 4% of the total number of shares of Common Stock outstanding on December 31st of the preceding calendar year, or (2) a number of shares determined by the Registrant’s Board of Directors.

EXHIBIT 5.1

January 25, 2024

X4 Pharmaceuticals, Inc.
61 North Beacon Street, 4th Floor
Boston, MA 02134

Re: Securities Being Registered under Registration Statement on Form S-8

We have acted as counsel to you in connection with your filing of a Registration Statement on Form S-8 (the "Registration Statement") pursuant to the Securities Act of 1933, as amended (the "Securities Act"), on or about the date hereof relating to an aggregate of 6,697,383 shares (the "Shares") of Common Stock, \$0.001 par value per share ("Common Stock"), of X4 Pharmaceuticals, Inc., a Delaware corporation (the "Company"), that may be issued pursuant to the Company's Amended and Restated 2017 Equity Incentive Plan (as amended from time to time, the "2017 Plan").

We have reviewed such documents and made such examination of law as we have deemed appropriate to give the opinion set forth below. We have relied, without independent verification, on certificates of public officials and, as to matters of fact material to the opinion set forth below, on certificates of officers of the Company.

The opinion set forth below is limited to the Delaware General Corporation Law.

For purposes of the opinion set forth below, we have assumed that no event occurs that causes the number of authorized shares of Common Stock available for issuance by the Company to be less than the number of then unissued Shares.

Based on the foregoing, we are of the opinion that the Shares have been duly authorized and, upon issuance and delivery against payment therefor in accordance with the terms of the 2017 Plan, will be validly issued, fully paid and nonassessable.

This opinion letter and the opinion it contains shall be interpreted in accordance with the Core Opinion Principles as published in *74 Business Lawyer* 815 (Summer 2019).

We hereby consent to the inclusion of this opinion as Exhibit 5.1 to the Registration Statement. In giving our consent, we do not admit that we are in the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations thereunder.

Very truly yours,

/s/ Goodwin Procter LLP

GOODWIN PROCTER LLP

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in this Registration Statement on Form S-8 of X4 Pharmaceuticals, Inc. of our report dated March 21, 2023 relating to the financial statements, which appears in X4 Pharmaceuticals, Inc.'s Annual Report on Form 10-K for the year ended December 31, 2022.

/s/ PricewaterhouseCoopers LLP
Boston, Massachusetts
January 25, 2024