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

FORM 8-K

**CURRENT REPORT
Pursuant to Section 13 or 15(d)
of the Securities Exchange Act of 1934**

Date of Report (Data of earliest event reported): **March 17, 2020**

X4 PHARMACEUTICALS, INC.

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of incorporation)

001-38295
(Commission File Number)

27-3181608
(IRS Employer Identification No.)

955 Massachusetts Avenue, 4th Floor
Cambridge, Massachusetts
(Address of principal executive offices)

2139
(Zip Code)

(857) 529-8300
(Registrant's telephone number, including area code)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

- Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
- Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
- Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
- Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Securities registered pursuant to Section 12(b) of the Act:

| Title of each class | Trading Symbol(s) | Name of each exchange on which registered |
|---|-------------------|---|
| Common Stock, par value \$0.001 per share | XFOR | The Nasdaq Stock Market LLC |

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (240.12b-2 of this chapter). 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

Item 1.01. Entry into a Material Definitive Agreement.

On March 13, 2020, X4 Pharmaceuticals, Inc., a Delaware corporation (“X4”) and its qualified subsidiaries, including without limitation X4 Therapeutics, Inc. (together with X4, the “Borrower”) entered into a First Amendment to the Amended and Restated Loan and Security Agreement dated June 27, 2019 (collectively the “Amended Loan Agreement”) with Hercules Capital, Inc., and Hercules Capital Funding Trust 2019-1 (collectively the “Lender” or “Hercules”), which provides for aggregate maximum borrowings of up to \$50.0 million.

The Amended Loan Agreement consists of (i) a term loan of \$25.0 million (including the \$20.0 million previously outstanding under the Amended and Restated Loan and Security Agreement dated June 27, 2019) and an additional \$5.0 million drawn at the closing of the first amendment on March 13, 2020 (the “Closing Date”) (the “Tranche 1 Term Loan Advance”), (ii) subject to the achievement of certain performance milestones and other conditions, a right of the Borrower to request that the Lender make additional term loan advances in an aggregate amount of up to \$7.5 million through June 30, 2021 (the “Tranche 2 Term Loan Advance”), (iii) subject to the achievement of certain performance milestones and conditions, a right of the Borrower to request that the Lender make additional term loan advances in an aggregate amount of up to \$7.5 million through June 30, 2022 (“Tranche 3 Term Loan Advance”) and (iv) subject to the Lender’s investment committee’s sole discretion, a right of the Borrower to request that the Lender make additional term loan advances in an aggregate amount of up to \$10.0 million through December 31, 2022 (“Tranche 4 Term Loan Advance”).

Borrowings under the Amended Loan Agreement bear interest at a variable rate equal to a per annum rate of interest equal to the greater of either (i) 3.75% plus the prime rate as reported in The Wall Street Journal, and (ii) 8.75%. In an event of default, as defined in the Amended Loan Agreement, and until such event is no longer continuing, the interest rate applicable to borrowings under the Amended Loan Agreement would be increased by 4.0%.

Borrowings under the Amended Loan Agreement are repayable in monthly interest-only payments through January 1, 2022, and in equal monthly payments of principal and accrued interest from February 1, 2022 until the maturity date of the loan, which is July 1, 2023. X4 may prepay all, but not less than all, of the outstanding borrowings, subject to a prepayment premium of up to 2.0%, 1.0% or 0.5% of the principal amount outstanding as of the date of repayment, in each case depending on when such repayment is made. In addition, the Amended Loan Agreement provides for payments by the Borrower to Hercules of (i) \$795,000 payable upon the earlier of November 1, 2021 or the repayment in full of all obligations under the Amended Loan Agreement, and (ii) 4.0% of the aggregate principal amount of all Term Loan Advances drawn under the Amended Loan Agreement (which payment amount would be \$2.0 million if X4 borrowed the aggregate maximum principal amount of \$50.0 million), payable upon the earlier of the maturity of the Amended Loan Agreement or the repayment in full of all obligations under the Amended Loan Agreement.

Borrowings under the Amended Loan Agreement are collateralized by substantially all of the Borrower’s personal property and other assets except for their intellectual property (but including rights to payment and proceeds from the sale, licensing or disposition of the intellectual property). Under the Amended Loan Agreement, the Borrower has agreed to affirmative and negative covenants to which the Borrower will remain subject until maturity or repayment of the loan in full. The covenants include, without limitation:

- (a) Effective immediately upon the date the outstanding principal amount of the advances under the Amended Loan Agreement exceeds \$25.0 million, Borrower at all times thereafter shall maintain cash in an account or accounts of Borrower in which Hercules has a first priority security interest, in an aggregate amount greater than or equal to the greater of (i) \$30.0 million or (ii) 6 multiplied by a metric based on prior months’ cash expenditures (“RML”); provided, however, that from and after Borrower’s achievement of certain performance milestones, the required level shall be reduced to the greater of (x) \$20.0 million, or (y) 3 multiplied by the current RML; and provided further, that subject to the achievement of certain milestones, this covenant shall be extinguished.
- (b) Restrictions on the Borrowers’ ability to incur additional indebtedness, pay dividends, encumber its intellectual property, or engage in certain fundamental business transactions, such as mergers or acquisitions of other businesses, with certain exceptions.

The Borrower's obligations under the Amended Loan Agreement are subject to acceleration upon occurrence of specified events of default, including payment default, insolvency and a material adverse change in the Borrower's business, operations or financial or other condition.

In addition, under the Amended Loan Agreement, Hercules has the right to participate, in a cumulative amount of up to \$3.0 million in the aggregate, of which \$1.0 million has already been exercised as of the Closing Date, and subject to exceptions as provided in the Amended Loan Agreement, in any future offering of X4's equity securities for cash that is solely for financing purposes and is broadly marketed to multiple investors.

The foregoing description of the Amended Loan Agreement does not purport to be complete and is qualified in its entirety by reference to the Amended Loan Agreement, which is attached hereto as Exhibit 10.1 and is incorporated herein by reference.

Item 2.03. Creation of a Direct Financial Obligation or an Obligation under an Off-Balance Sheet Arrangement of a Registrant.

The information set forth in Item 1.01 of this Current Report on Form 8-K with respect to the Amended Loan Agreement is incorporated by reference into this Item 2.03.

Item 9.01 Financial Statements and Exhibits.

**Exhibit
Number Description**

10.1 [Amendment No. 1 to Loan and Security Agreement, dated March 13, 2020, by and between X4 Pharmaceuticals, Inc. and Hercules Capital, Inc.](#)

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934 the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

X4 PHARMACEUTICALS, INC.

Date: March 17, 2020

By: /s/ Derek Meisner

Derek Meisner

General Counsel

**AMENDMENT NO. 1
TO
LOAN AND SECURITY AGREEMENT**

This Amendment No. 1 to Loan and Security Agreement (the “First Amendment”) is dated as of March 13, 2020 (the “First Amendment Date”) and is entered into by and among X4 PHARMACEUTICALS, INC. a Delaware corporation (the “Company”), and each of its Qualified Subsidiaries, including without limitation X4 THERAPEUTICS, INC. (“Therapeutics”) (hereinafter collectively referred to as the “Borrower”), the several banks and other financial institutions or entities from time to time parties hereto (collectively, referred to as “Lender”) and HERCULES CAPITAL, INC., a Maryland corporation, in its capacity as administrative agent for itself and the Lender (in such capacity, the “Agent”). Capitalized terms used herein without definition shall have the same meanings given them in the Agreement (as defined below).

Recitals

- A. Borrower, Agent and Lender have entered into that certain Amended and Restated Loan and Security Agreement dated as of June 27, 2019 (as may be amended, restated, or otherwise modified, the “Agreement”), pursuant to which Lender has agreed to extend and make available to Borrower certain advances of money.
- B. Borrower has requested and Agent and Lender have agreed to modify certain provisions of the Agreement, subject to the terms and conditions set forth herein.
- C. Borrower, Agent and Lender have agreed to amend the Agreement upon the terms and conditions more fully set forth herein.

Agreement

NOW, THEREFORE, in consideration of the foregoing Recitals and intending to be legally bound, the parties hereto agree as follows:

1. Amendments.

1.1 Definitions.

(a) **New Definitions.** The following definitions are hereby inserted alphabetically into Section 1.1 of the Agreement:

“FDA” means the U.S. Food and Drug Administration or any successor thereto.

“First Amendment” means the First Amendment to this Agreement, dated as of the First Amendment Date.

“First Amendment Date” means March 13, 2020.

“IND” means an Investigational New Drug Application submitted to the FDA pursuant to 21 C.F.R. § 312 (or its successor regulation) requesting authorization to initiate clinical trials in human subjects.

“Investment Activities” means Borrower’s investment activities that are defined and reported in Borrower’s monthly financial reporting delivered to Agent and in Borrower’s SEC reporting.

“Market Capitalization” means for any given date of determination, an amount equal to (a) the closing price of the Common Stock as reported for such date of determination (it being understood that a “trading day” shall mean a day on which shares of Common Stock trade on the NASDAQ in an ordinary trading session) *multiplied by* (b) the total number of issued and outstanding shares of Common Stock that are issued and outstanding on the date of the determination and listed on the NASDAQ (or, if the primary listing of such Common Stock is on another exchange, on such other exchange). Such determination shall be appropriately adjusted for any stock dividend, stock split, stock combination, reclassification or other similar transaction during the applicable calculation period.

“Operating Activities” means Borrower’s operating activities that are defined and reported in Borrower’s monthly financial reporting delivered to Agent and in Borrower’s SEC reporting.

“Performance Milestone I” means satisfaction of each of the following events: (a) no default or Event of Default shall have occurred and be continuing; (b) Borrower shall have communicated in writing to Agent and Lender that it has completed enrollment in the Phase 3 clinical trial of X4P-001 in patients with WHIM Syndrome (NCT03995108), and the trial shall not have been stopped for safety or futility concerns; (c) Borrower shall be actively conducting or preparing to initiate at least one other clinical trial under a Borrower-sponsored IND besides the Phase 3 WHIM clinical trial; and (d) at the time Borrower requests each Tranche 2 Term Loan Advance, Borrower shall have unrestricted cash in an amount of at least (i) 9 multiplied by the current RML, or (ii) 6

multiplied by the current RML if Borrower's Market Capitalization is at least \$250,000,000 for the 20 trading days immediately prior to the funding of the applicable Tranche 2 Term Loan Advance.

"Performance Milestone II" means satisfaction of each of the following events: (a) no default or Event of Default shall have occurred and be continuing; (b) Borrower shall have communicated in writing to Agent and Lender that it has completed enrollment in the Phase 3 clinical trial of X4P-001 in patients with WHIM Syndrome (NCT03995108), and the trial shall not have been stopped for safety or futility concerns; (c) Borrower shall have determined and provided to Agent and Lender reasonably acceptable evidence that either (i) the data in the Phase 1b study of X4P-001 in patients with Severe Congenital Neutropenia supports the launch of a Phase 2/3 registrational clinical trial as the next immediate step in clinical development, or (ii) the data in the Phase 1b/2a study of X4P-001 in patients with Waldenstrom's Macroglobulinemia supports the launch of a Phase 2/3 registrational clinical trial as the next immediate step in clinical development; and (d) at the time Borrower requests each Tranche 3 Term Loan Advance, Borrower shall have unrestricted cash in an amount of at least (i) 9 multiplied by the current RML, or (ii) 6 multiplied by the current RML if Borrower's Market Capitalization is at least \$250,000,000 for the 20 trading days immediately prior to the funding of the applicable Tranche 3 Term Loan Advance.

"Performance Milestone III" means satisfaction of each of the following events: (a) no default or Event of Default shall have occurred and be continuing; (b) the Phase 3 clinical trial of X4P-001 in patients with WHIM Syndrome (NCT03995108) shall have achieved its protocol-specified primary efficacy endpoint with statistical significance, an acceptable safety profile, and supporting efficacy data, such that the totality of safety and efficacy data are sufficient to file a New Drug Application as the next immediate step in clinical development; and (c) Borrower's executive officers shall have proceeded towards the filing of such NDA, subject to reasonable verification by Lender.

"RML" means on any measurement date amount equal to the quotient of (a) the sum of the immediately prior three months of (i) net cash used in Operating Activities plus (ii) net cash provided by Investment Activities, excluding the effect of any one-time items from business development transactions, such as upfront or milestone consideration or payments made in connection with acquisitions, or from the purchase or sale of short-term investments, divided by (b) 3; such quotient shall be calculated in accordance with the most recent Financial Statements delivered to Agent pursuant to Section 7.1. The definitions in clauses (a)(i) and (a)(ii) shall be in accordance with GAAP and generally consistent with how they are defined in Borrower's monthly financial reporting and SEC reporting as of the First Amendment Date.

"Tranche 3 Term Loan" means a loan in an aggregate principal amount of up to Seven Million Five Hundred Thousand Dollars (\$7,500,000).

"Tranche 3 Term Loan Advance" has the meaning assigned to such term in Section 2.2(a)(iii).

"Tranche 4 Term Loan" means a loan in an aggregate principal amount of up to Ten Million Dollars (\$10,000,000).

"Tranche 4 Term Loan Advance" has the meaning assigned to such term in Section 2.2(a)(iv).

(b) Amended Definitions. The following definitions in Section 1.1 (or, to the extent applicable, the Recitals) of the Agreement are hereby amended and restated in their entirety as follows:

"Facility Charge" means (a) \$75,000 (representing one-half percent (0.50%) of the maximum amount of the Tranche 2 Term Loan and the Tranche 3 Term Loan), due on the First Amendment Date, and (b) upon each funding of a Tranche 4 Term Loan Advance, one-half percent (0.50%) of the amount of each such Tranche 4 Term Loan Advance drawn.

"Maximum Term Loan Amount" means Fifty Million Dollars (\$50,000,000.00).

"Permitted Acquisition" shall mean any acquisition (including by way of merger or exclusive in-licensing arrangements) by Borrower of all or substantially all of the assets of another Person, or of a division or line of business of another Person, or capital stock of another Person, in each case located entirely within the United States of America, which is conducted in accordance with the following requirements:

(a) if such acquisition is of a business or Person, such business or Person is engaged in a line of business similar or related to that of the Borrower or its Subsidiaries;

(b) if such acquisition is structured as a stock acquisition, then the Person so acquired shall either (i) become a wholly-owned Subsidiary of Borrower or of a Subsidiary and the Borrower shall comply, or cause such Subsidiary to comply, with 7.13 hereof or (ii) such Person shall be merged with and into Borrower (with the Borrower being the surviving entity);

(c) if such acquisition is structured as the acquisition of assets, such assets shall be acquired by Borrower, and shall be free and clear of Liens other than Permitted Liens;

(d) the Borrower shall have delivered to Lender not less than ten (10) nor more than forty five (45) days prior to the date of such acquisition, notice of such acquisition together with pro forma projected financial information, copies of all material documents relating to such acquisition, and historical financial statements for such acquired entity, division or line of business, in each case in form and substance reasonably satisfactory to Lender and demonstrating compliance with the covenants set forth in Section 7 hereof on a pro forma basis as if the acquisition occurred on the first day of the most recent measurement period;

(e) both immediately before and after such acquisition no Default or Event of Default shall have occurred and be continuing; and

(f) the sum of the purchase price of such proposed new acquisition, computed on the basis of total acquisition consideration paid or incurred, or to be paid or incurred (but excluding for such purpose any performance-based milestones, earn-outs, royalties or similar payments), by Borrower with respect thereto, including the amount of Permitted Indebtedness assumed or to which such assets, businesses or business or ownership interest or shares, or any Person so acquired, is subject, shall not be greater than (i) \$5,000,000 for any single acquisition or group of related acquisitions or (ii) \$5,000,000 for all such acquisitions during the term of the Loan. Notwithstanding the foregoing, in the event Borrower draws a Tranche 4 Term Loan Advance in connection with financing a proposed acquisition, the proceeds of such Tranche 4 Term Loan Advance may be used for such acquisition.

“Term Loan” means individually and collectively the Tranche 1 Term Loan, the Tranche 2 Term Loan, the Tranche 3 Term Loan and the Tranche 4 Term Loan, as applicable, and shall not exceed an aggregate principal amount of up to Fifty Million Dollars (\$50,000,000.00).

“Term Loan Advance” means a Tranche 1 Term Loan Advance, Tranche 2 Term Loan Advance, Tranche 3 Term Loan Advance, Tranche 4 Term Loan Advance and any other Term Loan funds advanced under this Agreement.

“Term Loan Interest Rate” means (a) for any day prior to the First Amendment Date, a per annum rate of interest equal to the greater of either (i) 8.75% plus the prime rate as reported in The Wall Street Journal minus 6.00%, and (ii) 8.75%, and (b) for any day from and after the First Amendment Date, a per annum rate of interest equal to the greater of either (i) 3.75% plus the prime rate as reported in The Wall Street Journal, and (ii) 8.75%.

“Tranche 2 Term Loan” means a loan in an aggregate principal amount of up to Seven Million Five Hundred Thousand Dollars (\$7,500,000).

1.2 Amendments.

(a) Section 2.2(a) of the Agreement is hereby amended and restated in its entirety as follows:

2.2 Term Loan.

(a) Advances.

(i) **Tranche 1 Term Loan Advances.** Pursuant to the Agreement, the Lenders have severally (and not jointly) made, and Borrower has drawn, a Term Loan Advance in the amount of \$20,000,000 (the “Tranche 1A Term Loan Advance”). Subject to the terms and conditions of this Agreement, the Lenders will severally (and not jointly) make in an amount not to exceed their respective Term Commitments, and Borrower agrees to draw, a Term Loan Advance in the amount of \$5,000,000 (the “Tranche 1B Term Loan Advance” and, together with the “Tranche 1A Term Loan Advance”, the “Tranche 1 Term Loan Advances”) on the First Amendment Date.

(ii) **Tranche 2 Term Loan Advance.** Subject to the terms and conditions of this Agreement, beginning on the date Borrower achieves Performance Milestone I and continuing through June 30, 2021, Borrower may request and Lenders severally (and not jointly) will make Term Loan Advances in an aggregate amount up to \$7,500,000, in minimum increments of \$2,500,000, or if the undrawn amount of the Tranche 2 Term Loan is less than \$2,500,000, such lesser amount (each, a “Tranche 2 Term Loan Advance”).

(iii) **Tranche 3 Term Loan Advance.** Subject to the terms and conditions of this Agreement, beginning on the date Borrower achieves Performance Milestone II and continuing through June 30, 2022, Borrower may request and Lenders severally (and not jointly) will make Term Loan Advances in an aggregate amount up to \$7,500,000, in minimum increments of \$2,500,000, or if the undrawn amount of the Tranche 3 Term Loan is less than \$2,500,000, such lesser amount (each, a “Tranche 3 Term Loan Advance”).

(iv) **Tranche 4 Term Loan Advance.** Subject to the terms and conditions of this Agreement, beginning on the First Amendment Date and continuing through December 31, 2022, subject to approval by Lender’s investment committee in its sole discretion, Borrower may request and Lenders severally (and not jointly)

will make Term Loan Advances in an aggregate amount up to \$10,000,000, in minimum increments of \$5,000,000, or if the undrawn amount of the Tranche 4 Term Loan is less than \$5,000,000, such lesser amount (each, a "Tranche 4 Term Loan Advance").

The aggregate outstanding Term Loan Advances may be up to the Maximum Term Loan Amount.

(b) Section 7.22 of the Agreement is hereby amended and restated in its entirety as follows:

7.22 Minimum Cash. Effective immediately upon the date the outstanding principal amount of the Term Loan Advances exceeds \$25,000,000, Borrower at all times thereafter shall maintain Cash in an account or accounts of Borrower subject to an Account Control Agreement, in an aggregate amount greater than or equal to the greater of (i) \$30,000,000 or (ii) 6 multiplied by the current RML (as determined as of the last reporting under Section 7.1); provided, however, that from and after Borrower's achievement of Performance Milestone III, Borrower at all times thereafter shall maintain Cash in an account or accounts of Borrower subject to an Account Control Agreement, in an aggregate amount greater than or equal to the greater of (x) \$20,000,000, or (y) 3 multiplied by the current RML (as determined as of the last reporting under Section 7.1); and provided further, that from and after the date the FDA approves the NDA for X4P-001 for the treatment of WHIM Syndrome, any requirement for Borrower to maintain minimum Cash pursuant to this Section 7.22 shall be extinguished.

(c) Section 8.1 of the Agreement is hereby amended and restated in its entirety as follows:

8.1 Right to Invest. Lender or its assignee or nominee shall have the right, in its discretion, to participate, in a cumulative amount of up to \$3,000,000 (\$1,000,000 of which has already been exercised as of the First Amendment Date) in the aggregate, in one or more Subsequent Financings, on the same terms, conditions and pricing afforded to others participating in any such Subsequent Financing, provided, however, Lender or its assignee or nominee agrees to become a party to the agreements executed by the others participating in such Subsequent Financing. Notwithstanding the foregoing, the Company shall provide the Lender or its assignee or nominee at least one (1) Business Days notice (which may be oral) of a planned Subsequent Financing and the opportunity to exercise the right to invest under this Section 8.1 with respect to such Subsequent Financing. This Section 8.1, and all rights and obligations hereunder, shall terminate upon the earlier to occur of (i) such time that the Lender or its assignees or nominees have purchased \$3,000,000 (in the aggregate, inclusive of the \$1,000,000 purchased prior to the First Amendment Date) of the Company's equity securities in the aggregate in any Subsequent Financing(s) and (ii) the later to occur of (A) the repayment of the Indebtedness under this Agreement and (B) the exercise in full of the Warrants or the expiration or termination of the exercise period for the Warrants.

1.3 Exhibits and Schedules. The exhibits and schedules previously provided to or by Agent and Lender as of the Closing Date are hereby updated and amended, if applicable, as of the First Amendment Date by the exhibits and schedules attached to this First Amendment.

2. Borrower's Representations And Warranties. Borrower represents and warrants that:

2.1 Immediately upon giving effect to this First Amendment (i) the representations and warranties contained in the Loan Documents are true, accurate and complete in all material respects as of the date hereof (except to the extent such representations and warranties relate to an earlier date, in which case they are true and correct as of such date), and (ii) no Event of Default has occurred and is continuing with respect to which Borrower has not been notified in writing by Agent.

2.2 Borrower has the corporate power and authority to execute and deliver this First Amendment and to perform its obligations under the Agreement, as amended by this First Amendment.

2.3 The certificate of incorporation, bylaws and other organizational documents of Borrower delivered to Agent and Lender on the Closing Date remain true, accurate and complete and have not been amended, supplemented or restated and are and continue to be in full force and effect.

2.4 The execution and delivery by Borrower of this First Amendment and the performance by Borrower of its obligations under the Agreement, as amended by this First Amendment, have been duly authorized by all necessary corporate action on the part of Borrower.

2.5 This First Amendment has been duly executed and delivered by Borrower and is the binding obligation of Borrower, enforceable against it in accordance with its terms, except as such enforceability

may be limited by bankruptcy, insolvency, reorganization, liquidation, moratorium or other similar laws of general application and equitable principles relating to or affecting creditors' rights; and

2.6 As of the date hereof, it has no defenses against the obligations to pay any amounts under the Secured Obligations. Borrower acknowledges that Agent and Lender have acted in good faith and have conducted in a commercially reasonable manner their relationships with Borrower in connection with this First Amendment and in connection with the Loan Documents.

Borrower understands and acknowledges that Agent and Lender are entering into this First Amendment in reliance upon, and in partial consideration for, the above representations and warranties, and agrees that such reliance is reasonable and appropriate.

3. Limitation. The amendments set forth in this First Amendment shall be limited precisely as written and shall not be deemed (a) to be a waiver or modification of any other term or condition of the Agreement or of any other instrument or agreement referred to therein or to prejudice any right or remedy which Agent or Lender may now have or may have in the future under or in connection with the Agreement (as amended hereby) or any instrument or agreement referred to therein; or (b) to be a consent to any future amendment or modification or waiver to any instrument or agreement the execution and delivery of which is consented to hereby, or to any waiver of any of the provisions thereof. Except as expressly amended hereby, the Agreement shall continue in full force and effect.

4. Effectiveness. This First Amendment shall become effective upon the satisfaction of all the following conditions:

4.1 Amendment. Borrower, Agent and Lender shall have duly executed and delivered this First Amendment to Agent.

4.2 Payment of the Facility Charge. Borrower shall have paid a Facility Charge in the amount of \$75,000.

4.3 Secretary's Certificate. Borrower shall have delivered to Agent a secretary's certificate, together with a certified copy of resolutions of the Borrower's Board of Directors evidencing approval of the First Amendment.

4.4 Perfection Certificate. A completed perfection certificate of Borrower.

4.5 Payment of Agent and Lender Expenses. Borrower shall have paid all of Agent's and Lender's fees and expenses (including all reasonable attorneys' fees and reasonable expenses) incurred through the First Amendment Date, in each case to the extent invoiced on or prior to the First Amendment Date.

5. Release. In consideration of the agreements of Agent and each Lender contained herein and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Borrower, on behalf of itself and its successors, assigns, and other legal representatives, hereby fully, absolutely, unconditionally and irrevocably releases, remises and forever discharges Agent and each Lender, and its successors and assigns, and its present and former shareholders, affiliates, subsidiaries, divisions, predecessors, directors, officers, attorneys, employees, agents and other representatives (Agent, Lender and all such other persons being hereinafter referred to collectively as the "Releasees" and individually as a "Releasee"), of and from all demands, actions, causes of action, suits, covenants, contracts, controversies, agreements, promises, sums of money, accounts, bills, reckonings, damages and any and all other claims, counterclaims, defenses, rights of set-off, demands and liabilities whatsoever of every name and nature, known or unknown, suspected or unsuspected, both at law and in equity, which Borrower, or any of its successors, assigns, or other legal representatives may now or hereafter own, hold, have or claim to have against the Releasees or any of them for, upon, or by reason of any circumstance, action, cause or thing whatsoever which arises at any time immediately prior to the effectiveness of this Amendment under the Agreement or any of the other Loan Documents or transactions thereunder or related thereto. Borrower understands, acknowledges and agrees that the release set forth above may be pleaded as a full and complete defense and may be used as a basis for an injunction against any action, suit or other proceeding which may be instituted, prosecuted or attempted in breach of the provisions of such release. Borrower agrees that no fact, event, circumstance, evidence or transaction which could now be asserted or which may hereafter be discovered shall affect in any manner the final, absolute and unconditional nature of the release set forth above. Borrower hereby waives the provisions of California Civil Code section 1542, which states:

A GENERAL RELEASE DOES NOT EXTEND TO CLAIMS THAT THE CREDITOR OR RELEASING PARTY DOES NOT KNOW OR SUSPECT TO EXIST IN HIS OR HER FAVOR AT THE TIME OF EXECUTING THE RELEASE, AND THAT IF KNOWN BY HIM OR HER, WOULD HAVE MATERIALLY AFFECTED HIS OR HER SETTLEMENT WITH THE DEBTOR OR RELEASED PARTY.

6. Counterparts. This First Amendment may be signed in any number of counterparts, and by different parties hereto in separate counterparts, with the same effect as if the signatures to each such counterpart were upon a single instrument. All counterparts shall be deemed an original of this First Amendment. This First Amendment may be executed by facsimile, portable document format (.pdf) or similar technology signature, and such signature shall constitute an original for all purposes.

7. Incorporation By Reference. The provisions of Section 11 of the Agreement shall be deemed incorporated herein by reference, *mutatis mutandis*.

8. Loan Documents. This First Amendment shall constitute a Loan Document.

[Signatures on following page]

In Witness Whereof, the parties have duly authorized and caused this First Amendment to be executed as of the date first written above.

BORROWER:

X4 PHARMACEUTICALS, INC.

Signature: /s/ Adam Mostafa
Print name: Adam Mostafa
Title: Chief Financial Officer

X4 THERAPEUTICS, INC.

Signature: /s/ Adam Mostafa
Print name: Adam Mostafa
Title: Chief Financial Officer

Accepted in Palo Alto, California:

AGENT:

HERCULES CAPITAL, INC.

Signature: /s/ Jennifer Choe
 Jennifer Choe, Associate
 General Counsel

LENDER:

HERCULES CAPITAL, INC.

Signature: /s/ Jennifer Choe
 Jennifer Choe, Associate
 General Counsel

HERCULES CAPITAL FUNDING TRUST 2019-1

Signature: /s/ Jennifer Choe
 Jennifer Choe, Associate
 General Counsel

**EXHIBIT F-1
COMPLIANCE CERTIFICATE**

Hercules Capital, Inc. (as "Agent") 400 Hamilton Avenue, Suite 310 Palo Alto, CA 94301

Reference is made to that certain Amended and Restated Loan and Security Agreement dated June 27, 2019 and the Loan Documents (as defined therein) entered into in connection with such Amended and Restated Loan and Security Agreement all as may be amended from time to time (hereinafter referred to collectively as the "Loan Agreement") by and among Hercules Capital, Inc. (the "Agent"), the several banks and other financial institutions or entities from time to time party thereto (collectively, the "Lender") and Hercules Capital, Inc., as agent for the Lender (the "Agent") and X4 Pharmaceuticals, Inc. (the "Company") as Borrower. All capitalized terms not defined herein shall have the same meaning as defined in the Loan Agreement. The undersigned is an Officer of the Company, knowledgeable of all Company financial matters, and is authorized to provide certification of information regarding the Company; hereby certifies, in such capacity, that in accordance with the terms and conditions of the Loan Agreement, the Company is in compliance for the period ending _____ of all covenants, conditions and terms and hereby reaffirms that all representations and warranties contained therein are true and correct on and as of the date of this Compliance Certificate with the same effect as though made on and as of such date, except to the extent such representations and warranties expressly relate to an earlier date, after giving effect in all cases to any standard(s) of materiality contained in the Loan Agreement as to such representations and warranties. Attached are the required documents supporting the above certification. The undersigned further certifies that these are prepared in accordance with GAAP (except for the absence of footnotes with respect to unaudited financial statement and subject to normal year end adjustments) and are consistent from one period to the next except as explained below.

| REPORTING REQUIREMENT | REQUIRED | CHECK IF ATTACHED |
|------------------------------|--|-------------------|
| Interim Financial Statements | Monthly within 30 days | |
| Interim Financial Statements | Quarterly within 45 days (for first 3 calendar quarters) | |
| Audited Financial Statements | FYE within 90 days | |
| Budget and forecast | At least annually within 60 days following FYE | |

7.12 DEPOSIT ACCOUNTS

(A) Are all Cash balances held by Borrower held in accounts subject to an Account Control Agreement, other than Excluded Accounts? ____ Yes ____ No

(B) Is the Cash held by the Excluded Subsidiary less than the sum of (i) 70% of the outstanding Indebtedness under the FFG Agreement and (ii) \$5,000,000? ____ Yes ____ No

7.22 MINIMUM CASH (effective only when outstanding Term Loans exceed \$25,000,000)

| Required | 6x RML | 3x RML | Actual | Complies? |
|---|--------|--------|--------|-----------|
| Before Performance Milestone III is satisfied: Greater of \$30,000,000 or 6 x RML | \$ | | \$ | Yes No |
| After Performance Milestone III is satisfied: Greater of \$20,000,000 or 3 x RML | | \$ | \$ | Yes No |
| After FDA Approval of X4P-001 for treatment of WHIM Syndrome: \$0 | | | | |