

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

**FORM 10-Q**

(Mark One)

**QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the quarterly period ended September 30, 2025

or

**TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from \_\_\_\_\_ to \_\_\_\_\_

Commission File Number: 001-38295

**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)

(857) 529-8300

(Registrant's telephone number, including area code)

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 (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes  No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes  No

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 13(a) of the Exchange Act.

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes  No

As of October 31, 2025, the registrant had 87,436,688 shares of common stock, \$0.001 par value per share, outstanding.

**X4 PHARMACEUTICALS INC.  
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**EXPLANATORY NOTE**

On April 28, 2025, X4 Pharmaceuticals, Inc. (the "Company"), effected a 1-for-30 reverse stock split of its common stock (the "Reverse Stock Split"). Unless otherwise noted, all references to common stock share and per share amounts in this Quarterly Report on Form 10-Q have been retroactively adjusted to reflect the Reverse Stock Split.

See Note 13 of the condensed consolidated financial statements for a description of the Reverse Stock Split.

**PART I FINANCIAL INFORMATION**

**Item 1. Financial Statements.**

**X4 PHARMACEUTICALS, INC.**  
**CONDENSED CONSOLIDATED BALANCE SHEETS**  
(In thousands, except share and per share amounts)  
(unaudited)

	September 30, 2025	December 31, 2024
<b>ASSETS</b>		
Current assets:		
Cash and cash equivalents	\$ 69,632	\$ 55,699
Accounts receivable	891	1,070
Marketable securities	52,562	46,361
Research and development incentive receivable	715	640
Inventory	4,080	2,817
Prepaid expenses and other current assets	4,925	5,588
Total current assets	132,805	112,175
Property and equipment, net	218	776
Goodwill	17,351	17,351
Intangible asset, net	9,438	10,000
Right-of-use assets	1,775	4,065
Other assets	1,968	2,080
Total assets	\$ 163,555	\$ 146,447
<b>LIABILITIES AND STOCKHOLDERS' EQUITY</b>		
Current liabilities:		
Accounts payable	\$ 5,053	\$ 8,621
Accrued expenses	16,661	23,005
Deferred revenue	592	—
Current portion of lease liability	1,200	1,251
Total current liabilities	23,506	32,877
Long-term debt, including accretion, net of discount	76,062	75,425
Lease liabilities	95	1,410
Warrant liability	959	13,755
Deferred revenue	789	—
Other liabilities	525	831
Total liabilities	101,936	124,298
Commitments and contingencies (Note 10)		
Stockholders' equity:		
Preferred stock, \$0.001 par value. 10,000,000 shares authorized and no shares issued and outstanding as of September 30, 2025 and December 31, 2024, respectively	—	—
Common stock, \$0.001 par value, 500,000,000 shares authorized as of September 30, 2025 and December 31, 2024, respectively; 25,146,411 and 5,698,231 shares issued and outstanding as of September 30, 2025 and December 31, 2024, respectively	25	6
Additional paid-in capital	632,341	537,620
Accumulated other comprehensive loss	(118)	(122)
Accumulated deficit	(570,629)	(515,355)
Total stockholders' equity	61,619	22,149
Total liabilities and stockholders' equity	\$ 163,555	\$ 146,447

*The accompanying notes are an integral part of these unaudited condensed consolidated financial statements.*

**X4 PHARMACEUTICALS, INC.**

**CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS AND COMPREHENSIVE (LOSS) INCOME**

(In thousands, except share and per share amounts)

(unaudited)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2025	2024	2025	2024
License and other revenue	\$ 199	\$ —	\$ 28,293	\$ —
Product revenue, net	1,566	560	4,252	1,123
Total revenue	1,765	560	32,545	1,123
Costs and operating expenses:				
Cost of revenue	351	227	5,393	495
Research and development	17,337	19,173	54,202	59,941
Selling, general and administrative	11,586	15,660	36,134	46,373
Gain on sale of non-financial asset	—	—	—	(105,000)
Total operating expense	29,274	35,060	95,729	1,809
Loss from operations	(27,509)	(34,500)	(63,184)	(686)
Other (expense) income, net:				
Interest income	901	1,871	2,591	4,502
Interest expense	(2,257)	(2,414)	(6,690)	(6,464)
Change in fair value of warrant liability	(676)	(1,864)	12,796	4,596
Other (expense) income, net	(304)	226	(746)	475
Total other (expense) income, net	(2,336)	(2,181)	7,951	3,109
(Loss) income before provision for income taxes	(29,845)	(36,681)	(55,233)	2,423
Provision for income taxes	(30)	15	41	52
Net (loss) income	<u>\$ (29,815)</u>	<u>\$ (36,696)</u>	<u>\$ (55,274)</u>	<u>\$ 2,371</u>
Net (loss) income per share: basic	<u>\$ (0.69)</u>	<u>\$ (5.48)</u>	<u>\$ (2.87)</u>	<u>\$ 0.35</u>
Weighted average shares outstanding: basic	<u>43,272,773</u>	<u>6,695,509</u>	<u>19,242,848</u>	<u>6,681,134</u>
Net (loss) income per share: diluted	<u>\$ (0.69)</u>	<u>\$ (5.48)</u>	<u>\$ (2.87)</u>	<u>\$ 0.35</u>
Weighted average shares outstanding: diluted	<u>43,272,773</u>	<u>6,695,509</u>	<u>19,242,848</u>	<u>6,687,041</u>
Other comprehensive (loss) income, net of tax:				
Net (loss) income	\$ (29,815)	\$ (36,696)	\$ (55,274)	\$ 2,371
Change in net unrealized gains on marketable debt securities	20	45	4	5
Comprehensive (loss) income	<u>\$ (29,795)</u>	<u>\$ (36,651)</u>	<u>\$ (55,270)</u>	<u>\$ 2,376</u>

*The accompanying notes are an integral part of these unaudited condensed consolidated financial statements.*

X4 PHARMACEUTICALS, INC.

CONDENSED CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY

(In thousands, except share amounts)

(Unaudited)

	Common Stock		Additional Paid-In Capital	Accumulated Other Comprehensive Loss	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount				
<b>Balance at December 31, 2024</b>	5,698,231	\$ 6	\$ 537,620	\$ (122)	\$ (515,355)	\$ 22,149
Vesting of restricted stock units	90,514	—	—	—	—	—
Stock-based compensation expense			519			519
Unrealized loss on marketable securities				(6)		(6)
Net income					282	282
<b>Balance at March 31, 2025</b>	5,788,745	\$ 6	\$ 538,139	\$ (128)	\$ (515,073)	\$ 22,944
Proceeds from the sale of common stock, less discounts	2,140,729	2	5,982			5,984
Issuance of common stock under employee stock purchase plan	18,473	—	46			46
Vesting of restricted stock units	12,000	—	—			—
Stock-based compensation expense			748			748
Unrealized loss on marketable securities				(10)		(10)
Net loss					(25,741)	(25,741)
<b>Balance at June 30, 2025</b>	7,959,947	\$ 8	\$ 544,915	\$ (138)	\$ (540,814)	\$ 3,971
Sale of common stock, net of issuance costs	14,504,156	15	86,666			86,681
Vesting of restricted stock units	112,692	—	—			—
Exercise of pre-funded warrants	2,569,616	2	—			2
Stock-based compensation expense			760			760
Unrealized gains on marketable securities				20		20
Net loss					(29,815)	(29,815)
<b>Balance at September 30, 2025</b>	25,146,411	\$ 25	\$ 632,341	\$ (118)	\$ (570,629)	\$ 61,619

X4 PHARMACEUTICALS, INC.

CONDENSED CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY

(In thousands, except share amounts)

(Unaudited)

	Common Stock		Additional Paid-In Capital	Accumulated Other Comprehensive Loss	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount				
<b>Balance at December 31, 2023</b>	5,581,153	\$ 6	\$ 529,117	\$ (119)	\$ (477,905)	\$ 51,099
Vesting of restricted stock units	16,773	—	—	—	—	—
Stock-based compensation expense			1,739			1,739
Unrealized loss on marketable securities				(36)		(36)
Net loss					(51,766)	(51,766)
<b>Balance at March 31, 2024</b>	<u>5,597,926</u>	<u>\$ 6</u>	<u>\$ 530,856</u>	<u>\$ (155)</u>	<u>\$ (529,671)</u>	<u>\$ 1,036</u>
Issuance of common stock under employee stock purchase plan	7,835	—	158			158
Vesting of restricted stock units	777	—	—			—
Stock-based compensation			2,428			2,428
Unrealized loss on marketable securities				(4)		(4)
Net loss					90,833	90,833
<b>Balance at June 30, 2024</b>	<u>5,606,538</u>	<u>\$ 6</u>	<u>\$ 533,442</u>	<u>\$ (159)</u>	<u>\$ (438,838)</u>	<u>\$ 94,451</u>
Vesting of restricted stock units	10,504	—	1			1
Stock-based compensation expense			1,820			1,820
Unrealized gains on marketable securities				45		45
Net loss					(36,696)	(36,696)
<b>Balance at September 30, 2024</b>	<u>5,617,042</u>	<u>\$ 6</u>	<u>\$ 535,263</u>	<u>\$ (114)</u>	<u>\$ (475,534)</u>	<u>\$ 59,621</u>

The accompanying notes are an integral part of these unaudited condensed consolidated financial statements.

**X4 PHARMACEUTICALS, INC.**  
**CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS**  
(In thousands)  
(Unaudited)

	<b>Nine Months Ended September 30,</b>	
	<b>2025</b>	<b>2024</b>
<b>Cash flows from operating activities:</b>		
Net (loss) income	\$ (55,274)	\$ 2,371
Adjustments to reconcile net (loss) income to net cash used in operating activities:		
Stock-based compensation expense	2,027	5,987
Depreciation and amortization expense	1,054	523
Gain on sale of non-financial asset	—	(105,000)
Non-cash lease expense	2,290	1,179
Accretion of debt discount	658	655
Change in fair value of warrant liability	(12,796)	(4,596)
Other	44	(504)
Changes in operating assets and liabilities:		
Accounts receivable	179	—
Inventory	(1,263)	(2,445)
Prepaid expenses, other current and non-current assets and research and development incentive receivable	862	1,197
Accounts payable	(3,621)	(364)
Accrued expenses and other long-term liabilities	(4,190)	3,832
Deferred revenue	1,381	—
Lease liabilities	(1,442)	(741)
Net cash used in operating activities	(70,091)	(97,906)
<b>Cash flows from investing activities:</b>		
Acquisition of intangible asset	(3,000)	(7,000)
Proceeds from sale of non-financial asset	—	105,000
Purchase of marketable securities	(61,487)	(34,354)
Sales and maturities of marketable securities	55,792	12,250
Acquisition of property and equipment	—	(285)
Net cash (used in) provided by investing activities	(8,695)	75,611
<b>Cash flows from financing activities:</b>		
Proceeds from issuance of shares of common stock under employee stock purchase plan	46	159
Proceed from borrowings under loan and security agreement	—	20,000
Proceeds from sale of shares of common stock, less issuance costs	92,490	—
Net cash provided by financing activities	92,536	20,159
Effect of exchange rate changes on cash, cash equivalents and restricted cash	210	88
<b>Net increase (decrease) in cash, cash equivalents and restricted cash</b>	<b>13,960</b>	<b>(2,048)</b>
Cash, cash equivalents and restricted cash at beginning of period	56,475	100,248
Cash, cash equivalents and restricted cash at end of period	\$ 70,435	\$ 98,200
Issuance costs not yet paid related to sale of shares of common stock and pre-funded warrants	\$ 222	\$ —
Acquisition of intangible assets included in accrued expenses	\$ —	\$ 3,500

*The accompanying notes are an integral part of these unaudited condensed consolidated financial statements.*

## **1. Description of Business and Summary of Significant Accounting Policies**

X4 Pharmaceuticals Inc., together with its subsidiaries, also referred to in these financial statements as “we,” “us,” “our,” the “Company” and “X4,” is a biopharmaceutical company developing and commercializing novel therapeutics for the treatment of rare hematology diseases. We continue to progress our global, pivotal Phase 3 clinical trial, (the “4WARD” trial) to evaluate the efficacy, safety, and tolerability of oral, once-daily mavorixafor (with or without stable doses of G-CSF) in people with congenital, acquired primary autoimmune, or idiopathic chronic neutropenia who are experiencing recurrent and/or serious infections. The 52-week trial is a randomized, double-blind, placebo-controlled, multicenter study aiming to enroll up to 176 patients, with full enrollment expected in the third quarter of 2026. The FDA has granted Fast Track designation to mavorixafor for the treatment of chronic neutropenia. Chronic neutropenia is defined as periods lasting more than three months persistently or intermittently where there are abnormally low levels of neutrophils circulating in the blood, and may be idiopathic (of unknown origin), cyclic (episodes typically occurring every three weeks), or congenital (of genetic causation). Chronic neutropenia disorders are rare blood conditions similarly characterized by increased risks of infections and cancer due to abnormally low levels of neutrophils in the body. In all cases, the CXCL12/CXCR4 pathway is the key regulator of neutrophil release from the bone marrow. We have one commercially approved product, XOLREMDI® (mavorixafor), which has received accelerated approval in the United States from the U.S. Food and Drug Administration (“FDA”) for use as an oral, once-daily therapy in patients 12 years of age and older with WHIM (warts, hypogammaglobulinemia, infections, and myelokathexis) syndrome, to increase the number of circulating mature neutrophils and lymphocytes. WHIM syndrome is a rare combined primary immunodeficiency and chronic neutropenic disorder. In connection with the Company’s long term strategy to successfully complete the 4WARD Phase 3 trial in patients with moderate and severe chronic neutropenia, the Company is no longer prioritizing investment in the WHIM indication. The Company is headquartered in Boston, Massachusetts.

### *Basis of Presentation*

On April 28, 2025 the Company effected a 1-for-30 reverse stock split of its common stock (the “Reverse Stock Split”). Unless otherwise noted, all references to common stock share and per share amounts in this Quarterly Report on Form 10-Q have been retroactively adjusted to reflect the Reverse Stock Split.

The accompanying unaudited interim condensed consolidated financial statements as of and for the nine months ended September 30, 2025 and 2024, respectively have been prepared in accordance with accounting principles generally accepted in the U.S. for interim financial information and with the instructions to the Quarterly Report on Form 10-Q and Article 10 of Regulation S-X. In the opinion of management, such financial information includes all adjustments (consisting only of normal recurring adjustments) considered necessary for a fair presentation of our financial position at such dates and the operating results and cash flows for such periods. Operating results for the three and nine months ended September 30, 2025 are not necessarily indicative of the results that may be expected for the entire year or for any other subsequent interim period.

Certain information and footnote disclosures normally included in financial statements prepared in accordance with accounting principles generally accepted in the United States of America (“GAAP”) have been condensed or omitted pursuant to such rules and regulations. These unaudited interim condensed consolidated financial statements should be read in conjunction with the Company’s audited financial statements and the notes thereto for the year ended December 31, 2024 included in its Annual Report on Form 10-K filed with the SEC on March 26, 2025.

The condensed consolidated balance sheet at December 31, 2024 that is presented in these interim condensed consolidated financial statements was derived from audited financial statements but does not include all disclosures required by GAAP.

### *Principles of Consolidation*

The condensed consolidated financial statements include the accounts of the Company and its wholly-owned subsidiaries, including X4 Pharmaceuticals (Austria) GmbH, which is incorporated in Vienna, Austria, and X4 Therapeutics, Inc. All intercompany accounts and transactions have been eliminated.

### *Use of Estimates*

The preparation of the Company’s condensed consolidated financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities at the date of the condensed consolidated financial statements, and the reported amounts of expenses during the

**X4 PHARMACEUTICALS, INC.**  
**NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS**  
**(Unaudited)**

reporting period. Significant estimates and assumptions reflected in these condensed consolidated financial statements include, but are not limited to, the accrual of research and development expenses, the accrual of operational and financial license milestones, the accrual of reserves for variable consideration related to product revenue, and the impairment or lack of impairment of long-lived assets including operating lease right-of-use assets and goodwill. The Company bases its estimates on historical experience, known trends and other market-specific or other relevant factors that it believes to be reasonable under the circumstances. On an ongoing basis, management evaluates its estimates when there are changes in circumstances, facts and experience. Changes in estimates are recorded in the period in which they become known. As of the date of issuance of these condensed consolidated financial statements, the Company is not aware of any specific event or circumstance that would require the Company to update its estimates, assumptions and judgments or revise the carrying value of its assets or liabilities. Actual results could differ from those estimates, and any such differences may be material to the Company's condensed consolidated financial statements.

*Liquidity*

The Company has evaluated whether there are certain conditions and events, considered in the aggregate, that raise substantial doubt about the Company's ability to continue as a going concern within one year after the date that the condensed consolidated financial statements are issued. Although the Company has an approved drug product, licensing and sales of the Company's drug product over the next 12 months will not be sufficient to fund the Company's operating expenses. Since inception, the Company has incurred significant operating losses and negative cash flows from operations, and the Company expects to continue to generate operating losses and negative cash flows from operations for the foreseeable future. For the nine months ended September 30, 2025, the Company's net loss was \$55.3 million and net cash used in operating activities was \$70.1 million. As of September 30, 2025, the Company had \$122.2 million of cash, cash equivalents and short-term marketable securities, and an accumulated deficit of \$570.6 million.

On August 13, 2025, the Company closed a private placement of shares of its common stock and, in lieu of common stock to certain investors, prefunded warrants to purchase shares of its common stock, for net proceeds of approximately \$81.0 million, after deducting placement agent fees and other estimated expenses. See Note 11 for further information on this transaction. Also, on October 27, 2025, the Company closed an underwritten offering of shares of its common stock and, in lieu of common stock to certain investors, prefunded warrants to purchase shares of its common stock, for net proceeds of approximately \$145.6 million, after deducting the Underwriters' (as defined below) discounts and commissions and estimated offering expenses, which offering further extends the Company's ability to fund its operations and financial obligations.

The Company must continue to comply with covenants under its Second Amended and Restated Loan and Security Agreement, as amended, (the "Hercules Loan Agreement") with Hercules Capital Inc. ("Hercules"). Such covenants are described in Note 8 to these condensed consolidated financial statements. As of September 30, 2025, the Company was in compliance with all covenants under the Hercules Loan Agreement.

Based on its current operating plan, the Company believes (a) that its current cash, cash equivalents and short-term marketable will be sufficient to fund its operations for at least the next 12 months and (b) it will continue to comply with all covenants under the Hercules Loan Agreement through at least the 12-month period from the issuance date of these condensed consolidated financial statements.

The Company is subject to risks common to companies in the biopharmaceutical industry including, but not limited to, uncertainties relating to conducting preclinical and clinical research and development, the manufacture and supply of products and product candidates for clinical and commercial use, obtaining and maintaining regulatory approvals and pricing and reimbursement for the Company's products and product candidates, market acceptance, managing global growth and operating expenses, availability of additional capital, competition, obtaining and enforcing patents, stock price volatility, dependence on collaborative relationships and third-party service providers, dependence on key personnel, and from time to time government investigations, litigation, and potential product liability claims.

*Significant Accounting Policies*

The Company's significant accounting policies are disclosed in the audited consolidated financial statements and the notes thereto in the Company's Annual Report on Form 10-K for the year ended December 31, 2024 filed with the SEC on March 26, 2025. Since the date of those consolidated financial statements, there have been no material changes to the Company's significant accounting policies other than as follows:

**X4 PHARMACEUTICALS, INC.**  
**NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS**  
**(Unaudited)**

*Revenue Recognition*

The Company records revenue using the guidance of ASC Topic 606, *Revenue from Contracts with Customers* (“ASC 606”), as amended. Upon the approval by the FDA of the sales and marketing of the Company’s lead product candidate, revenue related to its sale and distribution is accounted for under ASC 606. The Company recognizes revenue when its customer obtains control of promised goods, services or licensed rights, in an amount that reflects the consideration that the Company determines it expects to receive in exchange for those goods, services or licensed rights. To determine revenue recognition for arrangements that the Company determines are within the scope of ASC 606, the Company performs the following five steps: (1) identify the customer and contract with the customer; (2) identify the performance obligations in the contract; (3) determine the transaction price, adjusted for variable consideration resulting from potential returns, rebates, discounts, down-stream charges and the probability of achievement of future milestones; (4) allocate the transaction price to the performance obligations in the contract; and (5) recognize revenue when the Company satisfies its performance obligations, which is upon delivery of the finished product to the customer, delivery of services or delivery of licensed rights.

The Company currently sells its product to a specialty pharmacy, which dispenses the Company’s drug product to patients in the U.S. The Company records revenue when the specialty pharmacy obtains control over the promised good, which occurs at a point in time, typically upon delivery to the specialty pharmacy. The Company has concluded that it provides one performance obligation in its contract with the specialty pharmacy customer and for other customers in this class: the delivery of drug product that has been approved for sale and distribution by the applicable regulatory authority.

The Company has also entered into a license and supply agreement with Norgine Pharma UK Limited (the “Norgine Agreement”) (Note 3). The terms of this agreement contain multiple performance obligations, which include a) the delivery of a license, b) WHIM research and development services and c) CN research and development services. Payments to the Company under this arrangement include non-refundable, upfront license fees; regulatory and sales-based milestone payments and royalties on future product sales.

As part of the accounting for its contract arrangements, the Company makes significant judgments, primarily related to the estimation of the amount of variable consideration to include in the transaction price upon delivery of the Company’s drug product or licensed rights.

- The variable consideration for product sales typically includes estimates for discounts, product returns, rebates due to U.S. federal and state payors, such as Medicaid, based on agreements that the Company has with these payors who provide medical insurance to the end patient, and estimated co-pay assistance payments for patients who enroll in the Company’s patient assistance program. These variable payments are considered a reduction of the Company’s transaction price with its customer and are estimated using the expected value method at the time the Company’s product is delivered to the customer.
- The consideration in license agreements typically includes future regulatory milestone payments, sales-based milestone payments, and royalties on future product sales. The Company has elected to exclude sale-based milestone payments and sales-based royalties from the transaction price under the applicable practical expedient. As such, the remaining variable consideration is generally comprised of future regulatory or operational milestone payments, which are considered for inclusion in the transaction price at the outset of the arrangement and at each reporting period using the most-likely-amount method.

For arrangements which contain multiple performance obligations, the Company allocates the transaction price to each performance obligation based on the estimated relative standalone selling price. The Company estimates the standalone selling price with the objective of determining the price at which the Company would sell such an item if it were to be sold regularly on a standalone basis.

Net revenue recognized for each period is the amount for which, based on management’s estimate, it is probable that a significant reversal of cumulative revenue recognized will not occur. At the end of each subsequent reporting period, the Company re-evaluates these estimates based on new information and actual operational trends and if necessary, adjusts these variable consideration estimates. Any such adjustments are recorded on a cumulative catch-up basis in the period of the adjustment.

**X4 PHARMACEUTICALS, INC.**  
**NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS**  
(Unaudited)

*Cost of Revenue*

Cost of revenue consists of drug product costs, including capitalized internal direct and overhead costs associated with the manufacturing, lot release and distribution of XOLREMDI, amortization of intangible assets associated with license agreements and royalty expense. Cost of revenue may also include costs related to excess or obsolete inventory adjustment charges and abnormal manufacturing costs.

*Restricted Cash*

(in thousands)	As of September 30, 2025	As of December 31, 2024
Letter of credit security: Vienna Austria lease	\$ 224	\$ 199
Letter of credit security: Boston lease	579	577
Total restricted cash	<u>\$ 803</u>	<u>\$ 776</u>

As of September 30, 2025, restricted cash related to the Vienna Austria lease is included in other current assets and restricted cash related to the Boston lease is included in other assets.

In connection with the Company's lease agreements for its facilities in Boston, Massachusetts and Vienna, Austria, the Company maintains letters of credit, which are secured by restricted cash, for the benefit of the respective landlord. In accordance with the Company's Hercules Loan Agreement and as further described in Note 10, the Company at all times must maintain a minimum level of cash of \$15.0 million in an account or accounts in which Hercules has a first priority security interest as further described in Note 10.

The following table provides a reconciliation of cash, cash equivalents, and restricted cash reported within the condensed consolidated balance sheets to the sum to the total of amounts shown in the Company's condensed consolidated statements of cash flows as of September 30, 2025 and December 31, 2024:

*Cash, Cash Equivalents, Restricted Cash and Marketable Securities*

(in thousands)	September 30, 2025	December 31, 2024
Cash and cash equivalents	\$ 69,632	\$ 55,699
Restricted cash	803	776
Total cash, cash equivalents and restricted cash	<u>\$ 70,435</u>	<u>\$ 56,475</u>

The Company's cash equivalents consisted of money market funds invested in U.S. Treasury securities. The money market funds were valued based on quoted prices in active markets for identical assets, which represents a Level 1 measurement. All marketable securities are classified as short-term investments as all are due within one year and include investments in U.S. Treasury notes, U.S. Treasury bills and federal government agency notes. The amortized cost of each investment, individually and in aggregate, approximated fair value. The Company evaluated each marketable security for impairment that is other-than-temporary and concluded that no marketable security was impaired as of September 30, 2025 and December 31, 2024.

(in thousands)	Fair Value Measurements as of September 30, 2025 Using:			
	Level 1	Level 2	Level 3	Total
Cash equivalents—money market funds	\$ 50,423	\$ —	\$ —	\$ 50,423
Marketable securities— U.S. Treasury notes, U.S. Treasury bills, and federal government agency notes	—	52,562	—	52,562
	<u>\$ 50,423</u>	<u>\$ 52,562</u>	<u>\$ —</u>	<u>\$ 102,985</u>

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(in thousands)	Fair Value Measurements as of December 31, 2024 Using:			
	Level 1	Level 2	Level 3	Total
Cash equivalents—money market funds	\$ 40,983	\$ —	\$ —	\$ 40,983
Marketable securities—U.S. Treasury notes, U.S. Treasury bills, and federal government agency notes	—	46,361	—	46,361
	<u>\$ 40,983</u>	<u>\$ 46,361</u>	<u>\$ —</u>	<u>\$ 87,344</u>

All marketable securities are classified as short-term investments as all are due within one year and include investments in U.S. Treasury notes, U.S. Treasury bills and federal government agency notes. The amortized cost of each investment, individually and in aggregate, approximated fair value. The Company evaluated each marketable security for impairment that is other-than-temporary and concluded that no marketable security was impaired as of September 30, 2025 and December 31, 2024. The Company's cash equivalents consisted of money market funds invested in U.S. Treasury securities. The money market funds were valued based on quoted prices in active markets for identical assets, which represents a Level 1 measurement.

The following table provides amortized cost, unrealized gains and losses and the carrying amount of available-for-sale debt marketable securities as of September 30, 2025:

(in thousands)	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
U.S. Treasury securities	\$ 17,352	\$ 1	\$ 3	\$ 17,350
Federal Government Agency securities	35,210	11	9	35,212
Total available-for-sale debt securities	<u>\$ 52,562</u>	<u>\$ 12</u>	<u>\$ 12</u>	<u>\$ 52,562</u>

The following table provides amortized cost, unrealized gains and losses and the carrying amount of available-for-sale debt marketable securities as of December 31, 2024:

(in thousands)	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
U.S. Treasury securities	\$ 18,928	\$ 5	\$ 3	\$ 18,930
Federal Government Agency securities	27,436	9	14	27,431
Total available-for-sale debt securities	<u>\$ 46,364</u>	<u>\$ 14</u>	<u>\$ 17</u>	<u>\$ 46,361</u>

*Liabilities Measured at Fair Value*

The following tables present information about the Company's financial liabilities measured at fair value on a recurring basis and indicate the level of the fair value hierarchy used to determine such fair values:

(in thousands)	Fair Value Measurements as of September 30, 2025 Using:			
	Level 1	Level 2	Level 3	Total
<b>Liabilities:</b>				
Embedded derivative liability	\$ —	\$ —	\$ 10	\$ 10
Class C warrant liability	—	—	959	959
	<u>\$ —</u>	<u>\$ —</u>	<u>\$ 969</u>	<u>\$ 969</u>

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(in thousands)	Fair Value Measurements as of December 31, 2024 Using:			
	Level 1	Level 2	Level 3	Total
<b>Liabilities:</b>				
Embedded derivative liability	\$ —	\$ —	\$ 10	\$ 10
Class C warrant liability	—	—	13,755	13,755
	<u>\$ —</u>	<u>\$ —</u>	<u>\$ 13,765</u>	<u>\$ 13,765</u>

The following table provides a roll-forward for the nine months ended September 30, 2025, of the aggregate fair values financial instruments for which fair values are determined using Level 3 inputs:

(in thousands)	Embedded Derivative Liability	Class C Warrant Liability	Total
Balance as of December 31, 2024	\$ 10	\$ 13,755	\$ 13,765
Change in fair value	—	(12,796)	(12,796)
Balance as of September 30, 2025	<u>\$ 10</u>	<u>\$ 959</u>	<u>\$ 969</u>

**Valuation of Embedded Derivative Liability**— The fair value of the embedded derivative liability recognized in connection with the Company’s Hercules Loan Agreement, which is associated with additional fees due to Hercules upon non-credit related events of default, was determined based on significant inputs not observable in the market, which represents a Level 3 measurement within the fair value hierarchy. The fair value of this embedded derivative liability, which is reported within other non-current liabilities on the condensed consolidated balance sheets, is estimated by the Company at each reporting date based, in part, on the results of third-party valuations, which were prepared based on a discounted cash flow model that considered the timing and probability of occurrence of a redemption upon an event of default, the potential amount of prepayment fees or contingent interest upon an event of default and the Company’s risk-adjusted discount rate of 17%. As of September 30, 2025 and December 31, 2024, the fair value of this derivative liability was \$10 thousand.

**Class C Warrant Liability**— In December 2022, the Company issued Class C Warrants for the purchase of shares of its common stock in a public offering. The Class C Warrants are accounted for as a liability on the condensed consolidated balance sheet and are adjusted to fair value at period end through “change in fair value of warrant liability” on the condensed consolidated statements of operations and comprehensive (loss) income.

The Company calculated the fair value of the Class C Warrants using the Black-Scholes option pricing model, with the following inputs:

	September 30, 2025	December 31, 2024
Common stock price	\$3.42	\$21.90
Risk-free interest rate	3.6 %	4.2 %
Expected term (in years)	2.2	2.9
Expected volatility	136.4 %	117.5 %
Expected dividend yield	— %	— %

**Net (Loss) Income Per Share**

Basic net (loss) income per common share is calculated based on the net (loss) income attributable to common stockholders divided by the weighted average number of shares outstanding for the period. The calculation of diluted net (loss) income per common share excludes the potential conversion of securities, such as stock awards and warrants, using the treasury stock method, as their inclusion would have an anti-dilutive effect.

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Basic and diluted net (loss) income per share was calculated as follows:

(in thousands, except share and per share data)	Three Months Ended September 30,		Nine Months Ended September 30,	
	2025	2024	2025	2024
<b>Numerator:</b>				
Net (loss) income	\$ (29,815)	\$ (36,696)	\$ (55,274)	\$ 2,371
<b>Denominator:</b>				
Weighted average shares of common stock outstanding—basic	43,272,773	6,695,509	19,242,848	6,681,134
Net (loss) income per share— basic	\$ (0.69)	\$ (5.48)	\$ (2.87)	\$ 0.35
Effective of dilutive securities				
Time-based restricted stock units	—	—	—	3,698
Employee stock purchase plan	—	—	—	2,209
Dilutive potential common shares	—	—	—	5,907
Weighted average shares of common stock outstanding—diluted	43,272,773	6,695,509	19,242,848	6,687,041
Net (loss) income per share— diluted	\$ (0.69)	\$ (5.48)	\$ (2.87)	\$ 0.35

Basic and diluted weighted average shares of common stock outstanding for the three and nine months ended September 30, 2025 and 2024 includes the weighted average effect of pre-funded warrants for the purchase of shares of common stock, for which the remaining unfunded exercise price is less than or equal to \$0.30 per share.

For the three and nine months ended September 30, 2025 and for the three months ended September 30, 2024, during which the Company recorded net loss, the Company’s potentially dilutive securities included outstanding stock options, employee stock purchase plan shares, unvested restricted stock units and warrants to purchase shares of common stock. These potentially dilutive securities have been excluded from the computation of diluted net loss per share as the effect would be to reduce the net loss per share, and thus they are considered “anti-dilutive.” Therefore, the weighted average number of common shares outstanding used to calculate both basic and diluted net loss per share attributable to common stockholders is the same for these periods.

For the nine months ended September 30, 2024, during which the Company recorded net income, the dilutive effect of outstanding stock options, restricted stock units, employee stock purchase plan shares and warrants were calculated using the treasury stock method, whereby all such awards were assumed to be exercised at the beginning of the period. The hypothetical proceeds from such exercises, including the average unrecognized stock compensation expense for outstanding stock options and restricted stock units, were assumed to be used to purchase outstanding common stock at the average price during the period. The net share impact of dilutive securities was added to the weighted average basic common shares outstanding to calculate weighted average diluted shares outstanding.

The Company excluded the following potential shares of common stock from the computation of diluted net (loss) income per share attributable to common stockholders for the periods indicated because including them would have had an anti-dilutive effect:

(in thousands)	Three Months Ended September 30,		Nine Months Ended September 30,	
	2025	2024	2025	2024
Options to purchase shares of common stock	12,988	386	12,988	386
Unvested restricted stock units	99	271	99	266
Warrants to purchase shares of common stock (excluding prefunded warrants, which are included in basic shares outstanding)	2,546	2,546	2,546	2,546
	15,633	3,203	15,633	3,198

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*Recently Announced Accounting Standards Not Yet Adopted*

In December 2023, the FASB issued ASU 2023-09, *Income Taxes (Topic 740) Improvements to Income Tax Disclosures* (“ASU 2023-09”). The amendments in ASU 2023-09 require that entities on an annual basis disclose specific categories in the income tax rate reconciliation and provide additional information for reconciling items if the effect of those reconciling items that exceed a certain threshold. ASU 2023-09 also requires more disaggregated disclosures related to income taxes paid. The amendments in ASU 2023-09 become effective for the Company in its December 31, 2025 consolidated financial statements. The Company does not expect that the adoption of ASU 2023-09 will have a material impact on its consolidated financial statements when adopted.

In November 2024, the FASB issued ASU 2024-03, *Disaggregation of Income Statement Expenses (Topic 220)* (“ASU 2024-03”) requiring that public business entities disclose additional information about specific expense categories in the notes to financial statements at interim and annual reporting periods. The amendments in ASU 2024-03 are effective for annual reporting periods beginning after December 15, 2026, and interim reporting periods beginning after December 15, 2027. The requirements in ASU 2024-03 may be applied either prospectively to financial statements issued for reporting periods after the effective date or retrospectively to any or all prior periods presented in the financial statements. The Company continues to evaluate the impact of ASU 2024-03.

**2. Strategic Restructurings**

In the first quarter of 2025, we implemented a strategic restructuring of our business operations, workforce and capital spending to focus efforts on advancing mavorixafor to treat patients with chronic neutropenia. As part of this restructuring, we (i) implemented a net reduction of our employee headcount by 43 employees, or approximately 30% of our total workforce as of February 2025, including our U.S. commercial field team, (ii) commenced the closure of our research and development facility in Vienna, Austria, (iii) paused our pre-clinical drug candidate programs and (iv) streamlined other spending to support the ongoing clinical development of mavorixafor for the larger population of patients with chronic neutropenia. We incurred charges of approximately \$2.3 million for severance and other employee termination-related costs related to this strategic restructuring, of which \$0.7 million is included in research and development and \$1.6 million is included in selling, general and administrative expense on the accompanying condensed consolidated income statements for the nine months ended September 30, 2025.

On September 17, 2025, we announced an additional strategic restructuring designed to sharpen operational focus and align resources with the Company’s long-term strategy to successfully complete the 4WARD Phase 3 trial in patients with moderate and severe chronic neutropenia. As part of this initiative, we have further reduced our workforce by an additional approximately 50%. This workforce reduction was substantially completed in the third quarter of 2025. As part of this strategic restructuring, we incurred expenses of approximately \$4.9 million for severance and other employee termination-related costs, of which \$1.5 million is included in research and development and \$3.4 million is included in selling, general and administrative expense on the accompanying condensed consolidated income statements for the three and nine months ended September 30, 2025.

Approximately \$3.7 million of accrued severance and other employee termination-related costs are included in accrued expenses on the condensed consolidated balance sheet as of September 30, 2025. These remaining severance obligation payments are expected to be substantially completed in the fourth quarter of 2025.

The following table summarizes the Company’s liability recognized in connection with these headcount reductions:

<b>(in thousands)</b>	
Balance as of January 1, 2025	\$ 522
Severance and other employee-related expenses	7,203
Cash payments	(4,019)
Balance as of September 30, 2025	<u>\$ 3,706</u>

**3. License Agreements**

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*Norgine Agreement*

On January 13, 2025, the Company entered into a License and Supply Agreement (the “Norgine Agreement”) with Norgine Pharma UK Limited (“Norgine”), pursuant to which Norgine was granted an exclusive license to seek regulatory approval and distribute, market and sell the Company’s product mavorixafor (marketed by the Company as XOLREMDI in the United States) within the Field (as defined in the Norgine Agreement), in the European Economic Area, Switzerland, the United Kingdom, Australia and New Zealand (collectively, the “Territory”), following regulatory approval in the Territory. Additionally, Norgine was granted a co-exclusive license to manufacture mavorixafor for the Territory. The Company retains all rights to mavorixafor outside the Territory and specific reserved rights within the Territory. Norgine may grant sublicenses to its affiliates and certain third parties subject to the terms of the Norgine Agreement, except that it may not sublicense the commercial rights granted under the Norgine Agreement for certain countries without X4’s explicit consent.

Pursuant to the terms of the Norgine Agreement, the Company received a one-time, non-refundable, upfront payment of €28.5 million and a regulatory milestone payment of €0.5 million. The Company could receive up to approximately €20.6 million, €20.0 million and €185.0 million upon the achievement of certain regulatory, commercial, and sales milestones, respectively, or €225.6 million in aggregate. The Norgine Agreement also includes escalating double-digit royalties of up to mid-twenties on any future net sales in the Territory. The tiered royalty payments are subject to royalty stacking, and to a material reduction on a country-by-country basis if a generic version of mavorixafor becomes available in the applicable country. The Company and Norgine will collaborate closely on regulatory filings, with the Company continuing to be responsible for the ongoing global, pivotal Phase 3 4WARD clinical trial evaluating mavorixafor in chronic neutropenia and certain components of pediatric studies for WHIM. Norgine will be responsible for all market access and commercialization activities. The Company also agreed to manufacture and supply mavorixafor to Norgine. Norgine shall be required to pay a supply price to the Company for the licensed product derived from the Company’s manufacturing costs plus margin in the low teens.

Subject to customary rights of each party to earlier terminate the Norgine Agreement, the term of the Norgine Agreement continues, on a country-by-country basis, until the later of: (i) the tenth (10th) anniversary of the first commercial sale of mavorixafor, (ii) expiration of regulatory market exclusivity of mavorixafor or (iii) expiration of the last-to-expire licensed patent in such country. The term of the Norgine Agreement shall be automatically renewed for additional three-year terms unless either party provides the other party written notice of its intent not to renew the Norgine Agreement at least one year prior to the applicable termination date of the Norgine Agreement. In the event of automatic renewal, the royalty payment rate drops to a single digit royalty.

**4. Revenue**

*Product Revenue, Net*

During the three and nine months ended September 30, 2025, the Company recorded net revenue \$1.6 million and \$4.3 million, respectively, for the sale of the Company’s drug product in the U.S. Net product revenue was \$0.6 million and \$1.1 million and for the three and nine months ended September 30, 2024 following the commercial launch of the Company’s product during the second quarter of 2024.

The following table summarizes the balances and activity in each of the product reserve accounts for the nine months ended September 30, 2025.

(in thousands)	Rebates and Discounts	Co-Pay Assistance	Product Returns	Total
Beginning balance at December 31, 2024	\$ 99	\$ 29	\$ 11	\$ 139
Provision related to revenue associated with sales processed in the nine month period ended September 30, 2025	413	69	38	520
Adjustments related to revenue associated with sales processed in prior periods	(16)	—	(41)	(57)
Credits and payments made during the period	(169)	(100)	—	(269)
Balance as of September 30, 2025	\$ 327	\$ (2)	\$ 8	\$ 333

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The provision for contractual discounts provided to the Company's customer is recorded as a reduction of accounts receivable. The provisions for co-pay assistance payments, contractual rebates and product returns are classified within accrued expenses.

The following table provides a rollforward of accounts receivable for the nine months ended September 30, 2025.

(in thousands)	Accounts Receivable	
Beginning balance at December 31, 2024	\$	1,070
Increase in accounts receivable for drug product sales		4,581
Decrease in accounts receivable for cash collections		(4,760)
Balance as of September 30, 2025	\$	891

*License and Other*

During the first quarter of 2025, the Company entered into the Norgine Agreement. The Company analyzed the activities required under the Norgine Agreement and concluded that the arrangement was indicative of a vendor-customer relationship and would be accounted for under ASC 606. During the nine months ended September 30, 2025, the Company received a one-time, non-refundable, up-front payment of €28.5 million and a regulatory milestone payment of €0.5 million, which are included in the transaction price. All other future regulatory-based milestone payments, which represent variable consideration, have been fully constrained as these are not yet considered probable. The Company has also excluded from the transaction price future royalty payments that are based on units sold by Norgine and future cumulative revenue-based milestone payments under the applicable practical expedient.

Under the Norgine Agreement, the Company's promises include a) the delivery of a license, b) research and development services for certain components of WHIM clinical studies, c) research and development services for the global Phase 3 trial of XOLREMDI for CN, and d) the option for delivery of commercial drug supply pursuant to a manufacturing agreement. The Company assessed the above promises and determined that the option for delivery of commercial drug supply is priced at fair value, and therefore is not a material right or a performance obligation. Revenue from the delivery of manufacturing supply will be recorded when delivered at the pricing agreed to in the contract. The license was considered functional intellectual property as of the inception of the Norgine Agreement and distinct from other promises under the contract, as Norgine can benefit from the license on its own or together with other readily available resources. Each of the research and development services were considered distinct as the customer can benefit from these services together with the license transferred at the inception of the agreement. The research and development services will not modify or customize the initial intellectual property transferred at contract inception due to the late stage of development of the intellectual property. As a result, the Company identified three performance obligations: a) the delivery of the license, b) research and development services for certain components of WHIM clinical studies, and c) research and development services for the global Phase 3 trial of XOLREMDI for CN.

The Company allocated the transaction price of \$29.7 million among these three performance obligations based on the Company's best estimate of stand-alone selling price for each distinct performance obligation. The Company developed the estimated standalone selling price, at inception, for each of the three performance obligations with the objective of determining the price at which the Company would sell such an item if it were to be sold regularly on a standalone basis. The Company developed the estimated standalone selling price for the license primarily based on the probability-weighted present value of expected future cash flows. In developing such estimates, the Company applied judgment in determining the forecasted revenues, taking into consideration the applicable market conditions and relevant entity-specific factors, the probability of success, the time needed to develop XOLREMDI and the discount rate. The Company developed the estimated standalone selling price for the research and development services based on the amount a third party would pay for these services, which contemplates the level of efforts necessary to perform these services and the costs for full-time equivalent employees and expected resources to be committed plus a reasonable margin.

During the nine months ended September 30, 2025, the Company recognized \$27.6 million for the delivery of the license and \$0.7 million for research and development services. The license performance obligation was satisfied at a point in time upon transfer of the license to Norgine. Control of the license was transferred on the effective date of the Norgine Agreement as Norgine could begin to use and benefit from the license. For the research and development performance obligations, the Company recognizes revenue over time using an input method based on cost incurred during the period relative to the total estimated cost of the obligation. This method, in management's judgment, is the best measure of progress towards satisfying the performance obligation as the transfer of control occurs as services are performed. The amounts received that have not yet been

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recognized as revenue are recorded as deferred revenue on the condensed consolidated balance sheet and will be recognized over the remaining period as the performance obligation is satisfied.

The following table summarizes the allocation of transaction price to the three performance obligations in the Norgine Agreement based on the weighting of estimated stand-alone selling price for these performance obligations at the inception of the agreement.

(in thousands)	Allocation of Transaction Price	Revenue Recognized	
		Nine Months Ended September 30,	
		2025	2024
<b>Performance Obligation:</b>			
License	\$ 27,639	\$ 27,639	\$ —
Research and development services: WHIM	312	25	—
Research and development services: CN	1,724	629	—
Total	<u>\$ 29,675</u>	<u>\$ 28,293</u>	<u>\$ —</u>

As of September 30, 2025, deferred revenue related to the Norgine Agreement was \$1.4 million, of which \$0.6 million was current.

## 5. Inventory

Inventory consists of the following:

(in thousands)	September 30, 2025	December 31, 2024
Raw materials	\$ 1,397	1,529
Work in process	2,111	608
Finished goods	572	680
Total inventory	<u>\$ 4,080</u>	<u>\$ 2,817</u>

## 6. Intangible Assets, Net

As of September 30, 2025, the Company's net definite-lived intangible asset, which resulted from the capitalization of certain milestone payments made or accrued related to its license agreement for the intellectual property contained in its drug product, included a gross intangible asset of \$10.5 million, less accumulated amortization of \$1.1 million for a net intangible asset of \$9.4 million. The Company amortizes the intangible asset to cost of revenue over the remaining life of the underlying patent protecting the intellectual property through 2038.

As of September 30, 2025, amortization expense for the next five years and beyond is summarized as follows (in thousands):

Year	Amortization expense
2025 (remainder of year)	\$ 188
2026	750
2027	750
2028	750
2029	750
Thereafter	6,250
Total	<u>\$ 9,438</u>

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The Company began amortizing its finite-lived intangible assets in April 2024 over a 14-year period based on the expected patent exclusivity period for XOLREMDI. Amortization expense totaled \$0.2 million and \$0.6 million for the three and nine months ended September 30, 2025, respectively, and \$0.2 million and \$0.3 million for the comparable prior year periods. Amortization expense is recorded as a component of cost of revenue on the condensed consolidated statements of operations and comprehensive (loss) income.

## 7. Accrued Expenses

Accrued expenses consisted of the following:

(in thousands)	September 30, 2025	December 31, 2024
Accrued employee compensation and benefits	\$ 8,344	13,053
Accrued external research and development expenses	5,923	3,727
Accrued royalty and milestone payments	100	3,092
Accrued professional fees	908	1,825
Accrued deferred financing fees	222	—
Other	1,164	1,308
	<u>\$ 16,661</u>	<u>\$ 23,005</u>

## 8. Long-Term Debt

Long-term debt consisted of the following:

(in thousands)	September 30, 2025	December 31, 2024
Principal amount of long-term debt	\$ 75,000	\$ 75,000
Debt discount, net of accretion	(475)	(650)
Cumulative accrual of end of term payments	1,537	1,075
Long-term debt	<u>\$ 76,062</u>	<u>\$ 75,425</u>

### ***Hercules Loan Agreement***

The Company is party to the Hercules Loan Agreement, which provides for an aggregate term loan facility of up to \$107.5 million, under which the Company has borrowed an aggregate of \$75.0 million of term loans, representing the maximum borrowings allowable as of September 30, 2025. Additional borrowings are available subject to approval of the Lender (as defined in the Hercules Loan Agreement) in its sole discretion.

Borrowings under the Hercules Loan Agreement accrue interest at a variable rate equal to the greater of (i) 10.15% or (ii) *The Wall Street Journal* prime rate plus 3.15%. In an event of default and until such event is no longer continuing, the interest rate applicable to borrowings would be increased by 4.0%. Borrowings are repayable in monthly interest-only payments through July 1, 2027, which is the maturity date of the Hercules Loan Agreement. At the Company's option, the Company may prepay all, but not less than all, of the outstanding borrowings, subject to a prepayment premium of 1%. In addition, the Hercules Loan Agreement provides for payment of end-of-term fees of \$2.8 million plus 3.5% of the aggregate principal amount of loans drawn, if any, subsequent to the most recent amendment in August 2023, payable upon the earlier of maturity or the repayment in full of all obligations under the Hercules Loan Agreement. Borrowings under the Hercules Loan Agreement are collateralized by substantially all of the Company's personal property and other assets except for its intellectual property (but including rights to payment and proceeds from the sale, licensing or disposition of the intellectual property).

Under the Hercules Loan Agreement, the Company has agreed to affirmative and negative covenants. The Company must maintain cash, cash equivalents or liquid assets in an account or accounts in which Hercules has a first priority security interest

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(“Qualified Cash”) in an aggregate amount equal to at least 20% of the aggregate principal amount of loans outstanding under the Hercules Loan Agreement, which equals \$15.0 million as of the issuance of these condensed consolidated financial statements. The Company must also continue to achieve a performance covenant, which includes maintaining a trailing six-month net product revenue of at least 55% of its forecast as approved by the Company’s Board of Directors (the “Performance Covenant”). Such Performance Covenant is waived during any period in which:

- (i.) the Company maintains Qualified Cash, as defined in the Hercules Loan Agreement, in an aggregate amount equal to at least 75% of loans outstanding under the Hercules Loan Agreement or
- (ii.) both (x.) the Company maintains a Market Capitalization (as defined in the Hercules Loan Agreement) of at least \$450.0 million and (y.) the Company maintains Qualified Cash in an aggregate amount equal to at least 45% of loans outstanding.

The Hercules Loan Agreement also restricts the Company’s 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 Company recognized interest expense under the Hercules Loan Agreement as follows:

(in thousands)	Three Months Ended September 30,		Nine Months Ended September 30,	
	2025	2024	2025	2024
Total interest expense	\$ 2,256	\$ 2,414	\$ 6,687	\$ 6,463
Non-cash interest expense	\$ 221	\$ 194	\$ 637	\$ 655

The annual effective interest rate on the Hercules Loan Agreement as of September 30, 2025 was 11.4%. There were no principal payments due or paid under the Hercules Loan Agreement during the three and nine months ended September 30, 2025 and 2024.

As of September 30, 2025, future principal and accrued end-of-term payments of \$76.5 million under the Hercules Loan Agreement are due on July 1, 2027.

(in thousands), Year Ending December 31,	Total
2025	—
2026	—
2027	76,537
Long-term debt, including end-of-term payments	\$ 76,537

**9. Leases**

The Company has lease agreements for its facilities in Boston, Massachusetts, which is the Company’s principal executive offices, and in Vienna, Austria, which was previously the Company’s research and development center. There are no restrictions or financial covenants associated with any of the lease agreements.

*Vienna Austria Lease Update*

The Company has an operating lease for approximately 1,200 square meters of laboratory and office space in Vienna, Austria (“Vienna Lease”), that commenced in February 2021 for a term of seven years. On February 6, 2025, the Company announced a plan to vacate the lease and close operations. As of September 30, 2025, the Company has abandoned the Vienna Lease and has entered into an agreement with the landlord to terminate the lease effective November 30, 2025. Accordingly, the Company has accelerated the amortization of the right of use asset to zero and adjusted the remaining lease obligation to reflect the Company’s remaining lease obligation as of September 30, 2025.

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**NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS**  
(Unaudited)

The components of lease expense for the three and nine months ended September 30, 2025 and 2024 were as follows:

(dollars in thousands)	Three Months Ended September 30,		Nine Months Ended September 30,	
<b>Lease Cost</b>				
	2025	2024	2025	2024
Fixed operating lease cost	\$ 142	\$ 495	\$ 1,714	\$ 1,473
Total lease expense	\$ 142	\$ 495	\$ 1,714	\$ 1,473
<b>Other information</b>				
Operating cash outflows from operating leases	\$ 363	345	\$ 1,065	\$ 1,032
Weighted-average remaining lease term—operating leases	1.1	2.5	1.1	2.5
Weighted-average discount rate—operating leases	11.5 %	11.5 %	11.5 %	11.5 %

Maturities of lease liabilities due under lease agreements that have commenced as of September 30, 2025 are as follows (in thousands):

<b>Maturity of lease liabilities</b>	<b>Operating Leases</b>
2025 (remainder of the year)	\$ 333
2026	1,053
Total lease payments	1,386
Less: interest	(91)
Total operating lease liabilities as of September 30, 2025	\$ 1,295

## 10. Commitments and Contingencies

The Company has agreements with contract research organizations (“CROs”) pursuant to which the Company and the CROs are conducting clinical trials. The Company may terminate these agreements by providing notice pursuant to the contractual provisions of such agreements and would incur early termination fees. The Company has agreements with contract manufacturing organizations (“CMOs”) for the production of mavorixafor for use in clinical trials and for the commercial supply of XOLREMDI. The Company’s agreement with the CMO who produces batches of drug substance for use in the Company’s clinical and commercial drug supply contains cancellation provisions that would require the Company to pay up to the full contract value upon cancellation. As of September 30, 2025, the Company has approximately \$0.6 million of such commitments in place subject to cancellation provisions.

### *License Agreements*

See Note 5 to the Company’s Annual Report on Form 10-K filed with the SEC on March 26, 2025 for a description of licensing agreements, which commit the Company to contingent milestone and royalty fees based on future operational events.

### *Indemnification Agreements*

In the ordinary course of business, the Company may provide indemnification of varying scope and terms to vendors, lessors, business partners, and other parties with respect to certain matters including, but not limited to, losses arising out of breach of such agreements or from intellectual property infringement claims made by third parties. In addition, the Company has entered into indemnification agreements with members of its board of directors and its executive officers that will require the Company to, among other things, indemnify them against certain liabilities that may arise by reason of their status or service as directors or officers. The maximum potential amount of future payments the Company could be required to make under these indemnification agreements is, in many cases, unlimited. To date, the Company has not incurred any material costs as a result of such indemnification obligations. The Company is not currently aware of any indemnification claims and has not accrued any liabilities related to such obligations in its condensed consolidated financial statements as of September 30, 2025 or December 31, 2024.

*Legal Proceedings*

The Company is not a party to any litigation and does not have contingency reserves established for any litigation liabilities. At each reporting date, the Company evaluates whether or not a potential loss amount or a potential range of loss is probable and reasonably estimable under the provisions of the authoritative guidance that addresses accounting for contingencies. The Company expenses as incurred the costs related to any legal proceedings.

**11. Equity Transactions**

*Reverse Stock Split*

On April 17, 2025, the Company's stockholders approved an amendment to its Restated Certificate of Incorporation, as amended ("Certificate of Incorporation") to combine outstanding shares of the Company's common stock into a lesser number of outstanding shares, by a ratio of not less than one-for-fifteen and not more than one-for-thirty, with the exact ratio to be set within this range by the Board of Directors in its sole discretion. On April 17, 2025, the Board of Directors approved the Reverse Stock Split. On April 24, 2025, the Company filed an amendment to its Certificate of Incorporation to effectuate the Reverse Stock Split effective as of 12:01 a.m. Eastern Time on April 28, 2025. As a result of the Reverse Stock Split, every 30 shares of the Company's common stock issued or outstanding were automatically reclassified into one validly issued, fully-paid and non-assessable new share of common stock, subject to the treatment of fractional shares as described below, without any action on the part of the holders. Proportional adjustments were made to the number of shares of common stock awarded and available for issuance under the Company's equity incentive plans, as well as the exercise price and the number of shares issuable upon the exercise or conversion of the Company's outstanding stock options and other equity securities under the Company's equity incentive plans. All outstanding warrants were also adjusted in accordance with their terms, which resulted, among other changes to the warrant terms, in proportionate adjustments being made to the number of shares issuable upon exercise of such warrants and to the exercise and redemption prices of such warrants. The shares of common stock outstanding following the Reverse Stock Split remain fully paid and non-assessable. The Reverse Stock Split did not affect the number of authorized shares of common stock or the par value of the common stock.

No fractional shares were issued in connection with the Reverse Stock Split. Stockholders who would otherwise be entitled to receive fractional shares were automatically entitled to receive cash in lieu of such fractional share. On April 28, 2025, the Company effected a 1-for-30 Reverse Stock Split. Unless otherwise noted, all references to common stock share and per share amounts in this Quarterly Report on Form 10-Q have been retroactively adjusted to reflect the Reverse Stock Split.

*ATM Sales Agreement*

We are party to a Controlled Equity Offering<sup>SM</sup> Sales Agreement ("ATM"), dated as of August 7, 2020, pursuant to which we may offer and sell shares of our common stock through one or more investment banks. To date and for the nine months ended September 30, 2025, we have sold \$23.6 million and \$9.0 million, respectively, of our common stock, net of offering costs, under the ATM. Pursuant to our Registration Statement on Form S-3 that became effective on August 24, 2023 and the related ATM prospectus contained therein, we may offer and sell shares of our common stock having an aggregate offering price of up to an additional \$66.0 million.

*Purchase Agreement*

In June 2025, we entered into a common stock purchase agreement ("Purchase Agreement") with Lincoln Park Capital Fund LLC pursuant to which Lincoln Park committed to purchase, at our request from time to time over a 24-month period, shares of our common stock having an aggregate offering price of up to \$40.0 million, subject to certain limitations including a common share cap that will require shareholder approval to exceed (the "Purchase Shares"). In consideration for entering into the Purchase Agreement, the Company issued 137,099 shares of common stock (the "Commitment Shares") to Lincoln Park as a commitment fee. The fair value of the Commitment Shares, which was consideration given to Lincoln Park in exchange for entering into the agreement and was not significant, was measured on the issuance date as determined based on the closing price of the Company's common stock. Through September 30, 2025, the Company sold 1,297,936 common shares to Lincoln Park for aggregate proceeds of \$2.2 million. The issuance of the Purchase Shares and Commitment Shares were registered pursuant to the Company's effective shelf registration statement on Form S-3 (the "Registration Statement"), and the related base prospectus included in the Registration Statement, as supplemented by a prospectus supplement filed on June 23, 2025. During the third quarter of 2025, the Company terminated the Purchase Agreement.

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**NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS**  
(Unaudited)

*Q3 2025 Private Placement*

On August 11, 2025 and August 12, 2025, the Company entered into securities purchase agreements pursuant to which it agreed to issue and sell to several institutional and accredited investors (the “Investors”), in a private placement (the “Q3 2025 Private Placement”), 11,040,776 shares of common stock at a price of \$1.42 per share and pre-funded warrants to purchase 48,852,772 shares of common stock at a purchase price of \$1.419 per pre-funded warrant (representing the price of \$1.42 per share minus the \$0.001 per share exercise price of each such prefunded warrant). The pre-funded warrants are exercisable, subject to certain beneficial ownership restrictions, at any time after their original issuance and will not expire. The Q3 2025 Private Placement closed on August 13, 2025. The net proceeds of \$81.0 million, after deducting placement agent fees and offering expenses paid by the Company, received for the shares of common stock and the pre-funded warrants was recorded as permanent equity as the Company concluded that the shares of common stock and pre-funded warrants met the criteria for permanent equity classification.

Also, on August 11, 2025 and August 12, 2025, the Company entered into registration rights agreements with the Investors, pursuant to which the Company agreed to register for resale the common shares issued in the Q3 2025 Private Placement and the issuance of the shares of common stock underlying the pre-funded warrants held by the Investors. Such registration statement was filed on September 10, 2025 and was declared effective by the SEC on September 17, 2025. The Company has agreed to use commercially reasonable efforts to keep such registration statement effective until the date the shares of common stock sold in the Q3 2025 Private Placement and the shares of common stock underlying the pre-funded warrants covered by such registration statement have been sold or may be resold pursuant to Rule 144 without restriction.

**12. Stock-Based Compensation**

As of September 30, 2025, there is an aggregate of approximately 0.2 million shares of common stock available for issuance under the Company’s equity incentive plans, including 0.1 million shares of common stock remain available for issuance under the Amended and Restated 2017 Employee Stock Purchase Plan.

*Stock Option Valuation*

The following table presents, on a weighted average basis, the assumptions used in the Black-Scholes option-pricing model to determine the grant-date fair value of stock options granted:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2025	2024	2025	2024
Risk-free interest rate	3.9 %	3.8 %	3.9 %	4.1 %
Expected term (in years)	5.8	6.1	5.8	6.1
Expected volatility	108.9 %	101.4 %	108.9 %	97.6 %
Expected dividend yield	0 %	0 %	0 %	0 %

*Stock Options*

The following table summarizes the Company’s stock option activity for the nine months ended September 30, 2025:

	Number of Shares	Weighted Average Exercise Price	Weighted Average Contractual Term (Years)	Aggregate Intrinsic Value (in thousands)
Outstanding as of December 31, 2024	394,493	\$ 57.09	8.6	\$ 269
Granted	12,792,811	1.63		
Forfeited and expired	(199,059)	32.73		\$ —
Outstanding as of September 30, 2025	<u>12,988,245</u>	\$ 2.84	9.8	\$ —
Exercisable as of September 30, 2025	<u>140,512</u>	\$ 99.19	6.9	\$ —
Vested and expected to vest as of September 30, 2025	<u>9,576,307</u>	\$ 3.24	9.8	\$ 16,880

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The aggregate intrinsic value of options is calculated as the difference between the exercise price of the stock options and the fair value of the Company's common stock to the extent the stock option had a lower exercise price. There were no options exercised in 2025 and 2024. The weighted average grant-date fair value per share of stock options granted during the nine months ended September 30, 2025 and 2024 was \$1.35 and \$23.40, respectively.

*Restricted Stock Units*

The following table summarizes the Company's restricted stock unit activity for the nine months ended September 30, 2025:

	<u>Number of Shares</u>
Unvested as of December 31, 2024	198,995
Granted	278,209
Vested	(224,616)
Forfeited	(153,356)
Unvested as of September 30, 2025	<u>99,232</u>

During the nine months ended September 30, 2025, the Company granted 0.3 million time-based restricted stock units to employees at the grant date fair value of \$12.65 per share. These awards vest as the employee provides services to the Company over a three-year vesting period. Also during the nine months ended September 30, 2025, 0.1 million outstanding performance-based restricted stock units ("PRSUs") vested based on the achievement of an operational milestone. The Company considers the achievement of the remaining operational milestone related to outstanding PRSUs to be probable. Stock-based compensation expense has been recognized for these awards using the accelerated attribution model based on the fair value of the awards as of the date of grant and management's best estimate of the date the probable operational milestone will be achieved. The Company updates its estimates related to the probability and timing of achievement of the operational milestones each period until the award either vests or is forfeited.

*Stock-Based Compensation*

Stock-based compensation expense was classified in the condensed consolidated statements of operations and comprehensive(loss) income as follows:

(in thousands)	Three Months Ended September 30,		Nine Months Ended September 30,	
	2025	2024	2025	2024
Research and development expense	\$ 179	\$ 1,143	\$ 778	\$ 3,108
Selling, general and administrative expense	581	677	1,249	2,879
Total stock-based compensation	<u>\$ 760</u>	<u>\$ 1,820</u>	<u>\$ 2,027</u>	<u>\$ 5,987</u>

*Stock Appreciation Rights*

The following table summarizes the Company's stock appreciation right ("SARs") balances and activity as of September 30, 2025. The weighted average target (exercise) price of the SARs is \$45.71. During the third quarter of 2025, all participants to whom SARs were granted were terminated and the vesting of certain unvested SARs was accelerated. The vested SARs of 313,856 as of September 30, 2025 are exercisable for 90 days from the termination date and will forfeit if not exercised.

	<u>Number of Shares</u>
Outstanding as of December 31, 2024	347,068
Forfeited	(22,099)
Outstanding as of September 30, 2025	<u>324,969</u>
Vested as of September 30, 2025	<u>313,856</u>

**X4 PHARMACEUTICALS, INC.**  
**NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS**  
(Unaudited)

**13. Segment Information**

We have defined our Chief Operating Decision Maker (“CODM”) as our Executive Chairman. The CODM manages the Company’s operations as a single operating segment, which comprises its single reportable segment, for the purposes of assessing performance and making operating decisions. The Company’s focus is on the research, development and commercialization of novel therapeutics for the treatment of rare diseases. The Company’s research, development and commercialization efforts are focused on its lead molecule, mavorixafor, which is being marketed in the U.S. under the trade name XOLREMDI. The CODM uses the Company’s condensed consolidated net (loss) income to monitor actual results as compared to forecast in assessing segment performance and allocation of resources.

We derive our revenue from the sale of XOLREMDI in the U.S. and from licensed rights to mavorixafor for other non-U.S. territories. We recognized \$1.6 million and \$4.3 million of revenue from our U.S. customer and \$0.2 million and \$28.3 million of revenue from our customer in the United Kingdom for the three and nine months ended September 30, 2025, respectively. The Company recognized \$0.6 million and \$1.1 million of revenue from its U.S. customer for the three and nine months ended September 30, 2024, respectively, and no non-U.S. revenue for the three and nine months ended September 30, 2024.

The measure of profit for the segment is net (loss) income and consisted of the following for the three and nine months ended September 30, 2025, and 2024:

(in thousands)	Three Months Ended September 30,		Nine Months Ended September 30,	
	2025	2024	2025	2024
Revenue from external customers	\$ 1,765	\$ 560	\$ 32,545	\$ 1,123
Compensation expense, excluding stock-based compensation, SARs compensation expense and severance expense	6,932	11,717	28,405	33,941
Direct research and development program expenses (X4P-001, mavorixafor)	10,314	9,665	28,139	31,073
Gain on sale of non-financial assets	—	—	—	(105,000)
Other segment items (a)	14,334	15,874	31,275	38,738
Net (loss) income (measure of segment profit)	\$ (29,815)	\$ (36,696)	\$ (55,274)	\$ 2,371

(a) Other segment items primarily include cost of revenue, non-compensation departmental costs within sales, general and administrative departments, certain unallocated external costs within research and development, stock-based compensation expense, SARs compensation expense, severance expense, other income (expense), and provision for income taxes.

The CODM only receives and reviews information regarding segment assets at the consolidated level. Certain other entity-wide disclosures are included elsewhere in these condensed consolidated financials statements. As of September 30, 2025, the Company’s single operating segment had long-lived assets, including property and equipment and right-of-use assets, of \$2.0 million, which were located in the U.S. As of December 31, 2024, the operating segment’s long-lived assets were \$4.8 million, of which \$3.2 million and \$1.6 million were located in the U.S. and Austria, respectively.

**14. Subsequent Events**

On October 23, 2025, the Company entered into an underwriting agreement with Leerink Partners LLC, Stifel, Nicolaus & Company, Incorporated and Guggenheim Securities, LLC, as the representatives of the underwriters named therein (the “Underwriters”), to issue and sell 45,860,000 shares of the Company’s common stock at a public offering price of \$2.90 per share and, in lieu of common stock to certain investors, pre-funded warrants to purchase 700,000 shares of the Company’s common stock (the “Pre-Funded Warrants”) at a public offering price of \$2.899 per share, which represents the per share public offering price for the common stock less the \$0.001 per share exercise price for each Pre-Funded Warrant (the “Offering”). In addition, the Company granted the Underwriters an option for a period of 30 days to purchase up to an additional 6,984,000 shares of its common stock at the public offering price, less the underwriting discounts and commissions, which the Underwriters exercised in full on October 24, 2025. The Offering closed on October 27, 2025.

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The Pre-Funded Warrants will be exercisable at any time after the date of issuance. A holder of Pre-Funded Warrants may not exercise the warrant if the holder, together with its affiliates, would beneficially own more than 4.99% or 9.99%, as applicable, of the number of shares of common stock outstanding immediately after giving effect to such exercise. A holder of Pre-Funded Warrants may increase or decrease this percentage to a percentage not in excess of 19.99% by providing prior notice to the Company, provided that any increase will not be effective until the 61st day after such notice is delivered to the Company.

The net proceeds from the Offering, including proceeds from the exercise in full of the Underwriters' option to purchase additional shares, were approximately \$145.6 million, after deducting the Underwriters' discounts and commissions and estimated offering expenses.

## Item 2. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following discussion and analysis should be read in conjunction with our condensed consolidated financial statements and related notes in "Item 1. Financial Statements." References in this report to "X4," the "Company," "we," "our" and "us" are references to X4 Pharmaceuticals, Inc. and its subsidiaries.

### Forward-Looking Statements

This Quarterly Report on Form 10-Q contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), that relate to future events or to our future operations or financial performance. All statements, other than statements of historical facts, contained in this Quarterly Report on Form 10-Q, including statements regarding our strategy, future operations, future financial position, future revenues, projected costs, prospects, plans and objectives of management, are forward-looking statements. These statements may be identified by such forward-looking terminology as "may," "should," "expects," "intends," "plans," "anticipates," "believes," "estimates," "predicts," "potential," "continue" or the negative of these terms or other comparable terminology. Our forward-looking statements are based on a series of expectations, assumptions, estimates and projections about our company, are not guarantees of future results or performance and involve substantial risks and uncertainty. We may not actually achieve the plans, intentions, or expectations disclosed in these forward-looking statements. Actual results or events could differ materially from the plans, intentions and expectations disclosed in these forward-looking statements. These forward-looking statements are subject to a number of known and unknown risks, uncertainties and assumptions, including risks described in the section titled "Risk Factors" and elsewhere in this report, regarding, among other things:

- our ability to raise additional capital or achieve sufficient revenue to properly fund our business and operating plan as well as our ability to continue as a going concern;
- our expectations and goals for commercialization of XOLREMDI<sup>®</sup>, which has been approved for use as an oral, once-daily therapy to increase the number of circulating mature neutrophils and lymphocytes in patients 12 years of age and older with WHIM (warts, hypogammaglobulinemia, infections, and myelokathexis) syndrome in the U.S. and that XOLREMDI, our one product approved for commercial sale, upon which we depend almost entirely on to produce revenue faces an unknown market size and growth potential and we have not generated significant revenue from product sales to date, and we may never achieve profitability;
- our expectations that the intended effects of the reverse stock split will occur and that we will be able to maintain compliance with Nasdaq's listing requirements and this will positively impact our ability to raise capital;
- the initiation, timing, progress and results of our current and future preclinical studies and clinical trials and related preparatory work and the period during which the results of the trials will become available, as well as our research and development programs;
- the timing of enrollment in, and our ability to successfully enroll, our clinical trials, including our Phase 3 4WARD clinical trial;
- the potential benefits, including clinical utility, that may be derived from XOLREMDI or any of our product candidates;
- the timing of and our ability to obtain and maintain regulatory approval of our existing product XOLREMDI (mavorixafor) or any product candidates that we may develop in the future, and any related restrictions, limitations, or warnings in the label of any approved product candidates;
- our plans to research, develop, manufacture and commercialize XOLREMDI or our product candidates;
- the timing of our regulatory filings for our product candidates, along with regulatory developments in the United States and other foreign countries;
- the size and growth potential of the markets for XOLREMDI and our product candidates, if approved, and the rate and degree of market acceptance of XOLREMDI and our product candidates, including reimbursement that may be received from payors;
- the benefits of U.S. Food and Drug Administration and European Commission designations, including, without limitation, Fast Track, orphan and Breakthrough Therapy;
- our commercialization, marketing and manufacturing capabilities and strategy;

- our ability to execute and realize benefits from the strategic restructurings announced in February 2025 and September 2025, or any similar actions taken in the future;
- our ability to attract and retain qualified employees and key personnel;
- our competitive position and the development of and projections relating to our competitors or our industry;
- our expectations regarding our ability to obtain and maintain intellectual property protection;
- the success of competing therapies that are or may become available;
- our estimates and expectations regarding future operations, financial position, revenues, costs, expenses, uses of cash, capital requirements or our need for additional financing;
- our plans to in-license, acquire, develop and commercialize additional product candidates;
- the impact of laws and regulations;
- our plans to identify additional product candidates with significant commercial potential that are consistent with our commercial objectives;
- our strategies, prospects, plans, expectations or objectives; and
- other risks and uncertainties, including those listed under the section titled “Risk Factors” in this Quarterly Report.

## OVERVIEW

We are a biopharmaceutical company developing, and commercializing novel therapeutics for the treatment of rare hematology diseases. We continue to progress our global, pivotal Phase 3 clinical trial, (the “4WARD” trial) to evaluate the efficacy, safety, and tolerability of oral, once-daily mavorixafor (with or without stable doses of G-CSF) in people with congenital, acquired primary autoimmune, or idiopathic chronic neutropenia who are experiencing recurrent and/or serious infections. The 52-week trial is a randomized, double-blind, placebo-controlled, multicenter study aiming to enroll up to 176 patients, with full enrollment expected in Q3 2026. The FDA has granted Fast Track designation to mavorixafor for the treatment of chronic neutropenia. Chronic neutropenia is defined as periods lasting more than three months persistently or intermittently where there are abnormally low levels of neutrophils circulating in the blood, and may be idiopathic (of unknown origin), cyclic (episodes typically occurring every three weeks), or congenital (of genetic causation). Chronic neutropenia disorders are rare blood conditions similarly characterized by increased risks of infections and cancer due to abnormally low levels of neutrophils in the body. In all cases, the CXCL12/CXCR4 pathway is the key regulator of neutrophil release from the bone marrow.

We have one commercially approved product, XOLREMDI® (mavorixafor), which has received accelerated approval in the United States from the U.S. Food and Drug Administration (“FDA”) for use as an oral, once-daily therapy in patients 12 years of age and older with WHIM (warts, hypogammaglobulinemia, infections, and myelokathexis) syndrome, to increase the number of circulating mature neutrophils and lymphocytes. WHIM syndrome is a rare combined primary immunodeficiency and chronic neutropenic disorder. In connection with our long term strategy to successfully complete the 4WARD Phase 3 trial in patients with moderate and severe chronic neutropenia, we are no longer prioritizing investment in the WHIM indication.

### *Private Placement Financing and Management Changes*

During the third quarter of 2025, we sold shares of common stock and pre-funded warrants to purchase common stock in a private placement that resulted in net proceeds of approximately \$81.0 million, after deducting placement agent fees and other expenses. Pursuant to registration rights agreements, we registered the shares of common stock issued and issuable under pre-funded warrants under a registration statement on Form S-3 that was declared effective by the SEC on September 17, 2025.

Concurrent with the financing and effective August 12, 2025, our former President and Chief Executive Officer Paula Ragan, PhD, and Chief Financial Officer Adam Mostafa stepped down from their respective roles. Dr. Ragan also resigned from the Company’s Board of Directors (the “Board”), and Michael Wyzga transitioned from Board Chair to Lead Independent Director. In their place, the Board appointed Adam R. Craig, M.D., Ph.D, as Executive Chair and Board Chair; John Volpone as President, and David Kirske as Chief Financial Officer.

### *Q4 2025 Equity Financing*

In October 2025, we closed an underwritten public offering of our common stock and, in lieu of common stock to certain investors, pre-funded warrants, raising proceeds of \$145.6 million, net of underwriting discounts and estimated offering

expenses.

### **Strategic Restructurings**

In the first quarter of 2025, we implemented a strategic restructuring of our business operations, workforce and capital spending to focus efforts on advancing mavorixafor to treat those with chronic neutropenia. As part of this restructuring, we (i) implemented a net reduction of our employee headcount by 43 employees, or approximately 30% of our total workforce, including our U.S. commercial field team, (ii) commenced the closure of our research and development facility in Vienna, Austria, (iii) paused our pre-clinical drug candidate programs and (iv) streamlined other spending to support the ongoing clinical development of mavorixafor for the larger population of those with chronic neutropenia. We incurred charges of approximately \$2.5 million for severance and other employee termination-related costs related to this strategic restructuring. We believe that this strategic restructuring will decrease our annual spending by \$30 million to \$35 million per year.

In September 2025, we announced an additional strategic restructuring designed to further sharpen operational focus and align resources with our long-term strategy to successfully complete the 4WARD Phase 3 trial in patients with moderate and severe chronic neutropenia. As part of this initiative, we further reduced our workforce by approximately 50%, a step anticipated to result in additional annualized cost savings of approximately \$13 million. We incurred expenses of approximately \$4.9 million during the third quarter for severance and other employee termination-related costs related to this strategic restructuring. This workforce reduction was substantially completed in the third quarter of 2025.

The estimate of costs that we expect to incur related to these workforce reduction as well as the decrease in spending, and the timing thereof are subject to a number of assumptions and actual results may differ. We may also incur additional costs not currently contemplated due to events that may occur as a result of, or that are associated with, the actions described above.

### **Regulatory Update and Out-License Agreements**

In early 2025, we submitted a Marketing Authorization Application (“MAA”) to the EMA seeking regulatory approval to commercialize mavorixafor for WHIM syndrome in the European Union. Such MAA was validated for processing by the EMA in January 2025. On January 13, 2025, we announced a License and Supply Agreement (the “Norgine Agreement”) with Norgine Pharma UK (“Norgine”), pursuant to which Norgine was granted an exclusive license to distribute, market and sell our drug product for all indications in the European Economic Area, Switzerland, the United Kingdom, Australia, and New Zealand.

## **RESULTS OF OPERATIONS**

The following table summarizes the results of our operations for the three and nine months ended September 30, 2025 and 2024:

(in millions)	Three Months Ended September 30,			Nine Months Ended September 30,		
	2025	2024	Change	2025	2024	Change
Revenue	\$ 1.8	\$ 0.6	\$ 1.2	\$ 32.5	\$ 1.1	\$ 31.4
Cost and operating expenses:						
Cost of revenue	0.4	0.2	0.2	5.4	0.5	4.9
Research and development	17.3	19.2	(1.9)	54.2	59.9	(5.7)
Selling, general and administrative	11.6	15.7	(4.1)	36.1	46.4	(10.3)
Gain on sale of non-financial asset	—	—	—	—	(105.0)	105.0
Total operating expenses	29.3	35.1	(5.8)	95.7	1.8	93.9
Loss from operations	(27.5)	(34.5)	7.0	(63.2)	(0.7)	(62.5)
Total other (expense) income, net	(2.3)	(2.2)	(0.1)	8.0	3.1	4.9
(Loss) income before income taxes	(29.8)	(36.7)	6.9	(55.2)	2.4	(57.6)
Provision for income taxes	—	—	—	(0.1)	—	(0.1)
Net (loss) income	<u>\$ (29.8)</u>	<u>\$ (36.7)</u>	<u>\$ 6.9</u>	<u>\$ (55.3)</u>	<u>\$ 2.4</u>	<u>\$ (57.7)</u>

### **Revenue**

#### **License and Other**

During the nine months ended September 30, 2025, we granted an exclusive license to Norgine to distribute, market and sell our product for all indications in the European Economic Area, Switzerland, the United Kingdom, Australia and New Zealand following regulatory approval. For the nine months ended September, 2025, we recognized \$27.6 million for the delivery of the

license and \$0.7 million for the provision of research and development services. We had no license or other revenue during the three or nine months ended September 30, 2024.

#### *Product Revenue, Net*

We began recognizing product sales in June 2024 following FDA approval of XOLREMDI on April 29, 2024 and its subsequent commercial launch in the United States. Net product sales were as follows for the nine months ended September 30, 2025 and for each of the quarterly periods therein and the comparative quarter in the prior year.

(in thousands)	2025		2024	
First quarter	\$	942	\$	—
Second quarter		1,744		563
Third quarter		1,566		560
Nine months ended September 30,	\$	4,252	\$	1,123

Co-pay assistance payments and rebates to U.S. government payors have comprised the majority of our gross-to-net revenue adjustments. Gross-to-net adjustments have been approximately 10% in 2025 year to date.

#### **Operating Cost and Expenses:**

##### *Cost of Revenue*

Cost of revenue primarily consists of amortization of an intangible asset related to accrued and paid milestone payments associated with our Genzyme license agreement, and sales and sublicense-based royalty payments due under our Genzyme license agreement. Cost of revenue increased \$4.9 million in the nine months ended September 30, 2025, as compared to the same period in the prior year, primarily due to additional royalties in the current nine period associated with sublicense income from our Norgine Agreement.

##### *Research and Development Expenses*

Research and development expenses consist primarily of costs incurred in connection with the development of our product candidates, including employee salaries and related expenses, clinical development expenses, internal and third-party costs of manufacturing our drug products for use in our clinical trials. Research and development expenses also include costs related to compliance with regulatory requirements; and prior to the FDA's approval of our drug product in the U.S. in the second quarter of 2024, payments made under third-party licensing agreements were charged to research and development expense.

Following our strategic restructuring announced during the first quarter of 2025, substantially all of our research and development has been focused on our one product candidate, mavoxixafor (X4P-001). The following table shows external costs incurred by product candidate (primarily external CRO costs) and unallocated research and development costs, primarily consisting of employee salaries and related expense for our research and development organization.

(in millions)	Three Months Ended September 30,			Nine Months Ended September 30,		
	2025	2024	Change	2025	2024	Change
Direct research and development expenses by product candidate:						
Mavoxixafor (X4P-001)	\$ 10.3	\$ 9.7	\$ 0.6	\$ 28.2	\$ 31.1	\$ (2.9)
X4P-002	—	—	—	—	0.2	(0.2)
X4P-003	—	—	—	—	0.1	(0.1)
Unallocated expense	7.0	9.5	(2.5)	26.0	28.5	(2.5)
Total research and development expenses	\$ 17.3	\$ 19.2	\$ (1.9)	\$ 54.2	\$ 59.9	\$ (5.7)

Research and development expenses decreased by \$1.9 million and \$5.7 million in the three and nine months ended September 30, 2025, respectively, as compared to the same periods in the prior year primarily due to decreases in spending associated with our 2025 strategic restructurings, including lower spending on non-clinical programs, lower consulting fees, lower drug substance manufacturing costs, and lower regulatory costs. For the three and nine months ended September 30, 2025, unallocated expense includes \$1.5 million and \$2.2 million, respectively, in severance charges for terminated employees.

Decreases in research and development expenses in the current three month period were partially offset by higher clinical costs associated with our 4WARD trial.

### ***Selling, General and Administrative Expenses***

Selling, general and administrative expenses consist primarily of salaries and related costs, including stock-based compensation, for personnel in sales and marketing, executive, finance, and administrative functions. Selling, general and administrative expenses also include direct and allocated facility-related costs as well as professional fees for legal, patent, consulting, investor and public relations, accounting, and audit services.

Selling, general and administrative expenses decreased by approximately \$4.1 million and \$10.3 million in the three and nine months ended September 30, 2025, respectively, as compared to the same periods in the prior year. Selling, general and administrative expenses include \$3.4 million and \$5.0 million in severance charges for terminated employees in the three and nine month periods ended September 30, 2025, respectively. Decreases to selling, general and administrative expense in each period were primarily due to a decreases in compensation expense due to lower head count in our general and administrative functions, a significant decrease in sales and marketing expenses in the current three and nine month periods as compared to the prior year, during which we incurred commercialization sales and marketing launch costs related to our drug product. These decreases in selling, general and administrative expenses were partially offset by higher severance costs associated with our 2025 strategic restructurings and higher legal costs in the current three and nine month periods.

### ***Other (Expense) Income, Net***

	Three Months Ended September 30,			Nine Months Ended September 30,		
	2025	2024	change	2025	2024	change
(in millions)						
Interest income	\$ 0.9	\$ 1.9	\$ (1.0)	\$ 2.6	\$ 4.5	\$ (1.9)
Interest expense	(2.3)	(2.4)	0.1	(6.7)	(6.5)	(0.2)
Change in fair value of Class C warrant liability	(0.7)	(1.9)	1.2	12.8	4.6	8.2
Other (expense) income, net	(0.2)	0.2	(0.4)	(0.7)	0.5	(1.2)
Total other (expense) income, net	\$ (2.3)	\$ (2.2)	\$ (0.1)	\$ 8.0	\$ 3.1	\$ 4.9

Other expense, net, increased approximately \$0.1 million in the three months ended September 30, 2025 as compared to the same period in the prior year primarily due to lower interest income earned on our marketable securities, partially offset by lower losses in the current period on fair value adjustments related to our Class C warrants. Other expense, net, decreased \$4.9 million in the nine months ended September 30, 2025 as compared to the same period in the prior year primarily due to higher gains on fair value adjustments related to our Class C warrants in the current period, partially offset by lower interest income on our marketable security investment portfolio.

### ***Provision for Income Taxes***

Income tax provisions recorded for the three and nine months ended September 30, 2025 and 2024 were not significant and were primarily related to our Austrian subsidiary. We will continue to maintain a full valuation allowance against net deferred tax assets, including net operating loss carryforwards, until we are able to consistently generate sufficient taxable income to realize the benefit of our net deferred tax assets.

## **Liquidity and Capital Resources**

### **Sources of Liquidity**

To date, we have funded our operations primarily with proceeds from sales of common stock, warrants and prefunded warrants for the purchase of our preferred stock and our common stock, sales of preferred stock, proceeds from the issuance of convertible debt and borrowings under loan and security agreements.

**Public and Private Equity Offerings.** Over the past several years we have funded our operations primarily from sales of common stock, warrants and prefunded warrants through both public offerings and private placements. Most recently in August 2025, we sold shares of common stock and, in lieu of common stock to certain investors, pre-funded warrants to purchase shares of common stock in a private placement (“Q3 2025 PIPE”) offering for net proceeds of \$81.0 million, after placement agent fees and offering expenses. In addition, in Q4 2025 we completed an underwritten public offering of 52,844,000 shares of our common stock (inclusive of 6,984,000 shares pursuant to the exercise in full of the underwriters’ option to purchase additional shares) at a public offering price of \$2.90 per share and, in lieu of common stock to certain investors, prefunded warrants to purchase up to 700,000 shares of our common stock at a price of \$2.899 per pre-funded warrant, for net proceeds of \$145.6 million, after underwriting discounts and offering expenses.

**ATM Sales Agreement.** We are party to a Controlled Equity Offering<sup>SM</sup> Sales Agreement (“ATM”), dated as of August 7, 2020, pursuant to which we may offer and sell shares of our common stock through one or more investment banks. To date and for the nine months ended September 30, 2025, we have sold \$23.6 million and \$9.0 million, respectively, of our common stock, net of offering costs, under the ATM. Pursuant to our Registration Statement on Form S-3 that became effective on August 24, 2023 and the related ATM prospectus contained therein, we may offer and sell shares of our common stock having an aggregate offering price of up to an additional \$66.0 million.

**Product Sales and License Revenue.** We commercially launched XOLREMDI in the second quarter of 2024 following the approval of XOLREMDI by the FDA on April 29, 2024. To date, we have generated \$6.8 million of net product revenue from the sale of XOLREMDI. In the first quarter of 2025, we generated \$27.6 million in license revenue from the Norgine Agreement.

**Hercules Loan Agreement.** We are a party to a loan and security agreement (the “Hercules Loan Agreement”), which provides for a term loan facility of up to \$107.5 million, under which we have borrowed an aggregate of \$75.0 million of term loans to date, representing the maximum borrowings as of September 30, 2025. The term loan facility requires that we make interest-only payments through maturity on July 1, 2027 and requires that we meet certain operational and financial covenants. See Note 8 to the condensed, consolidated financial statements contained herein for a full description of our Hercules Loan Agreement.

### Historical Cash Flows

The following table summarizes our cash flow activities for each of the periods presented:

	Nine Months Ended September 30,	
	2025	2024
	(in thousands)	
Net (loss) income	\$ (55.3)	\$ 2.4
Adjustments to reconcile net (loss) income to net cash used in operating activities	(6.7)	(101.8)
Changes in operating assets and liabilities	(8.1)	1.5
Net cash used in operating activities	(70.1)	(97.9)
Net cash (used in) provided by investing activities	(8.7)	75.6
Net cash provided by financing activities	92.5	20.3
Effect of exchange rate changes on cash, cash equivalents and restricted cash	0.1	—
Net increase in cash, cash equivalents and restricted cash	13.9	(2.0)
Cash, cash equivalents and restricted cash, beginning of period	56.5	100.2
Cash, cash equivalents and restricted cash, end of period	\$ 70.4	\$ 98.2

### Operating Activities

During the nine months ended September 30, 2025, net cash used in operating activities was \$70.1 million, primarily resulting from net losses of \$55.3 million adjusted for net non-cash income of \$6.7 million, primarily related to gains on changes to the fair value of our Class C warrants that are measured quarterly at fair value, and \$8.1 million of changes to operating assets and liabilities primarily related to a reduction in accounts payable and accrued expenses. Net cash used in operating activities for the nine months ended September 30, 2024 was \$97.9 million, primarily resulting from costs and operating expenses of \$106.8 million, adjusted for non-cash expenses of \$7.7 million and changes in our operating assets and liabilities of \$1.5 million. Net cash used in operations for the nine months ended September 30, 2025 also excludes the gain on sale of a priority review

voucher, which is included in investing activities. Non-cash expenses primarily include stock-based compensation expense, non-cash lease expense, non-cash interest expense and change in fair value of financial liabilities.

### ***Investing Activities***

During the nine months ended September 30, 2025, cash used in investing activities of \$8.7 million, primarily include net sales of short-term marketable securities. During the nine months ended September 30, 2024, cash provided by investing activities of \$75.6 million included \$105.0 million in cash proceeds from the sale of a priority review voucher obtained as a result of the approval of our drug product by the FDA, partially offset by cash outflows of \$7.0 million in license payments classified as the acquisition of an intangible assets, \$22.1 million of net investments of short-term marketable securities and the acquisition of equipment.

### ***Financing Activities***

During the nine months ended September 30, 2025, cash provided by financing activities of \$92.5 million was primarily due to proceeds of \$81.2 million, net of cash paid for issuance costs, for the sale our common stock and pre-funded warrants in our Q3 2025 PIPE, \$9.0 million in sales of our common stock through our ATM program and \$2.2 million in sales of our common stock through our common stock purchase agreement with Lincoln Park Capital Fund LLC. Cash provided by financing activities for the nine months ended September 30, 2024 included \$20.0 million of new borrowings on our loan facility.

### ***Capital Resources***

Based on our cash, cash equivalents and marketable securities on hand as of November 5, 2025 and our current operating plan, we believe that our cash, cash equivalents and marketable securities will allow us to fund operations for at least the next 12 months.

### ***Capital Requirements***

October 27, 2025, we closed an underwritten offering of shares of our common stock and, in lieu of common stock to certain investors, pre-funded warrants to purchase shares of our common stock, for net proceeds of approximately \$145.6 million, after deducting underwriting discounts and commissions and estimated offering expenses, which further extends our ability to fund our operations and financial obligations. Until we reach profitability, we will need to raise additional capital, which cannot be assured, to fund our operations and meet our financial obligations beyond this period. Such additional capital could be raised through a combination of equity offerings, debt financings, other third-party funding, marketing and distribution arrangements, or other collaborations and strategic alliances. If we are unable to obtain funding, we could be forced to delay, reduce, or eliminate some or all of our research and development programs, product portfolio expansion or commercialization efforts, which would adversely affect our business prospects, or we may be unable to continue operations and may need to restructure our obligations in a court-supervised process or otherwise.

Due to the numerous risks and uncertainties associated with the future sale of our approved drug product and the research, development, and commercialization of future product candidates, we are unable to estimate the exact amount of our funding requirements. Our short-term and long-term funding requirements will depend on and could increase significantly as a result of many factors, including:

- the scope, number, initiation, progress, timing, costs, design, duration, any potential delays, and results of clinical trials and nonclinical studies for our current or future product candidates, particularly our Phase 3 clinical trial of mavoxixafor for the treatment of individuals with chronic neutropenic disorders;
- the outcome, timing and cost of regulatory reviews, approvals or other actions to meet regulatory requirements established by the FDA and comparable foreign regulatory authorities, including the potential for the FDA or comparable foreign regulatory authorities to require that we perform more studies for our product candidates than those that we currently expect;
- our ability to obtain marketing approval for our product candidates;
- the cost of filing, prosecuting, defending and enforcing our patent claims and other intellectual property rights covering our product and product candidates, including any such patent claims and intellectual property rights that we have licensed from Genzyme pursuant to the terms of our license agreement with Genzyme;
- our ability to maintain, expand and defend the scope of our intellectual property portfolio, including the cost of defending intellectual property disputes, including patent infringement actions brought by third parties against us or our product or product candidates;
- our ability to establish and maintain licensing, collaboration or similar arrangements on favorable terms and whether and to what extent we retain development or commercialization responsibilities under any new licensing, collaboration or similar arrangement;

- the success of any other business, product or technology that we acquire or in which we invest;
- the costs of acquiring, licensing or investing in businesses, product candidates and technologies;
- the effect of competing technological and market developments; and
- the costs to continue operating as a public company

## **CRITICAL ACCOUNTING POLICIES AND SIGNIFICANT JUDGMENTS AND ESTIMATES**

Our condensed consolidated financial statements are prepared in accordance with generally accepted accounting principles in the United States. The preparation of our condensed consolidated financial statements and related disclosures requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, costs and expenses, and the disclosure of contingent assets and liabilities in our condensed consolidated financial statements. We base our estimates on historical experience, known trends and events and various other factors that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. We evaluate our estimates and assumptions on an ongoing basis. Our actual results may differ from these estimates under different assumptions or conditions.

During the three months ended September 30, 2025, there were no material changes to our critical accounting policies as reported for the year ended December 31, 2024 as part of our Annual Report on Form 10-K other than as updated in Note 2 of these condensed consolidated financial statements. Also see Note 2 under the heading “Recently Adopted Accounting Pronouncements” for new accounting pronouncements or changes to the accounting pronouncements during the three months ended September 30, 2025.

### **Smaller Reporting Company Status**

We are a smaller reporting company (“SRC”) as defined by Rule 12b-2 of the Exchange Act and Item 10(f)(1) of Regulation S-K. We may take advantage of certain of the scaled disclosures available to smaller reporting companies for so long as (i) our voting and non-voting common stock held by non-affiliates is less than \$250.0 million measured on the last business day of our second fiscal quarter or (ii) our annual revenue is less than \$100.0 million during the most recently completed fiscal year and our voting and non-voting common stock held by non-affiliates is less than \$700.0 million measured on the last business day of our second fiscal quarter.

### **Item 3. Quantitative and Qualitative Disclosures About Market Risk**

As an SRC, we are not required to provide the information requested by this Item.

### **Item 4. Controls and Procedures**

#### *Evaluation of Disclosure Controls and Procedures*

We maintain disclosure controls and procedures that are designed to ensure that information required to be disclosed in the reports that we file or submit under the Exchange Act is recorded, processed, summarized, and reported within the time periods specified in the SEC’s rules and forms and accumulated and communicated to our management, including our principal executive officer and principal financial officer, to allow timely decisions regarding required disclosure.

Our management, with the participation of our principal executive officer and principal financial officer, evaluated the effectiveness of our disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) as of September 30, 2025, and have concluded that, based on such evaluation, our disclosure controls and procedures were effective as of September 30, 2025 at the reasonable assurance level. Our management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives, and management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures.

#### *Changes in Internal Control Over Financial Reporting*

There were no changes in our internal control over financial reporting that occurred during the three months ended September 30, 2025 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

## PART II: OTHER INFORMATION

### Item 1. Legal Proceedings

From time to time, we may become involved in legal proceedings or be subject to claims arising in the ordinary course of our business. We are not currently a party to any material legal proceedings and we are not aware of any pending or threatened legal proceedings against us that we believe could have a material adverse effect on our business, operating results or financial condition.

### Item 1A. Risk Factors

Our business is subject to various risks, including those described in Part II, Item 1A, “Risk Factors” of our Quarterly Report on Form 10-Q for the quarter ended June 30, 2025. There have been no material changes from the risk factors disclosed in Item 1A of our Quarterly Report on Form 10-Q for the quarter ended June 30, 2025.

This report contains forward-looking statements that involve risks and uncertainties. The occurrence of any of the risks described in our Quarterly Report on Form 10-Q for the quarter ended June 30, 2025 could materially adversely affect our business, financial condition, liquidity, operating results or prospects and the trading price of our securities. Additional risks and uncertainties that we do not presently know or that we currently deem immaterial may also harm our business, financial condition, operating results and prospects and the trading price of our securities.

### Item 2. Unregistered Sales of Equity Securities and Use of Proceeds

None.

### Item 3. Defaults upon Senior Securities

None.

### Item 4. Mine Safety Disclosures

Not applicable.

### Item 5. Other Information

#### *Rule 10b5-1 Trading Plans*

During the quarter ended September 30, 2025, no director or Section 16 officer adopted, modified or terminated any Rule 10b5-1 trading arrangements or non-Rule 10b5-1 trading arrangements (in each case, as defined in Item 408(a) of Regulation S-K), except as described below:

In connection with her departure from the Company, Dr. Paula Ragan, the Company’s former President and Chief Executive Officer and a former director, terminated a Rule 10b5-1 trading arrangement on August 14, 2025. The terminated Rule 10b5-1 trading arrangement was originally adopted on June 28, 2024, and provided for the sale of up to 313,794 shares of common stock and (ii) 25,682 shares of our common stock to satisfy tax withholding obligation upon the vesting of performance-based restricted stock units.

In connection with his departure from the Company, Adam Mostafa, the Company’s former Chief Financial Officer, terminated a Rule 10b5-1 trading arrangement on August 14, 2025. The terminated Rule 10b5-1 trading arrangement was originally adopted on June 28, 2024, and provided for the sale 11,229 shares of our common stock to satisfy tax withholding obligation upon the vesting of performance-based restricted stock units.

On September 4, 2025, Mark Baldry, the Company’s former Chief Commercial Officer, adopted a written trading arrangement for the sale of Company securities intended to satisfy the affirmative defense conditions of Rule 10b5-1(c). In connection with his departure from the Company, Mr. Baldry terminated the 10b5-1 trading arrangement on September 25, 2025. This trading arrangement was subject to a 90-day “cooling off” period before any trades could be conducted thereunder, would have expired on February 28, 2026 and provided for the sale of an indeterminable<sup>(1)</sup> number of shares of our common stock.

<sup>(1)</sup> The number of shares that were to be sold in accordance with these trading arrangements was indeterminable at the time of the filing of this Quarterly Report on Form 10-Q for the period ended September 30, 2025. Upon vesting of performance-

based restricted stock units, a sell-to-cover trade would have occurred to satisfy any applicable tax withholding obligations on behalf of the employee. The number of shares sold in the sell-to-cover would have varied based on the market price of the Company's common stock at the time of settlement and the employee's minimum tax withholding obligation.

**Item 6. Exhibits**

Exhibit No.	Exhibit Description	Form	Incorporated by Reference to:		
			Exhibit No.	Filing Date	File No.
3.1	<a href="#">Restated Certificate of Incorporation, as amended, as of September 1, 2022.</a>	8-K	3.1	09/01/2022	001-38295
3.2	<a href="#">Certificate of Amendment to the Restated Certificate of Incorporation of X4 Pharmaceuticals, Inc.</a>	8-K	3.1	04/24/2025	001-38295
3.3	<a href="#">Amended and Restated By-laws of the Company</a>	8-K	3.2	11/20/2017	001-38295
4.1	<a href="#">Form of Common Stock Certificate</a>	8-K	4.1	3/13/2019	001-38295
4.2	Form of August 2025 Pre-Funded Warrant.	8-K	4.1	8/12/2025	001-38295
4.3	Form of Pre-Funded Warrant.	8-K	4.1	10/27/2025	001-38295
4.4	Form of Registration Rights Agreement, dated August 11, 2025.	8-K	10.2	8/12/2025	001-38295
4.5	Form of Registration Rights Agreement, dated August 12, 2025.	8-K	10.2	8/13/2025	001-38295
10.1@	Amendment No. 1 to X4 Pharmaceuticals Inc., Amended and Restated 2019 Inducement Equity Incentive Plan.	8-K	10.3	8/12/2025	001-38295
10.2*@	<a href="#">Employment Agreement, dated as of August 11, 2025, by and between X4 Pharmaceuticals, Inc. and Adam Craig.</a>				
10.3*@	<a href="#">Employment Agreement, dated as of August 11, 2025, by and between X4 Pharmaceuticals, Inc. and David Kirske.</a>				
10.4*@	<a href="#">Employment Agreement, dated as of August 11, 2025, by and between X4 Pharmaceuticals, Inc. and John Volpone.</a>				
31.1*	<a href="#">Certification of Principal Executive Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.</a>				
31.2*	<a href="#">Certification of Principal Financial Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.</a>				
32.1**	<a href="#">Certification of Principal Executive Officer and Principal Financial Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.</a>				
101.INS*	Inline XBRL Instance Document				
101.SCH*	Inline XBRL Taxonomy Extension Schema Document				
101.CAL*	Inline XBRL Taxonomy Extension Calculation Linkbase Document				
101.DEF*	Inline XBRL Taxonomy Extension Definition Linkbase Document				
101.LAB*	Inline XBRL Taxonomy Extension Label Linkbase Document				

101.PRE\*      Inline XBRL Taxonomy Extension Presentation Linkbase Document  
104            Cover Page Interactive Data File (formatted as Inline XBRL and  
                 contained in Exhibit 101)

\* Filed herewith

\*\* The certification attached as Exhibit 32.1 accompanying this Quarterly Report on Form 10-Q is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference into any filing of the Company under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, whether made before or after the date of this Quarterly Report on Form 10-Q, irrespective of any general incorporation language contained in such filing.

@ Indicates management contract or compensatory plan.

**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 thereunto duly authorized.

Date: November 5, 2025

**X4 PHARMACEUTICALS, INC.**

By: /s/ Adam R. Craig

Adam R. Craig, M.D., Ph.D.  
Executive Chairman (*Principal Executive Officer*)

Date: November 5, 2025

By: /s/ David Kirske

David Kirske  
Chief Financial Officer and Treasurer (*Principal Financial and Accounting Officer*)



**Exhibit 10.2**

**EXECUTIVE EMPLOYMENT AGREEMENT**

THIS EXECUTIVE EMPLOYMENT AGREEMENT (this "Agreement") is entered into as of August 11, 2025 (the "Effective Date"), by and between X4 Pharmaceuticals, Inc. (the "Company"), and Adam R. Craig, MD, PhD, ("Executive") (collectively referred to as the "Parties" or individually referred to as a "Party").

**RECITALS**

WHEREAS, the Company desires to employ Executive as its Executive Chairman, and to enter into an agreement embodying the terms of such employment;

WHEREAS, Executive desires to accept such employment and enter into such an agreement.

**AGREEMENT**

NOW, THEREFORE, in consideration of the premises and mutual covenants herein and for other good and valuable consideration, the Parties agree as follows:

1. Duties and Scope of Employment.

(a) Positions and Duties. As of August 12, 2025 (the "Start Date"), Executive will serve as Executive Chairman of the Company. Executive will render such business and professional services in the performance of Executive's duties, consistent with Executive's position within the Company, as shall reasonably be assigned to Executive by the Company's Board of Directors ("Board"). The period of Executive's at-will employment under the terms of this Agreement is referred to herein as the "Employment Term."

(b) Obligations. During the Employment Term, Executive will perform Executive's duties faithfully and to the best of Executive's ability. During the Employment Term, Executive shall provide the services hereunder on a part-time basis and is currently expected to provide 24 hours of service per week, on average. For the duration of the Employment Term, Executive agrees not to actively engage in any other employment, occupation or consulting activity, for any direct or indirect remuneration, that creates a conflict of interest or substantially interferes with Executive's duties to the Company. Notwithstanding anything herein to the contrary, Executive may continue to provide strategic advisory and consulting services and Executive's provision of such services shall not constitute a breach of the provisions of this Agreement.

(c) No Conflicts. As a condition of Executive's employment, Executive certifies to the Company that: (a) Executive is free to enter into and fully perform the duties of Executive's position; (b) Executive is not subject to any employment, confidentiality, non-competition or other agreement that would restrict Executive's performance for the Company; (c) Executive's signing this Agreement does not violate any order, judgment or injunction applicable to Executive, or conflict with or breach any agreement to which Executive is a party or by which Executive is bound; and (d) all facts Executive has presented to the Company are accurate and true,

including, but not limited to, all oral and written statements Executive has made (including those pertaining to Executive's education, training, qualifications, licensing and prior work experience) in any job application, resume, *c.v.*, interview or discussion with the Company.

2. At-Will Employment. Subject to Sections 6, 7, and 8 below, the parties agree that Executive's employment with the Company will be "at-will" employment and may be terminated at any time with or without cause or notice, for any reason or no reason. Executive understands and agrees that neither Executive's job performance nor promotions, commendations, bonuses or the like from the Company give rise to or in any way serve as the basis for modification, amendment, or extension, by implication or otherwise, of Executive's employment with the Company.

3. Compensation.

(a) Base Salary. During the Employment Term, the Company will initially pay Executive as compensation for Executive's services a base salary at a rate of £340,000 (GBP) per year (the "Base Salary"). To the extent Executive's time commitment exceeds the level described in Section 1(b), the Board shall provide a proportional increase in the Base Salary to reflect the increased level of service. The Base Salary will be paid in regular installments in accordance with the Company's normal payroll practices through a payroll provider located in the United Kingdom (subject to required withholdings and deductions). Any increase in Base Salary (together with the then existing Base Salary) shall serve as the "Base Salary" for future employment under this Agreement. The first and last payment will be adjusted, if necessary, to reflect a commencement or termination date other than the first or last working day of a pay period.

(b) Annual Bonus. Executive will also be eligible to earn an annual discretionary bonus with a target amount equal to 60% of the Base Salary ("Target Bonus"). The amount of the Target Bonus, if any, will be determined in the sole discretion of the Company and based, in part, on Executive's performance and the performance of the Company during the calendar year. Any Target Bonus for the calendar year 2025 shall be pro-rated by the percentage of the year that the Executive was employed by the Company. The Company will pay Executive the Target Bonus, if any, by no later than March 15th of the following calendar year. The Target Bonus is not earned until paid and, except as set forth in Section 8(a) of this Agreement, no pro-rated amount will be paid if Executive's employment terminates for any reason prior to the payment date.

(c) Equity Awards. Executive will be eligible to receive awards of stock options, restricted stock or other equity awards pursuant to any plans or arrangements the Company may have in effect from time to time. The Board or a committee of the Board shall determine in its discretion whether Executive shall be granted any such equity awards and the terms of any such award in accordance with the terms of any applicable plan or arrangement that may be in effect from time to time.

(d) Employee Benefits. During the Employment Term, Executive may take advantage of various benefits offered by the Company, such as group medical insurance, dental insurance, short-term disability, long-term disability and the Company's 401(k) plan. Executive will also be entitled to twenty (20) days of paid time off per year (prorated based upon Executive's part-time employment schedule), as well as two (2) personal days and twelve (12) paid holidays, exclusive of any sick days Executive may need. These benefits may be modified or changed from time to time at the sole discretion of the Company. The details of the Company's full benefit offerings can be found in its Employee Handbook.

4. Business Expenses. During the Employment Term, the Company will reimburse Executive for reasonable business travel, entertainment or other business expenses incurred by Executive in the furtherance of

or in connection with the performance of Executive's duties hereunder, in accordance with the Company's expense reimbursement policy as in effect from time to time. All reimbursements provided under this Agreement will be made or provided in accordance with the requirements of Section 409A of the Internal Revenue Code ("Section 409A") and the rules and regulations thereunder, including, where applicable, the requirement that (i) any reimbursement is for expenses incurred during Executive's lifetime (or during a shorter period of time specified in this Agreement); (ii) the amount of expenses eligible for reimbursement during a calendar year may not affect the expenses eligible for reimbursement in any other calendar year; (iii) the reimbursement of an eligible expense shall be made no later than the last day of the calendar year following the year in which the expense is incurred; and (iv) the right to reimbursement or in kind benefits is not subject to liquidation or exchange for another benefit.

5. Termination on Death or Disability.

(a) Effectiveness. Executive's employment will terminate automatically upon Executive's Death or, upon fourteen (14) days prior written notice from the Company, in the event of Disability.

(b) Effect of Termination. Upon any termination for death or Disability, Executive shall be entitled to: (i) Executive's Base Salary through the effective date of termination; (ii) the right to continue health care benefits under Title X of the Consolidated Omnibus Budget Reconciliation Act of 1985, as amended ("COBRA"), if any, at Executive's cost, to the extent required and available by law; (iii) reimbursement of expenses for which Executive is entitled to be reimbursed pursuant to Section 5 above, but for which Executive has not yet been reimbursed; and (iv) no other severance or benefits of any kind, unless required by law or pursuant to any other written Company plans or policies, as then in effect.

6. Involuntary Termination for Cause; Resignation without Good Reason.

(a) Effectiveness. Notwithstanding any other provision of this Agreement, the Company may terminate Executive's employment at any time for Cause, which shall be effective on the date the Company gives notice to Employee of such termination in accordance with this Agreement unless otherwise agreed by the Parties. Executive may resign from Executive's employment with the Company without Good Reason, provided that Executive provide at least four (4) weeks prior written notice (the "Notice Period"). Such resignation shall be effective upon the expiration of the Notice Period. In the event that the Company accelerates the effective date of a resignation without Good Reason, such acceleration shall not be construed as a termination of Executive's employment by the Company or deemed Good Reason for such resignation.

(b) Effect of Termination. In the case of the Company's termination of Executive's employment for Cause, or Executive's resignation without Good Reason, Executive shall be entitled to receive: (i) Base Salary through the effective date of the termination or resignation, as applicable; (ii) reimbursement of all business expenses for which Executive is entitled to be reimbursed pursuant to Section 5 above, but for which Executive has not yet been reimbursed; (iii) the right to continue health care benefits under COBRA, at Executive's cost, to the extent required and available by law; and (iv) no other severance or benefits of any kind, unless required by law or pursuant to any other written Company plans or policies, as then in effect.

7. Involuntary Termination Without Cause; Resignation for Good Reason.

(a) Effect of Termination. The Company shall be entitled to terminate Executive without Cause and Executive may resign for Good Reason, subject to the following:

(i) If Executive is terminated by the Company involuntarily without Cause (excluding any termination due to death or Disability) or Executive resigns for Good Reason, then, subject to the limitations of Sections 8(b) and 23 below, Executive shall be entitled to receive: (A) Executive's Base

Salary through the effective date of the termination or resignation; (B) continuing severance pay at a rate equal to one hundred percent (100%) of Executive's Base Salary, plus the pro-rata portion of the Target Bonus for the calendar year in which the termination occurs based on the period worked by Executive during such calendar year prior to termination, as then in effect (less applicable withholding), for a period of 18 months from the date of such termination, to be paid in a single lump sum in accordance with the Company's normal payroll practices within sixty (60) days following the date of termination; (C) reimbursement of all business expenses for which Executive is entitled to be reimbursed pursuant to Section 5 above, but for which Executive has not yet been reimbursed; (D) the pro-rata portion of the Target Bonus for the calendar year in which the termination occurs based on the period worked by Executive during such calendar year prior to termination; (E) provided that Executive elects COBRA coverage, the Company shall reimburse Executive for a portion of each COBRA premium payment equal to the portion the Company contributed to such health insurance premium cost as of the date Executive's employment terminates, until the earlier of 18 months from the date of termination or the date upon which Executive becomes eligible to receive health benefits through another employer; (F) accelerated vesting of any then-outstanding unvested equity awards; and (G) no other severance or benefits of any kind, unless required by law or pursuant to any written Company plans or policies, as then in effect.

(ii) If, within twenty-four (24) months after a Change of Control as defined below, Executive is terminated by the Company without Cause (excluding any termination due to death or Disability) or Executive resigns for Good Reason (and complies with the requirements set forth in Section 7(a)), then, subject to the limitations of Sections 8(b) and 23 below, Executive shall be entitled to receive, in lieu of the benefits set forth in Section 8(a)(i): (A) Executive's Base Salary through the effective date of the termination or resignation; (B) continuing severance pay at a rate equal to 100% of Executive's Base Salary, plus Executive's Target Bonus, as then in effect (less applicable withholding), for a period of 18 months from the date of such termination, to be paid in a single lump sum in accordance with the Company's normal payroll practices within sixty (60) days following the date of termination; (C) reimbursement of all business expenses for which Executive is entitled to be reimbursed pursuant to Section 5 above, but for which Executive has not yet been reimbursed as of the date of the termination or resignation; (D) an amount equal to 100% of Executive's Target Bonus for the calendar year in which the termination or resignation occurs in advance of such Target Bonus being earned; (E) provided that Executive elects COBRA coverage, the Company shall reimburse Executive for a portion of each COBRA premium payment equal to the portion the Company contributed to such health insurance premium cost as of the date Executive's employment terminates, until the earlier of 18 months from the date employment terminates or the date upon which Executive becomes eligible to receive health benefits through another employer; (F) the full acceleration of vesting of any then-outstanding unvested equity awards as of the date Executive's employment with the Company terminated; and (G) no other severance or benefits of any kind, unless required by law or pursuant to any written Company plans or policies, as then in effect. For purposes of this Agreement, a "Change of Control" is defined as a Reorganization Event, as defined in the X4 Pharmaceuticals, Inc. Amended and Restated 2017 Equity Incentive Plan (the "2017 Plan"), as it may be further amended from time to time, or any successor plan thereto.

(b) Conditions Precedent. Any severance payments contemplated by Sections 8(a)(i) and 8(a)(ii) above are conditional on Executive: (i) continuing to comply with the terms of this Agreement and the Confidential Information Agreement (as defined below); and (ii) signing and not revoking a separation agreement and release of known and unknown claims in the form provided by the Company (including nondisparagement and no cooperation provisions) (the "Release") and provided that such Release becomes effective and irrevocable no later than sixty (60) days following the termination date or such earlier date required by the release (such deadline, the "Release Deadline"). If the Release does not become effective by the Release Deadline, Executive will forfeit any rights to severance or benefits under Sections 8(a)(i) or 8(a)(ii) or elsewhere

in this Agreement. Any severance payments or other benefits under this Agreement will be paid on, or, in the case of installments, will not commence until, the sixtieth (60th) day following Executive's separation from service, or, if later, such time as required by Section 23(b). Except as required by Section 23(b), any installment payments that would have been made to Employee during the sixty (60) day period immediately following Executive's separation from service but for the preceding sentence will be paid to Executive on the sixtieth (60th) day following Executive's separation from service and the remaining payments will be made as provided in this Agreement, unless subject to the 6-month payment delay described herein. Notwithstanding the foregoing, this Section 8(b) shall not limit Executive's ability to obtain expense reimbursements under Section 5 or any other compensation or benefits otherwise required by law or in accordance with written Company plans or policies, as then in effect.

8. Definitions.

(a) Cause. For purposes of this Agreement, "Cause" shall mean: (i) Executive's continued failure to substantially perform the material duties and obligations under this Agreement (for reasons other than death or Disability), which failure, if curable within the reasonable discretion of the Company, is not cured to the reasonable satisfaction of the Company within thirty (30) days after receipt of written notice from the Company of such failure; (ii) Executive's failure or refusal to comply with the policies, standards and regulations established by the Company from time to time which failure, if curable in the reasonable discretion of the Company, is not cured to the reasonable satisfaction of the Company within thirty (30) days after receipt of written notice of such failure from the Company; (iii) any act of willful misconduct, fraud, embezzlement, misrepresentation, or other unlawful act committed by Executive that benefits Executive at the expense of the Company; (iv) the Executive's violation of a federal or state law or regulation applicable to the Company's business; (v) the Executive's violation of, or a plea of nolo contendere or guilty to, a felony under the laws of the United States or any state; (vi) the Executive's material breach of the terms of this Agreement or the Confidential Information Agreement (defined below); or (vii) the Company's severe financial distress, whereby the Company is in the process of winding down its business and Executive's employment is terminated in connection with such winding down; provided that prior to such termination, a determination is made by the Company's Board of Directors that none of the Company's Officers (as that term is defined in Section 16 of the Securities Exchange Act of 1934) will receive severance payments in connection with the winding down of the Company's business.

(b) Disability. For purposes of this Agreement, "Disability" means that Executive, at the time notice is given, has been unable to substantially perform Executive's duties under this Agreement for not less than one-hundred and twenty (120) work days within a twelve (12) consecutive month period as a result of Executive's incapacity due to a physical or mental condition and, if reasonable accommodation is required by law, after any reasonable accommodation.

(c) Good Reason. For purposes of this Agreement, "Good Reason" means Executive's written notice of Executive's intent to resign for Good Reason with a reasonable description of the grounds therefor within 10 days after the occurrence of one or more of the following without Executive's consent, and subsequent resignation within 30 days following the expiration of any Company cure period (discussed below): (i) a material reduction of Executive's duties, position or responsibilities; (ii) a material reduction in Executive's Base Salary, which the parties agree is a reduction of at least 10% of Executive's base salary (unless pursuant to a salary reduction program applicable generally to the Company's similarly situated employees); (iii) relocation of Executive's principal place of employment to a place that increases Executive's one-way commute by more than sixty (60) miles as compared to Executive's then-current principal place of employment immediately prior to such relocation; (iv) a material breach of this Agreement by the Company; or (v) any directive given to

Executive by the Company that the Company knows is in violation of a law, regulation, or material Company policy and the Company requires Executive to implement as a condition of his continued employment. Executive will not resign for Good Reason without first providing the Company with written notice of the acts or omissions constituting the grounds for “Good Reason” within 30 days of the initial existence of the grounds for “Good Reason” and a reasonable cure period of not less than 30 days following the date of such notice if such act or omission is capable of cure.

9. Company Matters.

(a) Proprietary Information and Inventions. In connection with Executive’s employment with the Company, Executive will receive and have access to Company confidential information and trade secrets. Executive hereby to execute a Confidentiality, Non-Solicitation, and Intellectual Property Agreement (the “Confidential Information Agreement”) which contains restrictive covenants and prohibits unauthorized use or disclosure of the Company’s confidential information and trade secrets, among other obligations.

(b) Resignation on Termination. On termination of Executive’s employment, regardless of the reason for such termination, Executive shall immediately (and with contemporaneous effect) resign any directorships, offices or other positions that Executive may hold in the Company or any affiliate, unless otherwise agreed in writing by the Parties.

(c) Notification of New Employer. In the event that Executive leaves the employ of the Company, Executive grants consent to notification by the Company to Executive’s new employer about Executive’s rights and obligations under this Agreement and the Confidential Information Agreement. Company agrees not to notify Executive’s new employer unless it has a reasonable belief that Executive has violated or intends to violate a provision of the Confidential Information Agreement.

10. Arbitration. To ensure the timely and economical resolution of disputes that may arise in connection with Executive’s employment with the Company, Executive and the Company agree that any and all disputes, claims, or causes of action arising from or relating to the enforcement, breach, performance, negotiation, execution, or interpretation of this Agreement, Confidential Information Agreement, or Executive’s employment, or the termination of Executive’s employment will be resolved pursuant to the Federal Arbitration Act, 9 U.S.C. §1-16, and to the fullest extent permitted by law, by final, binding and confidential arbitration by a single arbitrator conducted in Boston, Massachusetts by Judicial Arbitration and Mediation Services Inc. (“JAMS”) under the then applicable JAMS rules (at the following web address: <https://www.jamsadr.com/rules-employment-arbitration/>); provided, however, this arbitration provision shall not apply to sexual harassment claims to the extent prohibited by applicable law. A hard copy of the rules will be provided to Executive upon request. **By agreeing to this arbitration procedure, both Executive and the Company waive the right to resolve any such dispute through a trial by jury or judge or administrative proceeding.** In addition, all claims, disputes, or causes of action under this section, whether by Executive or the Company, must be brought in an individual capacity, and shall not be brought as a plaintiff (or claimant) or class member in any purported class or representative proceeding, nor joined or consolidated with the claims of any other person or entity. The Arbitrator may not consolidate the claims of more than one person or entity, and may not preside over any form of representative or class proceeding. To the extent that the preceding sentences regarding class claims or proceedings are found to violate applicable law or are otherwise found unenforceable, any claim(s) alleged or brought on behalf of a class shall proceed in a court of law rather than by arbitration. The Company acknowledges that Executive will have the right to be represented by legal counsel at any arbitration proceeding. Questions of whether a claim is subject to arbitration under this Agreement shall be decided by the arbitrator. Likewise, procedural questions which grow out of the dispute and bear on the final disposition are also matters

for the arbitrator. The arbitrator shall: (a) have the authority to compel adequate discovery for the resolution of the dispute and to award such relief as would otherwise be permitted by law; (b) issue a written arbitration decision, to include the arbitrator's essential findings and conclusions and a statement of the award; and (c) be authorized to award any or all remedies that Executive or the Company would be entitled to seek in a court of law. Executive and the Company shall equally share all JAMS' arbitration fees. Except as modified in the Confidential Information Agreement, each party is responsible for its own attorneys' fees. Nothing in this Agreement is intended to prevent either Executive or the Company from obtaining injunctive relief in court to prevent irreparable harm pending the conclusion of any such arbitration. Any awards or orders in such arbitrations may be entered and enforced as judgments in the federal and state courts of any competent jurisdiction. To the extent applicable law prohibits mandatory arbitration of sexual harassment claims, in the event you intend to bring multiple claims, including a sexual harassment claim, the sexual harassment may be publicly filed with a court, while any other claims will remain subject to mandatory arbitration.

11. Assignment. This Agreement will be binding upon and inure to the benefit of (a) the heirs, executors and legal representatives of Executive upon Executive's death and (b) any successor of the Company. Any such successor of the Company will be deemed substituted for the Company under the terms of this Agreement for all purposes. For this purpose, "successor" means any person, firm, corporation or other business entity which at any time, whether by purchase, merger or otherwise, directly or indirectly acquires all or substantially all of the assets or business of the Company. None of the rights of Executive to receive any form of compensation payable pursuant to this Agreement may be assigned or transferred except by will or the laws of descent and distribution. Any other attempted assignment, transfer, conveyance or other disposition of Executive's right to compensation or other benefits will be null and void.

12. Notices. All notices, requests, demands and other communications called for under this Agreement shall be in writing and shall be delivered via e-mail, personally by hand or by courier, mailed by United States first-class mail, postage prepaid, or sent by facsimile directed to the Party to be notified at the address or facsimile number indicated for such Party on the signature page to this Agreement, or at such other address or facsimile number as such Party may designate by ten (10) days' advance written notice to the other Parties hereto. All such notices and other communications shall be deemed given upon personal delivery, three (3) days after the date of mailing, or upon confirmation of facsimile transfer or e-mail. Notices sent via e-mail under this Section shall be sent to either the e-mail address in this Agreement, or for e-mails sent by the Company to Executive, to the last e-mail address on file with the Company.

13. Severability. In the event that any provision hereof becomes or is declared by a court of competent jurisdiction to be illegal, unenforceable or void, this Agreement will continue in full force and effect without said provision.

14. Integration. This Agreement, together with the Plan and related agreements, and the Confidential Information Agreement represents the entire agreement and understanding between the parties as to the subject matter herein and supersedes all prior or contemporaneous agreements whether written or oral. No waiver, alteration, or modification of any of the provisions of this Agreement will be binding unless in writing and signed by duly authorized representatives of the parties hereto.

15. Tax Withholding. All payments made pursuant to this Agreement will be subject to withholding of applicable taxes.

16. Waiver. No Party shall be deemed to have waived any right, power or privilege under this Agreement or any provisions hereof unless such waiver shall have been duly executed in writing and acknowledged by the Party to be charged with such waiver. The failure of any Party at any time to insist on

performance of any of the provisions of this Agreement shall in no way be construed to be a waiver of such provisions, nor in any way to affect the validity of this Agreement or any part hereof. No waiver of any breach of this Agreement shall be held to be a waiver of any other subsequent breach.

17. Governing Law. This Agreement will be governed by the laws of the State of Washington (with the exception of its conflict of laws provisions).

18. Acknowledgment. Executive acknowledges that Executive has had the opportunity to discuss this matter with and obtain advice from Executive's legal counsel, has had sufficient time to, and has carefully read and fully understands all the provisions of this Agreement, and is knowingly and voluntarily entering into this Agreement.

19. Counterparts. This Agreement may be executed in multiple counterparts, each of which shall be deemed to be an original, and all such counterparts shall constitute but one instrument.

20. Effect of Headings. The section and subsection headings contained herein are for convenience only and shall not affect the construction hereof.

21. Construction of Agreement. This Agreement has been negotiated by the respective Parties, and the language shall not be construed for or against either Party.

22. Section 409A.

(a) Notwithstanding anything to the contrary in this Agreement, no severance pay or benefits to be paid or provided to Executive, if any, pursuant to this Agreement, when considered together with any other severance payments or separation benefits that are considered deferred compensation under Section 409A (together, the "Deferred Compensation Separation Benefits") will be paid or otherwise provided until Executive has a "separation from service" within the meaning of Section 409A.

(b) Notwithstanding anything to the contrary in this Agreement, if Executive is a "specified employee" within the meaning of Section 409A at the time of Executive's termination (other than due to death), then the Deferred Compensation Separation Benefits that are payable within the first six (6) months following Executive's separation from service, will become payable on the first payroll date that occurs on or after the date six (6) months and one (1) day following the date of Executive's separation from service. All subsequent Deferred Compensation Separation Benefits, if any, will be payable in accordance with the payment schedule applicable to each payment or benefit. Notwithstanding anything herein to the contrary, if Executive dies following Executive's separation from service, but prior to the six (6) month anniversary of the separation from service, then any payments delayed in accordance with this paragraph will be payable in a lump sum as soon as administratively practicable after the date of Executive's death and all other Deferred Compensation Separation Benefits will be payable in accordance with the payment schedule applicable to each payment or benefit. Each payment and benefit payable under this Agreement is intended to constitute separate payments for purposes of Section 1.409A-2(b)(2) of the Treasury Regulations.

(c) Any amount paid under this Agreement that satisfies the requirements of the "short-term deferral" rule set forth in Section 1.409A-1(b)(4) of the Treasury Regulations will not constitute Deferred Compensation Separation Benefits for purposes of clause (a) above.

(d) Any amount paid under this Agreement that qualifies as a payment made as a result of an involuntary separation from service pursuant to Section 1.409A-1(b)(9)(iii) of the Treasury Regulations that does not exceed the Section 409A Limit will not constitute Deferred Compensation Separation Benefits for purposes of clause (a) above. For purposes of this Agreement, "Section 409A Limit" will mean the lesser of two (2) times:

(i) Executive's annualized compensation based upon the annual rate of pay paid to Executive during the Executive's taxable year preceding Executive's taxable year of Executive's termination of employment as

determined under Treasury Regulation Section 1.409A-1(b)(9)(iii)(A)(1) and any Internal Revenue Service guidance issued with respect thereto; or (ii) the maximum amount that may be taken into account under a qualified plan pursuant to Section 401(a)(17) of the Internal Revenue Code for the year in which Executive's employment is terminated.

(e) The foregoing provisions are intended to comply with the requirements of Section 409A so that none of the severance payments and benefits to be provided hereunder will be subject to the additional tax imposed under Section 409A, and any ambiguities herein will be interpreted to so comply. The Company and Executive agree to work together in good faith to consider amendments to this Agreement and to take such reasonable actions which are necessary, appropriate or desirable to avoid imposition of any additional tax or income recognition prior to actual payment to Executive under Section 409A.

**IN WITNESS WHEREOF**, each of the Parties has executed this Agreement as of the day and year first above written.

**“COMPANY”**

**X4 PHARMACEUTICALS, INC.**

By: /s/ Natasha Thoren  
Natasha Thoren  
Chief Legal Officer

Address  
X4 Pharmaceuticals, Inc  
61 North Beacon Street, 4<sup>th</sup> Floor  
Boston, MA 02134  
Attention: Chief Legal Officer  
Email:

**“EXECUTIVE”**

By: /s/ Adam Craig  
Executive Name: ADAM CRAIG  
Address:  
Email:

Enclosure  
Confidentiality, Non-Solicitation, and Intellectual Property Agreement

**X4 PHARMACEUTICALS, INC. EXECUTIVE EMPLOYMENT  
AGREEMENT SIGNATURE PAGE**



Exhibit 10.3

EXECUTIVE EMPLOYMENT AGREEMENT

THIS EXECUTIVE EMPLOYMENT AGREEMENT (this “Agreement”) is entered into as of August 11, 2025 (the “Effective Date”), by and between X4 Pharmaceuticals, Inc. (the “Company”), and David Kirske, (“Executive”) (collectively referred to as the “Parties” or individually referred to as a “Party”).

R E C I T A L S

WHEREAS, the Company desires to employ Executive as its Chief Financial Officer, and to enter into an agreement embodying the terms of such employment;

WHEREAS, Executive desires to accept such employment and enter into such an agreement.

A G R E E M E N T

NOW, THEREFORE, in consideration of the premises and mutual covenants herein and for other good and valuable consideration, the Parties agree as follows:

1. Duties and Scope of Employment.

(a) Positions and Duties. As of August 12, 2025 (the “Start Date”), Executive will serve as Chief Financial Officer of the Company. Executive will render such business and professional services in the performance of Executive’s duties, consistent with Executive’s position within the Company, as shall reasonably be assigned to Executive by the Company’s Chief Executive Officer or Executive serving an equivalent role. The period of Executive’s at-will employment under the terms of this Agreement is referred to herein as the “Employment Term.”

(b) Obligations. During the Employment Term, Executive will perform Executive’s duties faithfully and to the best of Executive’s ability and will devote Executive’s full business efforts and time to the Company. For the duration of the Employment Term, Executive agrees not to actively engage in any other employment, occupation or consulting activity, for any direct or indirect remuneration, that creates a conflict of interest or substantially interferes with Executive’s duties to the Company.

(c) No Conflicts. As a condition of Executive’s employment, Executive certifies to the Company that: (a) Executive is free to enter into and fully perform the duties of Executive’s position; (b) Executive is not subject to any employment, confidentiality, non-competition or other agreement that would restrict Executive’s performance for the Company; (c) Executive’s signing this Agreement does not violate any order, judgment or injunction applicable to Executive, or conflict with or breach any agreement to which Executive is a party or by which Executive is bound; and (d) all facts Executive has presented to the Company are accurate and true, including, but not limited to, all oral and written statements Executive has made (including those pertaining to Executive’s education, training, qualifications, licensing and prior work experience) in any job application, resume, *c.v.*, interview or discussion with the Company.

2. At-Will Employment. Subject to Sections 6, 7, and 8 below, the parties agree that Executive's employment with the Company will be "at-will" employment and may be terminated at any time with or without cause or notice, for any reason or no reason. Executive understands and agrees that neither Executive's job performance nor promotions, commendations, bonuses or the like from the Company give rise to or in any way serve as the basis for modification, amendment, or extension, by implication or otherwise, of Executive's employment with the Company.

3. Compensation.

(a) Base Salary. During the Employment Term, the Company will initially pay Executive as compensation for Executive's services a base salary at a rate of \$495,000 per year (the "Base Salary"). The Base Salary will be paid in regular installments in accordance with the Company's normal payroll practices (subject to required withholding). Any increase in Base Salary (together with the then existing Base Salary) shall serve as the "Base Salary" for future employment under this Agreement. The first and last payment will be adjusted, if necessary, to reflect a commencement or termination date other than the first or last working day of a pay period.

(b) Annual Bonus. Executive will also be eligible to earn an annual discretionary bonus with a target amount equal to 50% of the Base Salary ("Target Bonus"). The amount of the Target Bonus, if any, will be determined in the sole discretion of the Company and based, in part, on Executive's performance and the performance of the Company during the calendar year. Any Target Bonus for the calendar year 2025 shall be pro-rated by the percentage of the year that the Executive was employed by the Company. The Company will pay Executive the Target Bonus, if any, by no later than March 15th of the following calendar year. The Target Bonus is not earned until paid and, except as set forth in Section 8(a) of this Agreement, no pro-rated amount will be paid if Executive's employment terminates for any reason prior to the payment date. In addition to the annual bonus opportunity set forth above, Executive will be eligible to receive a deferred cash bonus in the amount of \$120,000 (the "Deferred Bonus") so long as Executive remains employed with the Company through the earlier of (i) the six month anniversary of the Effective Date and (ii) the successful consummation of an equity financing transaction by the Company, as determined by the board of directors of the Company (the "Board"), and the appointment of a successor chief financial officer by the Board, which Deferred Bonus shall be paid within thirty (30) days following Executive's termination of employment for any reason other than a termination by the Company for Cause (as defined below). For the avoidance of doubt, if Executive's employment terminates prior to the first anniversary of the Effective Date or is terminated by the Company for Cause at any time, the Deferred Bonus will be forfeited.

(c) Equity Awards. Executive will be eligible to receive awards of stock options, restricted stock or other equity awards pursuant to any plans or arrangements the Company may have in effect from time to time. The Board or a committee of the Board shall determine in its discretion whether Executive shall be granted any such equity awards and the terms of any such award in accordance with the terms of any applicable plan or arrangement that may be in effect from time to time.

(d) Employee Benefits. During the Employment Term, Executive may take advantage of various benefits offered by the Company, such as short-term disability, long-term disability and the Company's 401(k) plan. Executive will also be entitled to twenty (20) days of paid time off per year, as well as two (2) personal days and twelve (12) paid holidays, exclusive of any sick days Executive may need. These benefits may be modified or changed from time to time at the sole discretion of the Company. The details of the Company's full benefit offerings can be found in its Employee Handbook.

4. Business Expenses. During the Employment Term, the Company will reimburse Executive for reasonable business travel, entertainment or other business expenses incurred by Executive in the furtherance of or in connection with the performance of Executive's duties hereunder, in accordance with the Company's expense reimbursement policy as in effect from time to time. All reimbursements provided under this Agreement will be made or provided in accordance with the requirements of Section 409A of the Internal Revenue Code ("Section 409A") and the rules and regulations thereunder, including, where applicable, the requirement that (i) any reimbursement is for expenses incurred during Executive's lifetime (or during a shorter period of time specified in this Agreement); (ii) the amount of expenses eligible for reimbursement during a calendar year may not affect the expenses eligible for reimbursement in any other calendar year; (iii) the reimbursement of an eligible expense shall be made no later than the last day of the calendar year following the year in which the expense is incurred; and (iv) the right to reimbursement or in kind benefits is not subject to liquidation or exchange for another benefit.

5. Termination on Death or Disability.

(a) Effectiveness. Executive's employment will terminate automatically upon Executive's Death or, upon fourteen (14) days prior written notice from the Company, in the event of Disability.

(b) Effect of Termination. Upon any termination for death or Disability, Executive shall be entitled to: (i) Executive's Base Salary through the effective date of termination; (ii) the right to continue health care benefits under Title X of the Consolidated Omnibus Budget Reconciliation Act of 1985, as amended ("COBRA"), if any, at Executive's cost, to the extent required and available by law; (iii) reimbursement of expenses for which Executive is entitled to be reimbursed pursuant to Section 5 above, but for which Executive has not yet been reimbursed; and (iv) no other severance or benefits of any kind, unless required by law or pursuant to any other written Company plans or policies, as then in effect.

6. Involuntary Termination for Cause; Resignation without Good Reason.

(a) Effectiveness. Notwithstanding any other provision of this Agreement, the Company may terminate Executive's employment at any time for Cause, which shall be effective on the date the Company gives notice to Employee of such termination in accordance with this Agreement unless otherwise agreed by the Parties. Executive may resign from Executive's employment with the Company without Good Reason, provided that Executive provide at least four (4) weeks prior written notice (the "Notice Period"). Such resignation shall be effective upon the expiration of the Notice Period. In the event that the Company accelerates the effective date of a resignation without Good Reason, such acceleration shall not be construed as a termination of Executive's employment by the Company or deemed Good Reason for such resignation.

(b) Effect of Termination. In the case of the Company's termination of Executive's employment for Cause, or Executive's resignation without Good Reason, Executive shall be entitled to receive: (i) Base Salary through the effective date of the termination or resignation, as applicable; (ii) reimbursement of all business expenses for which Executive is entitled to be reimbursed pursuant to Section 5 above, but for which Executive has not yet been reimbursed; (iii) the right to continue health care benefits under COBRA, at Executive's cost, to the extent required and available by law; and (iv) no other severance or benefits of any kind, unless required by law or pursuant to any other written Company plans or policies, as then in effect.

7. Involuntary Termination Without Cause; Resignation for Good Reason.

(a) Effect of Termination. The Company shall be entitled to terminate Executive without Cause and Executive may resign for Good Reason, subject to the following:

(i) If Executive is terminated by the Company involuntarily without Cause (excluding any termination due to death or Disability) or Executive resigns for Good Reason, then, subject to the limitations of Sections 8(b) and 23 below, Executive shall be entitled to receive: (A) Executive's Base Salary through the effective date of the termination or resignation; (B) continuing severance pay at a rate equal to one hundred percent (100%) of Executive's Base Salary, plus the pro-rata portion of the Target Bonus for the calendar year in which the termination occurs based on the period worked by Executive during such calendar year prior to termination, as then in effect (less applicable withholding), for a period of 12 months from the date of such termination, to be paid in a single lump sum in accordance with the Company's normal payroll practices within sixty (60) days following the date of termination; (C) reimbursement of all business expenses for which Executive is entitled to be reimbursed pursuant to Section 5 above, but for which Executive has not yet been reimbursed; (D) the pro-rata portion of the Target Bonus for the calendar year in which the termination occurs based on the period worked by Executive during such calendar year prior to termination; (E) provided that Executive elects COBRA coverage, the Company shall reimburse Executive for a portion of each COBRA premium payment equal to the portion the Company contributed to such health insurance premium cost as of the date Executive's employment terminates, until the earlier of 12 months from the date of termination or the date upon which Executive becomes eligible to receive health benefits through another employer; (F) accelerated vesting of any then-outstanding unvested equity awards; and (G) no other severance or benefits of any kind, unless required by law or pursuant to any written Company plans or policies, as then in effect.

(ii) If, within twenty-four (24) months after a Change of Control as defined below, Executive is terminated by the Company without Cause (excluding any termination due to death or Disability) or Executive resigns for Good Reason (and complies with the requirements set forth in Section 7(a)), then, subject to the limitations of Sections 8(b) and 23 below, Executive shall be entitled to receive, in lieu of the benefits set forth in Section 8(a)(i): (A) Executive's Base Salary through the effective date of the termination or resignation; (B) continuing severance pay at a rate equal to 100% of Executive's Base Salary, plus Executive's Target Bonus, as then in effect (less applicable withholding), for a period of 12 months from the date of such termination, to be paid in a single lump sum in accordance with the Company's normal payroll practices within sixty (60) days following the date of termination; (C) reimbursement of all business expenses for which Executive is entitled to be reimbursed pursuant to Section 5 above, but for which Executive has not yet been reimbursed as of the date of the termination or resignation; (D) an amount equal to 100% of Executive's Target Bonus for the calendar year in which the termination or resignation occurs in advance of such Target Bonus being earned; (E) provided that Executive elects COBRA coverage, the Company shall reimburse Executive for a portion of each COBRA premium payment equal to the portion the Company contributed to such health insurance premium cost as of the date Executive's employment terminates, until the earlier of 12 months from the date employment terminates or the date upon which Executive becomes eligible to receive health benefits through another employer; (F) the full acceleration of vesting of any then-outstanding unvested equity awards as of the date Executive's employment with the Company terminated; and (G) no other severance or benefits of any kind, unless required by law or pursuant to any written Company plans or policies, as then in effect. For purposes of this Agreement, a "Change of Control" is defined as a Reorganization Event, as defined in the X4 Pharmaceuticals, Inc. Amended and Restated 2017 Equity Incentive Plan (the "2017 Plan"), as it may be further amended from time to time, or any successor plan thereto.

(b) Conditions Precedent. Any severance payments contemplated by Sections 8(a)(i) and 8(a)(ii) above are conditional on Executive: (i) continuing to comply with the terms of this Agreement and the Confidential Information Agreement (as defined below); and (ii) signing and not revoking a separation agreement and release of known and unknown claims in the form provided by the Company (including

nondisparagement and no cooperation provisions) (the “Release”) and provided that such Release becomes effective and irrevocable no later than sixty (60) days following the termination date or such earlier date required by the release (such deadline, the “Release Deadline”). If the Release does not become effective by the Release Deadline, Executive will forfeit any rights to severance or benefits under Sections 8(a)(i) or 8(a)(ii) or elsewhere in this Agreement. Any severance payments or other benefits under this Agreement will be paid on, or, in the case of installments, will not commence until, the sixtieth (60th) day following Executive’s separation from service, or, if later, such time as required by Section 23(b). Except as required by Section 23(b), any installment payments that would have been made to Employee during the sixty (60) day period immediately following Executive’s separation from service but for the preceding sentence will be paid to Executive on the sixtieth (60th) day following Executive’s separation from service and the remaining payments will be made as provided in this Agreement, unless subject to the 6-month payment delay described herein. Notwithstanding the foregoing, this Section 8(b) shall not limit Executive’s ability to obtain expense reimbursements under Section 5 or any other compensation or benefits otherwise required by law or in accordance with written Company plans or policies, as then in effect.

#### 8. Definitions.

(a) Cause. For purposes of this Agreement, “Cause” shall mean: (i) Executive’s continued failure to substantially perform the material duties and obligations under this Agreement (for reasons other than death or Disability), which failure, if curable within the reasonable discretion of the Company, is not cured to the reasonable satisfaction of the Company within thirty (30) days after receipt of written notice from the Company of such failure; (ii) Executive’s failure or refusal to comply with the policies, standards and regulations established by the Company from time to time which failure, if curable in the reasonable discretion of the Company, is not cured to the reasonable satisfaction of the Company within thirty (30) days after receipt of written notice of such failure from the Company; (iii) any act of willful misconduct, fraud, embezzlement, misrepresentation, or other unlawful act committed by Executive that benefits Executive at the expense of the Company; (iv) the Executive’s violation of a federal or state law or regulation applicable to the Company’s business; (v) the Executive’s violation of, or a plea of nolo contendere or guilty to, a felony under the laws of the United States or any state; (vi) the Executive’s material breach of the terms of this Agreement or the Confidential Information Agreement (defined below); or (vii) the Company’s severe financial distress, whereby the Company is in the process of winding down its business and Executive’s employment is terminated in connection with such winding down; provided that prior to such termination, a determination is made by the Company’s Board of Directors that none of the Company’s Officers (as that term is defined in Section 16 of the Securities Exchange Act of 1934) will receive severance payments in connection with the winding down of the Company’s business.

(b) Disability. For purposes of this Agreement, “Disability” means that Executive, at the time notice is given, has been unable to substantially perform Executive’s duties under this Agreement for not less than one-hundred and twenty (120) work days within a twelve (12) consecutive month period as a result of Executive’s incapacity due to a physical or mental condition and, if reasonable accommodation is required by law, after any reasonable accommodation.

(c) Good Reason. For purposes of this Agreement, “Good Reason” means Executive’s written notice of Executive’s intent to resign for Good Reason with a reasonable description of the grounds therefor within 10 days after the occurrence of one or more of the following without Executive’s consent, and subsequent resignation within 30 days following the expiration of any Company cure period (discussed below): (i) a material reduction of Executive’s duties, position or responsibilities; (ii) a material reduction in Executive’s Base Salary, which the parties agree is a reduction of at least 10% of Executive’s base salary (unless pursuant to

a salary reduction program applicable generally to the Company's similarly situated employees); (iii) relocation of Executive's principal place of employment to a place that increases Executive's one-way commute by more than sixty (60) miles as compared to Executive's then-current principal place of employment immediately prior to such relocation; (iv) a material breach of this Agreement by the Company; or (v) any directive given to Executive by the Company that the Company knows is in violation of a law, regulation, or material Company policy and the Company requires Executive to implement as a condition of his continued employment. Executive will not resign for Good Reason without first providing the Company with written notice of the acts or omissions constituting the grounds for "Good Reason" within 30 days of the initial existence of the grounds for "Good Reason" and a reasonable cure period of not less than 30 days following the date of such notice if such act or omission is capable of cure.

9. Company Matters.

(a) Proprietary Information and Inventions. In connection with Executive's employment with the Company, Executive will receive and have access to Company confidential information and trade secrets. Executive hereby to execute a Confidentiality, Non-Solicitation, and Intellectual Property Agreement (the "Confidential Information Agreement") which contains restrictive covenants and prohibits unauthorized use or disclosure of the Company's confidential information and trade secrets, among other obligations.

(b) Resignation on Termination. On termination of Executive's employment, regardless of the reason for such termination, Executive shall immediately (and with contemporaneous effect) resign any directorships, offices or other positions that Executive may hold in the Company or any affiliate, unless otherwise agreed in writing by the Parties.

(c) Notification of New Employer. In the event that Executive leaves the employ of the Company, Executive grants consent to notification by the Company to Executive's new employer about Executive's rights and obligations under this Agreement and the Confidential Information Agreement. Company agrees not to notify Executive's new employer unless it has a reasonable belief that Executive has violated or intends to violate a provision of the Confidential Information Agreement.

10. Arbitration. To ensure the timely and economical resolution of disputes that may arise in connection with Executive's employment with the Company, Executive and the Company agree that any and all disputes, claims, or causes of action arising from or relating to the enforcement, breach, performance, negotiation, execution, or interpretation of this Agreement, Confidential Information Agreement, or Executive's employment, or the termination of Executive's employment will be resolved pursuant to the Federal Arbitration Act, 9 U.S.C. §1-16, and to the fullest extent permitted by law, by final, binding and confidential arbitration by a single arbitrator conducted in Boston, Massachusetts by Judicial Arbitration and Mediation Services Inc. ("JAMS") under the then applicable JAMS rules (at the following web address: <https://www.jamsadr.com/rules-employment-arbitration/>); provided, however, this arbitration provision shall not apply to sexual harassment claims to the extent prohibited by applicable law. A hard copy of the rules will be provided to Executive upon request. **By agreeing to this arbitration procedure, both Executive and the Company waive the right to resolve any such dispute through a trial by jury or judge or administrative proceeding.** In addition, all claims, disputes, or causes of action under this section, whether by Executive or the Company, must be brought in an individual capacity, and shall not be brought as a plaintiff (or claimant) or class member in any purported class or representative proceeding, nor joined or consolidated with the claims of any other person or entity. The Arbitrator may not consolidate the claims of more than one person or entity, and may not preside over any form of representative or class proceeding. To the extent that the preceding sentences regarding class claims or proceedings are found to violate applicable law or are otherwise found unenforceable, any claim(s) alleged or

brought on behalf of a class shall proceed in a court of law rather than by arbitration. The Company acknowledges that Executive will have the right to be represented by legal counsel at any arbitration proceeding. Questions of whether a claim is subject to arbitration under this Agreement shall be decided by the arbitrator. Likewise, procedural questions which grow out of the dispute and bear on the final disposition are also matters for the arbitrator. The arbitrator shall: (a) have the authority to compel adequate discovery for the resolution of the dispute and to award such relief as would otherwise be permitted by law; (b) issue a written arbitration decision, to include the arbitrator's essential findings and conclusions and a statement of the award; and (c) be authorized to award any or all remedies that Executive or the Company would be entitled to seek in a court of law. Executive and the Company shall equally share all JAMS' arbitration fees. Except as modified in the Confidential Information Agreement, each party is responsible for its own attorneys' fees. Nothing in this Agreement is intended to prevent either Executive or the Company from obtaining injunctive relief in court to prevent irreparable harm pending the conclusion of any such arbitration. Any awards or orders in such arbitrations may be entered and enforced as judgments in the federal and state courts of any competent jurisdiction. To the extent applicable law prohibits mandatory arbitration of sexual harassment claims, in the event you intend to bring multiple claims, including a sexual harassment claim, the sexual harassment may be publicly filed with a court, while any other claims will remain subject to mandatory arbitration.

11. Assignment. This Agreement will be binding upon and inure to the benefit of (a) the heirs, executors and legal representatives of Executive upon Executive's death and (b) any successor of the Company. Any such successor of the Company will be deemed substituted for the Company under the terms of this Agreement for all purposes. For this purpose, "successor" means any person, firm, corporation or other business entity which at any time, whether by purchase, merger or otherwise, directly or indirectly acquires all or substantially all of the assets or business of the Company. None of the rights of Executive to receive any form of compensation payable pursuant to this Agreement may be assigned or transferred except by will or the laws of descent and distribution. Any other attempted assignment, transfer, conveyance or other disposition of Executive's right to compensation or other benefits will be null and void.

12. Notices. All notices, requests, demands and other communications called for under this Agreement shall be in writing and shall be delivered via e-mail, personally by hand or by courier, mailed by United States first-class mail, postage prepaid, or sent by facsimile directed to the Party to be notified at the address or facsimile number indicated for such Party on the signature page to this Agreement, or at such other address or facsimile number as such Party may designate by ten (10) days' advance written notice to the other Parties hereto. All such notices and other communications shall be deemed given upon personal delivery, three (3) days after the date of mailing, or upon confirmation of facsimile transfer or e-mail. Notices sent via e-mail under this Section shall be sent to either the e-mail address in this Agreement, or for e-mails sent by the Company to Executive, to the last e-mail address on file with the Company.

13. Severability. In the event that any provision hereof becomes or is declared by a court of competent jurisdiction to be illegal, unenforceable or void, this Agreement will continue in full force and effect without said provision.

14. Integration. This Agreement, together with the Plan and related agreements, and the Confidential Information Agreement represents the entire agreement and understanding between the parties as to the subject matter herein and supersedes all prior or contemporaneous agreements whether written or oral. No waiver, alteration, or modification of any of the provisions of this Agreement will be binding unless in writing and signed by duly authorized representatives of the parties hereto.

15. Tax Withholding. All payments made pursuant to this Agreement will be subject to withholding of applicable taxes.

16. Waiver. No Party shall be deemed to have waived any right, power or privilege under this Agreement or any provisions hereof unless such waiver shall have been duly executed in writing and acknowledged by the Party to be charged with such waiver. The failure of any Party at any time to insist on performance of any of the provisions of this Agreement shall in no way be construed to be a waiver of such provisions, nor in any way to affect the validity of this Agreement or any part hereof. No waiver of any breach of this Agreement shall be held to be a waiver of any other subsequent breach.

17. Governing Law. This Agreement will be governed by the laws of the State of Washington (with the exception of its conflict of laws provisions).

18. Acknowledgment. Executive acknowledges that Executive has had the opportunity to discuss this matter with and obtain advice from Executive's legal counsel, has had sufficient time to, and has carefully read and fully understands all the provisions of this Agreement, and is knowingly and voluntarily entering into this Agreement.

19. Counterparts. This Agreement may be executed in multiple counterparts, each of which shall be deemed to be an original, and all such counterparts shall constitute but one instrument.

20. Effect of Headings. The section and subsection headings contained herein are for convenience only and shall not affect the construction hereof.

21. Construction of Agreement. This Agreement has been negotiated by the respective Parties, and the language shall not be construed for or against either Party.

22. Section 409A.

(a) Notwithstanding anything to the contrary in this Agreement, no severance pay or benefits to be paid or provided to Executive, if any, pursuant to this Agreement, when considered together with any other severance payments or separation benefits that are considered deferred compensation under Section 409A (together, the "Deferred Compensation Separation Benefits") will be paid or otherwise provided until Executive has a "separation from service" within the meaning of Section 409A.

(b) Notwithstanding anything to the contrary in this Agreement, if Executive is a "specified employee" within the meaning of Section 409A at the time of Executive's termination (other than due to death), then the Deferred Compensation Separation Benefits that are payable within the first six (6) months following Executive's separation from service, will become payable on the first payroll date that occurs on or after the date six (6) months and one (1) day following the date of Executive's separation from service. All subsequent Deferred Compensation Separation Benefits, if any, will be payable in accordance with the payment schedule applicable to each payment or benefit. Notwithstanding anything herein to the contrary, if Executive dies following Executive's separation from service, but prior to the six (6) month anniversary of the separation from service, then any payments delayed in accordance with this paragraph will be payable in a lump sum as soon as administratively practicable after the date of Executive's death and all other Deferred Compensation Separation Benefits will be payable in accordance with the payment schedule applicable to each payment or benefit. Each payment and benefit payable under this Agreement is intended to constitute separate payments for purposes of Section 1.409A-2(b)(2) of the Treasury Regulations.

(c) Any amount paid under this Agreement that satisfies the requirements of the “short-term deferral” rule set forth in Section 1.409A-1(b)(4) of the Treasury Regulations will not constitute Deferred Compensation Separation Benefits for purposes of clause (a) above.

(d) Any amount paid under this Agreement that qualifies as a payment made as a result of an involuntary separation from service pursuant to Section 1.409A-1(b)(9)(iii) of the Treasury Regulations that does not exceed the Section 409A Limit will not constitute Deferred Compensation Separation Benefits for purposes of clause (a) above. For purposes of this Agreement, “Section 409A Limit” will mean the lesser of two (2) times:

(i) Executive’s annualized compensation based upon the annual rate of pay paid to Executive during the Executive’s taxable year preceding Executive’s taxable year of Executive’s termination of employment as determined under Treasury Regulation Section 1.409A-1(b)(9)(iii)(A)(1) and any Internal Revenue Service guidance issued with respect thereto; or (ii) the maximum amount that may be taken into account under a qualified plan pursuant to Section 401(a)(17) of the Internal Revenue Code for the year in which Executive’s employment is terminated.

(e) The foregoing provisions are intended to comply with the requirements of Section 409A so that none of the severance payments and benefits to be provided hereunder will be subject to the additional tax imposed under Section 409A, and any ambiguities herein will be interpreted to so comply. The Company and Executive agree to work together in good faith to consider amendments to this Agreement and to take such reasonable actions which are necessary, appropriate or desirable to avoid imposition of any additional tax or income recognition prior to actual payment to Executive under Section 409A.

**IN WITNESS WHEREOF**, each of the Parties has executed this Agreement as of the day and year first above written.

**“COMPANY”**

**X4 PHARMACEUTICALS, INC.**

By: /s/ Natasha Thoren  
Natasha Thoren  
Chief Legal Officer

Address:  
X4 Pharmaceuticals, Inc  
61 North Beacon Street, 4<sup>th</sup> Floor  
Boston, MA 02134  
Attention: Chief Legal Officer  
Email:

**“EXECUTIVE”**

By: /s/ David Kirske  
Executive Name: DAVID KIRSKE  
Address:  
Email:

Enclosure  
Confidentiality, Non-Solicitation, and Intellectual Property Agreement

**X4 PHARMACEUTICALS, INC. EXECUTIVE EMPLOYMENT  
AGREEMENT SIGNATURE PAGE**



Exhibit 10.4

## EXECUTIVE EMPLOYMENT AGREEMENT

THIS EXECUTIVE EMPLOYMENT AGREEMENT (this "Agreement") is entered into as of August 11, 2025 (the "Effective Date"), by and between X4 Pharmaceuticals, Inc. (the "Company"), and John Volpone ("Executive") (collectively referred to as the "Parties" or individually referred to as a "Party").

### RECITALS

WHEREAS, the Company desires to employ Executive as its President, and to enter into an agreement embodying the terms of such employment;

WHEREAS, Executive desires to accept such employment and enter into such an agreement.

### AGREEMENT

NOW, THEREFORE, in consideration of the premises and mutual covenants herein and for other good and valuable consideration, the Parties agree as follows:

1. Duties and Scope of Employment.

(a) Positions and Duties. As of August 12, 2025 (the "Start Date"), Executive will serve as President of the Company. Executive will render such business and professional services in the performance of Executive's duties, consistent with Executive's position within the Company, as shall reasonably be assigned to Executive by the Company's Chief Executive Officer or Executive serving an equivalent role. The period of Executive's at-will employment under the terms of this Agreement is referred to herein as the "Employment Term."

(b) Obligations. During the Employment Term, Executive will perform Executive's duties faithfully and to the best of Executive's ability and will devote Executive's full business efforts and time to the Company. For the duration of the Employment Term, Executive agrees not to actively engage in any other employment, occupation or consulting activity, for any direct or indirect remuneration, that creates a conflict of interest or substantially interferes with Executive's duties to the Company.

(c) No Conflicts. As a condition of Executive's employment, Executive certifies to the Company that: (a) Executive is free to enter into and fully perform the duties of Executive's position; (b) Executive is not subject to any employment, confidentiality, non-competition or other agreement that would restrict Executive's performance for the Company; (c) Executive's signing this Agreement does not violate any order, judgment or injunction applicable to Executive, or conflict with or breach any agreement to which Executive is a party or by which Executive is bound; and (d) all facts Executive has presented to the Company are accurate and true, including, but not limited to, all oral and written statements Executive has made (including those pertaining to Executive's education, training, qualifications, licensing and prior work experience) in any job application, resume, *c.v.*, interview or discussion with the Company.

2. At-Will Employment. Subject to Sections 6, 7, and 8 below, the parties agree that Executive's employment with the Company will be "at-will" employment and may be terminated at any time with or without cause or notice, for any reason or no reason. Executive understands and agrees that neither Executive's job performance nor promotions, commendations, bonuses or the like from the Company give rise to or in any way serve as the basis for modification, amendment, or extension, by implication or otherwise, of Executive's employment with the Company.

3. Compensation.

(a) Base Salary. During the Employment Term, the Company will initially pay Executive as compensation for Executive's services a base salary at a rate of \$450,000 per year (the "Base Salary"). The Base Salary will be paid in regular installments in accordance with the Company's normal payroll practices (subject to required withholding). Any increase in Base Salary (together with the then existing Base Salary) shall serve as the "Base Salary" for future employment under this Agreement. The first and last payment will be adjusted, if necessary, to reflect a commencement or termination date other than the first or last working day of a pay period.

(b) Annual Bonus. Executive will also be eligible to earn an annual discretionary bonus with a target amount equal to 40% of the Base Salary ("Target Bonus"). The amount of the Target Bonus, if any, will be determined in the sole discretion of the Company and based, in part, on Executive's performance and the performance of the Company during the calendar year. Any Target Bonus for the calendar year 2025 shall be pro-rated by the percentage of the year that the Executive was employed by the Company. The Company will pay Executive the Target Bonus, if any, by no later than March 15th of the following calendar year. The Target Bonus is not earned until paid and, except as set forth in Section 8(a) of this Agreement, no pro-rated amount will be paid if Executive's employment terminates for any reason prior to the payment date.

(c) Equity Awards. Executive will be eligible to receive awards of stock options, restricted stock or other equity awards pursuant to any plans or arrangements the Company may have in effect from time to time. The Board or a committee of the Board shall determine in its discretion whether Executive shall be granted any such equity awards and the terms of any such award in accordance with the terms of any applicable plan or arrangement that may be in effect from time to time.

(d) Employee Benefits. During the Employment Term, Executive may take advantage of various benefits offered by the Company, such as short-term disability, long-term disability and the Company's 401(k) plan. Executive will also be entitled to twenty (20) days of paid time off per year, as well as two (2) personal days and twelve (12) paid holidays, exclusive of any sick days Executive may need. These benefits may be modified or changed from time to time at the sole discretion of the Company. The details of the Company's full benefit offerings can be found in its Employee Handbook.

4. Business Expenses. During the Employment Term, the Company will reimburse Executive for reasonable business travel, entertainment or other business expenses incurred by Executive in the furtherance of or in connection with the performance of Executive's duties hereunder, in accordance with the Company's expense reimbursement policy as in effect from time to time. All reimbursements provided under this Agreement will be made or provided in accordance with the requirements of Section 409A of the Internal Revenue Code ("Section 409A") and the rules and regulations thereunder, including, where applicable, the requirement that (i) any reimbursement is for expenses incurred during Executive's lifetime (or during a shorter period of time specified in this Agreement); (ii) the amount of expenses eligible for reimbursement during a calendar year may

not affect the expenses eligible for reimbursement in any other calendar year; (iii) the reimbursement of an eligible expense shall be made no later than the last day of the calendar year following the year in which the expense is incurred; and (iv) the right to reimbursement or in kind benefits is not subject to liquidation or exchange for another benefit.

5. Termination on Death or Disability.

(a) Effectiveness. Executive's employment will terminate automatically upon Executive's Death or, upon fourteen (14) days prior written notice from the Company, in the event of Disability.

(b) Effect of Termination. Upon any termination for death or Disability, Executive shall be entitled to: (i) Executive's Base Salary through the effective date of termination; (ii) the right to continue health care benefits under Title X of the Consolidated Omnibus Budget Reconciliation Act of 1985, as amended ("COBRA"), if any, at Executive's cost, to the extent required and available by law; (iii) reimbursement of expenses for which Executive is entitled to be reimbursed pursuant to Section 5 above, but for which Executive has not yet been reimbursed; and (iv) no other severance or benefits of any kind, unless required by law or pursuant to any other written Company plans or policies, as then in effect.

6. Involuntary Termination for Cause; Resignation without Good Reason.

(a) Effectiveness. Notwithstanding any other provision of this Agreement, the Company may terminate Executive's employment at any time for Cause, which shall be effective on the date the Company gives notice to Employee of such termination in accordance with this Agreement unless otherwise agreed by the Parties. Executive may resign from Executive's employment with the Company without Good Reason, provided that Executive provide at least four (4) weeks prior written notice (the "Notice Period"). Such resignation shall be effective upon the expiration of the Notice Period. In the event that the Company accelerates the effective date of a resignation without Good Reason, such acceleration shall not be construed as a termination of Executive's employment by the Company or deemed Good Reason for such resignation.

(b) Effect of Termination. In the case of the Company's termination of Executive's employment for Cause, or Executive's resignation without Good Reason, Executive shall be entitled to receive: (i) Base Salary through the effective date of the termination or resignation, as applicable; (ii) reimbursement of all business expenses for which Executive is entitled to be reimbursed pursuant to Section 5 above, but for which Executive has not yet been reimbursed; (iii) the right to continue health care benefits under COBRA, at Executive's cost, to the extent required and available by law; and (iv) no other severance or benefits of any kind, unless required by law or pursuant to any other written Company plans or policies, as then in effect.

7. Involuntary Termination Without Cause; Resignation for Good Reason.

(a) Effect of Termination. The Company shall be entitled to terminate Executive without Cause and Executive may resign for Good Reason, subject to the following:

(i) If Executive is terminated by the Company involuntarily without Cause (excluding any termination due to death or Disability) or Executive resigns for Good Reason, then, subject to the limitations of Sections 8(b) and 23 below, Executive shall be entitled to receive: (A) Executive's Base Salary through the effective date of the termination or resignation; (B) continuing severance pay at a rate equal to one hundred percent (100%) of Executive's Base Salary, plus the pro-rata portion of the Target Bonus for the calendar year in which the termination occurs based on the period worked by Executive during such calendar year prior to termination, as then in effect (less applicable withholding), for a period of 12 months from the date of such termination, to be paid in a single lump sum in accordance with the Company's normal payroll practices within sixty (60) days following the date of termination; (C) reimbursement of all business expenses for which

Executive is entitled to be reimbursed pursuant to Section 5 above, but for which Executive has not yet been reimbursed; (D) the pro-rata portion of the Target Bonus for the calendar year in which the termination occurs based on the period worked by Executive during such calendar year prior to termination; (E) provided that Executive elects COBRA coverage, the Company shall reimburse Executive for a portion of each COBRA premium payment equal to the portion the Company contributed to such health insurance premium cost as of the date Executive's employment terminates, until the earlier of 12 months from the date of termination or the date upon which Executive becomes eligible to receive health benefits through another employer; (F) accelerated vesting of any then-outstanding unvested equity awards; and (G) no other severance or benefits of any kind, unless required by law or pursuant to any written Company plans or policies, as then in effect.

(ii) If, within twenty-four (24) months after a Change of Control as defined below, Executive is terminated by the Company without Cause (excluding any termination due to death or Disability) or Executive resigns for Good Reason (and complies with the requirements set forth in Section 7(a)), then, subject to the limitations of Sections 8(b) and 23 below, Executive shall be entitled to receive, in lieu of the benefits set forth in Section 8(a)(i): (A) Executive's Base Salary through the effective date of the termination or resignation; (B) continuing severance pay at a rate equal to 100% of Executive's Base Salary, plus Executive's Target Bonus, as then in effect (less applicable withholding), for a period of 12 months from the date of such termination, to be paid in a single lump sum in accordance with the Company's normal payroll practices within sixty (60) days following the date of termination; (C) reimbursement of all business expenses for which Executive is entitled to be reimbursed pursuant to Section 5 above, but for which Executive has not yet been reimbursed as of the date of the termination or resignation; (D) an amount equal to 100% of Executive's Target Bonus for the calendar year in which the termination or resignation occurs in advance of such Target Bonus being earned; (E) provided that Executive elects COBRA coverage, the Company shall reimburse Executive for a portion of each COBRA premium payment equal to the portion the Company contributed to such health insurance premium cost as of the date Executive's employment terminates, until the earlier of 12 months from the date employment terminates or the date upon which Executive becomes eligible to receive health benefits through another employer; (F) the full acceleration of vesting of any then-outstanding unvested equity awards as of the date Executive's employment with the Company terminated; and (G) no other severance or benefits of any kind, unless required by law or pursuant to any written Company plans or policies, as then in effect. For purposes of this Agreement, a "Change of Control" is defined as a Reorganization Event, as defined in the X4 Pharmaceuticals, Inc. Amended and Restated 2017 Equity Incentive Plan (the "2017 Plan"), as it may be further amended from time to time, or any successor plan thereto.

(b) Conditions Precedent. Any severance payments contemplated by Sections 8(a)(i) and 8(a)(ii) above are conditional on Executive: (i) continuing to comply with the terms of this Agreement and the Confidential Information Agreement (as defined below); and (ii) signing and not revoking a separation agreement and release of known and unknown claims in the form provided by the Company (including nondisparagement and no cooperation provisions) (the "Release") and provided that such Release becomes effective and irrevocable no later than sixty (60) days following the termination date or such earlier date required by the release (such deadline, the "Release Deadline"). If the Release does not become effective by the Release Deadline, Executive will forfeit any rights to severance or benefits under Sections 8(a)(i) or 8(a)(ii) or elsewhere in this Agreement. Any severance payments or other benefits under this Agreement will be paid on, or, in the case of installments, will not commence until, the sixtieth (60th) day following Executive's separation from service, or, if later, such time as required by Section 23(b). Except as required by Section 23(b), any installment payments that would have been made to Employee during the sixty (60) day period immediately following Executive's separation from service but for the preceding sentence will be paid to Executive on the sixtieth (60th) day following Executive's separation from service and the remaining payments will be made as provided in this

Agreement, unless subject to the 6-month payment delay described herein. Notwithstanding the foregoing, this Section 8(b) shall not limit Executive's ability to obtain expense reimbursements under Section 5 or any other compensation or benefits otherwise required by law or in accordance with written Company plans or policies, as then in effect.

8. Definitions.

(a) Cause. For purposes of this Agreement, "Cause" shall mean: (i) Executive's continued failure to substantially perform the material duties and obligations under this Agreement (for reasons other than death or Disability), which failure, if curable within the reasonable discretion of the Company, is not cured to the reasonable satisfaction of the Company within thirty (30) days after receipt of written notice from the Company of such failure; (ii) Executive's failure or refusal to comply with the policies, standards and regulations established by the Company from time to time which failure, if curable in the reasonable discretion of the Company, is not cured to the reasonable satisfaction of the Company within thirty (30) days after receipt of written notice of such failure from the Company; (iii) any act of willful misconduct, fraud, embezzlement, misrepresentation, or other unlawful act committed by Executive that benefits Executive at the expense of the Company; (iv) the Executive's violation of a federal or state law or regulation applicable to the Company's business; (v) the Executive's violation of, or a plea of nolo contendere or guilty to, a felony under the laws of the United States or any state; (vi) the Executive's material breach of the terms of this Agreement or the Confidential Information Agreement (defined below); or (vii) the Company's severe financial distress, whereby the Company is in the process of winding down its business and Executive's employment is terminated in connection with such winding down; provided that prior to such termination, a determination is made by the Company's Board of Directors that none of the Company's Officers (as that term is defined in Section 16 of the Securities Exchange Act of 1934) will receive severance payments in connection with the winding down of the Company's business.

(b) Disability. For purposes of this Agreement, "Disability" means that Executive, at the time notice is given, has been unable to substantially perform Executive's duties under this Agreement for not less than one-hundred and twenty (120) work days within a twelve (12) consecutive month period as a result of Executive's incapacity due to a physical or mental condition and, if reasonable accommodation is required by law, after any reasonable accommodation.

(c) Good Reason. For purposes of this Agreement, "Good Reason" means Executive's written notice of Executive's intent to resign for Good Reason with a reasonable description of the grounds therefor within 10 days after the occurrence of one or more of the following without Executive's consent, and subsequent resignation within 30 days following the expiration of any Company cure period (discussed below): (i) a material reduction of Executive's duties, position or responsibilities; (ii) a material reduction in Executive's Base Salary, which the parties agree is a reduction of at least 10% of Executive's base salary (unless pursuant to a salary reduction program applicable generally to the Company's similarly situated employees); (iii) relocation of Executive's principal place of employment to a place that increases Executive's one-way commute by more than sixty (60) miles as compared to Executive's then-current principal place of employment immediately prior to such relocation; (iv) a material breach of this Agreement by the Company; or (v) any directive given to Executive by the Company that the Company knows is in violation of a law, regulation, or material Company policy and the Company requires Executive to implement as a condition of his continued employment. Executive will not resign for Good Reason without first providing the Company with written notice of the acts or omissions constituting the grounds for "Good Reason" within 30 days of the initial existence of the grounds for "Good Reason" and a reasonable cure period of not less than 30 days following the date of such notice if such act or omission is capable of cure.

9. Company Matters.

(a) Proprietary Information and Inventions. In connection with Executive's employment with the Company, Executive will receive and have access to Company confidential information and trade secrets. Executive hereby to execute a Confidentiality, Non-Solicitation, and Intellectual Property Agreement (the "Confidential Information Agreement") which contains restrictive covenants and prohibits unauthorized use or disclosure of the Company's confidential information and trade secrets, among other obligations.

(b) Resignation on Termination. On termination of Executive's employment, regardless of the reason for such termination, Executive shall immediately (and with contemporaneous effect) resign any directorships, offices or other positions that Executive may hold in the Company or any affiliate, unless otherwise agreed in writing by the Parties.

(c) Notification of New Employer. In the event that Executive leaves the employ of the Company, Executive grants consent to notification by the Company to Executive's new employer about Executive's rights and obligations under this Agreement and the Confidential Information Agreement. Company agrees not to notify Executive's new employer unless it has a reasonable belief that Executive has violated or intends to violate a provision of the Confidential Information Agreement.

10. Arbitration. To ensure the timely and economical resolution of disputes that may arise in connection with Executive's employment with the Company, Executive and the Company agree that any and all disputes, claims, or causes of action arising from or relating to the enforcement, breach, performance, negotiation, execution, or interpretation of this Agreement, Confidential Information Agreement, or Executive's employment, or the termination of Executive's employment will be resolved pursuant to the Federal Arbitration Act, 9 U.S.C. §1-16, and to the fullest extent permitted by law, by final, binding and confidential arbitration by a single arbitrator conducted in Boston, Massachusetts by Judicial Arbitration and Mediation Services Inc. ("JAMS") under the then applicable JAMS rules (at the following web address: <https://www.jamsadr.com/rules-employment-arbitration/>); provided, however, this arbitration provision shall not apply to sexual harassment claims to the extent prohibited by applicable law. A hard copy of the rules will be provided to Executive upon request. **By agreeing to this arbitration procedure, both Executive and the Company waive the right to resolve any such dispute through a trial by jury or judge or administrative proceeding.** In addition, all claims, disputes, or causes of action under this section, whether by Executive or the Company, must be brought in an individual capacity, and shall not be brought as a plaintiff (or claimant) or class member in any purported class or representative proceeding, nor joined or consolidated with the claims of any other person or entity. The Arbitrator may not consolidate the claims of more than one person or entity, and may not preside over any form of representative or class proceeding. To the extent that the preceding sentences regarding class claims or proceedings are found to violate applicable law or are otherwise found unenforceable, any claim(s) alleged or brought on behalf of a class shall proceed in a court of law rather than by arbitration. The Company acknowledges that Executive will have the right to be represented by legal counsel at any arbitration proceeding. Questions of whether a claim is subject to arbitration under this Agreement shall be decided by the arbitrator. Likewise, procedural questions which grow out of the dispute and bear on the final disposition are also matters for the arbitrator. The arbitrator shall: (a) have the authority to compel adequate discovery for the resolution of the dispute and to award such relief as would otherwise be permitted by law; (b) issue a written arbitration decision, to include the arbitrator's essential findings and conclusions and a statement of the award; and (c) be authorized to award any or all remedies that Executive or the Company would be entitled to seek in a court of law. Executive and the Company shall equally share all JAMS' arbitration fees. Except as modified in the Confidential Information Agreement, each party is responsible for its own attorneys' fees. Nothing in this Agreement is intended to prevent either Executive or the Company from obtaining injunctive relief in court to

prevent irreparable harm pending the conclusion of any such arbitration. Any awards or orders in such arbitrations may be entered and enforced as judgments in the federal and state courts of any competent jurisdiction. To the extent applicable law prohibits mandatory arbitration of sexual harassment claims, in the event you intend to bring multiple claims, including a sexual harassment claim, the sexual harassment may be publicly filed with a court, while any other claims will remain subject to mandatory arbitration.

11. Assignment. This Agreement will be binding upon and inure to the benefit of (a) the heirs, executors and legal representatives of Executive upon Executive's death and (b) any successor of the Company. Any such successor of the Company will be deemed substituted for the Company under the terms of this Agreement for all purposes. For this purpose, "successor" means any person, firm, corporation or other business entity which at any time, whether by purchase, merger or otherwise, directly or indirectly acquires all or substantially all of the assets or business of the Company. None of the rights of Executive to receive any form of compensation payable pursuant to this Agreement may be assigned or transferred except by will or the laws of descent and distribution. Any other attempted assignment, transfer, conveyance or other disposition of Executive's right to compensation or other benefits will be null and void.

12. Notices. All notices, requests, demands and other communications called for under this Agreement shall be in writing and shall be delivered via e-mail, personally by hand or by courier, mailed by United States first-class mail, postage prepaid, or sent by facsimile directed to the Party to be notified at the address or facsimile number indicated for such Party on the signature page to this Agreement, or at such other address or facsimile number as such Party may designate by ten (10) days' advance written notice to the other Parties hereto. All such notices and other communications shall be deemed given upon personal delivery, three (3) days after the date of mailing, or upon confirmation of facsimile transfer or e-mail. Notices sent via e-mail under this Section shall be sent to either the e-mail address in this Agreement, or for e-mails sent by the Company to Executive, to the last e-mail address on file with the Company.

13. Severability. In the event that any provision hereof becomes or is declared by a court of competent jurisdiction to be illegal, unenforceable or void, this Agreement will continue in full force and effect without said provision.

14. Integration. This Agreement, together with the Plan and related agreements, and the Confidential Information Agreement represents the entire agreement and understanding between the parties as to the subject matter herein and supersedes all prior or contemporaneous agreements whether written or oral. No waiver, alteration, or modification of any of the provisions of this Agreement will be binding unless in writing and signed by duly authorized representatives of the parties hereto.

15. Tax Withholding. All payments made pursuant to this Agreement will be subject to withholding of applicable taxes.

16. Waiver. No Party shall be deemed to have waived any right, power or privilege under this Agreement or any provisions hereof unless such waiver shall have been duly executed in writing and acknowledged by the Party to be charged with such waiver. The failure of any Party at any time to insist on performance of any of the provisions of this Agreement shall in no way be construed to be a waiver of such provisions, nor in any way to affect the validity of this Agreement or any part hereof. No waiver of any breach of this Agreement shall be held to be a waiver of any other subsequent breach.

17. Governing Law. This Agreement will be governed by the laws of the State of Washington (with the exception of its conflict of laws provisions).

18. Acknowledgment. Executive acknowledges that Executive has had the opportunity to discuss this matter with and obtain advice from Executive's legal counsel, has had sufficient time to, and has carefully read and fully understands all the provisions of this Agreement, and is knowingly and voluntarily entering into this Agreement.

19. Counterparts. This Agreement may be executed in multiple counterparts, each of which shall be deemed to be an original, and all such counterparts shall constitute but one instrument.

20. Effect of Headings. The section and subsection headings contained herein are for convenience only and shall not affect the construction hereof.

21. Construction of Agreement. This Agreement has been negotiated by the respective Parties, and the language shall not be construed for or against either Party.

22. Section 409A.

(a) Notwithstanding anything to the contrary in this Agreement, no severance pay or benefits to be paid or provided to Executive, if any, pursuant to this Agreement, when considered together with any other severance payments or separation benefits that are considered deferred compensation under Section 409A (together, the "Deferred Compensation Separation Benefits") will be paid or otherwise provided until Executive has a "separation from service" within the meaning of Section 409A.

(b) Notwithstanding anything to the contrary in this Agreement, if Executive is a "specified employee" within the meaning of Section 409A at the time of Executive's termination (other than due to death), then the Deferred Compensation Separation Benefits that are payable within the first six (6) months following Executive's separation from service, will become payable on the first payroll date that occurs on or after the date six (6) months and one (1) day following the date of Executive's separation from service. All subsequent Deferred Compensation Separation Benefits, if any, will be payable in accordance with the payment schedule applicable to each payment or benefit. Notwithstanding anything herein to the contrary, if Executive dies following Executive's separation from service, but prior to the six (6) month anniversary of the separation from service, then any payments delayed in accordance with this paragraph will be payable in a lump sum as soon as administratively practicable after the date of Executive's death and all other Deferred Compensation Separation Benefits will be payable in accordance with the payment schedule applicable to each payment or benefit. Each payment and benefit payable under this Agreement is intended to constitute separate payments for purposes of Section 1.409A-2(b)(2) of the Treasury Regulations.

(c) Any amount paid under this Agreement that satisfies the requirements of the "short-term deferral" rule set forth in Section 1.409A-1(b)(4) of the Treasury Regulations will not constitute Deferred Compensation Separation Benefits for purposes of clause (a) above.

(d) Any amount paid under this Agreement that qualifies as a payment made as a result of an involuntary separation from service pursuant to Section 1.409A-1(b)(9)(iii) of the Treasury Regulations that does not exceed the Section 409A Limit will not constitute Deferred Compensation Separation Benefits for purposes of clause (a) above. For purposes of this Agreement, "Section 409A Limit" will mean the lesser of two (2) times:

(i) Executive's annualized compensation based upon the annual rate of pay paid to Executive during the Executive's taxable year preceding Executive's taxable year of Executive's termination of employment as determined under Treasury Regulation Section 1.409A-1(b)(9)(iii)(A)(1) and any Internal Revenue Service guidance issued with respect thereto; or (ii) the maximum amount that may be taken into account under a qualified plan pursuant to Section 401(a)(17) of the Internal Revenue Code for the year in which Executive's employment is terminated.

(e) The foregoing provisions are intended to comply with the requirements of Section 409A so that none of the severance payments and benefits to be provided hereunder will be subject to the additional tax

imposed under Section 409A, and any ambiguities herein will be interpreted to so comply. The Company and Executive agree to work together in good faith to consider amendments to this Agreement and to take such reasonable actions which are necessary, appropriate or desirable to avoid imposition of any additional tax or income recognition prior to actual payment to Executive under Section 409A.

**IN WITNESS WHEREOF**, each of the Parties has executed this Agreement as of the day and year first above written.

**“COMPANY”**

**X4 PHARMACEUTICALS, INC.**

By: /s/ Natasha Thoren  
Natasha Thoren  
Chief Legal Officer

Address:

X4 Pharmaceuticals, Inc

61 North Beacon Street, 4<sup>th</sup> Floor Boston, MA 02134

Attention: Chief Legal Officer

Email:

**“EXECUTIVE”**

By: /s/ John Volpone  
Executive Name: JOHN VOLPONE  
Address:  
Email:

Enclosure  
Confidentiality, Non-Solicitation, and Intellectual Property Agreement

**X4 PHARMACEUTICALS, INC. EXECUTIVE EMPLOYMENT  
AGREEMENT SIGNATURE PAGE**

## CERTIFICATION

I, Adam R. Craig, M.D., Ph.D. certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of X4 Pharmaceuticals, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
  - a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
  - b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
  - c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
  - d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
  - a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
  - b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: November 5, 2025

/s/ Adam R. Craig

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Adam R. Craig, M.D., Ph.D.,  
Executive Chairman  
(Principal Executive Officer)

## CERTIFICATION

I, David Kirske, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of X4 Pharmaceuticals, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
  - a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
  - b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
  - c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
  - d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
  - a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
  - b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: November 5, 2025

/s/ David Kirske

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David Kirske  
Chief Financial Officer  
(Principal Financial Officer)

**CERTIFICATION**

Pursuant to the requirement set forth in Rule 13a-14(b) of the Securities Exchange Act of 1934, as amended, (the “Exchange Act”) and Section 1350 of Chapter 63 of Title 18 of the United States Code (18 U.S.C. §1350), Dr. Adam Craig, Executive Chairman of X4 Pharmaceuticals, Inc. (the “Company”), and David Kirske, Chief Financial Officer of the Company, each hereby certifies that, to the best of his or her knowledge:

1. The Company’s Quarterly Report on Form 10-Q for the period ended September 30, 2025, to which this Certification is attached as Exhibit 32.1 (the “Quarterly Report”), fully complies with the requirements of Section 13(a) or Section 15(d) of the Exchange Act; and
2. The information contained in the Quarterly Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

**In Witness Whereof**, the undersigned have set their hands hereto as of the 5th day of November, 2025.

/s/ Adam R. Craig      /s/ David Kirske

Adam R. Craig, M.D., Ph.D.,      David Kirske  
Executive Chairman      Chief Financial Officer

*(Principal Executive Officer)*      *(Principal Financial Officer and Principal Accounting Officer)*