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, 2026

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)**	**27-3181608** **(I.R.S. Employer Identification No.)**
61 North Beacon Street, 4th Floor **Boston, Massachusetts** **(Address of principal executive offices)**	**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	☐	Accelerated filer	☐
Non-accelerated filer	☒	Smaller reporting company	☒
		Emerging growth company	☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

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 November 2, 2026, the registrant had 102,113,554 shares of common stock, $0.001 par value per share, outstanding.

X4 PHARMACEUTICALS INC.
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CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

In this Quarterly Report on Form 10-Q, unless context otherwise requires or where otherwise indicated, the terms "X4," "we," "us," "our," and the "Company," refer to X4 Pharmaceuticals, Inc. and its subsidiaries. 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 (the "Securities Act"), and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"). All statements, other than statements of historical facts, contained in this Quarterly Report on Form 10-Q, including statements regarding our plans, objectives, goals, strategies, future events, future operations, future financial position, future revenues or performance, projected costs, prospects, expectations, plans or intentions relating to clinical development, product candidates, the regulatory approval process, products and markets, and business trends and other information referred to in the sections titled "Risk Factors" and "Management's Discussion and Analysis of Financial Condition and Results of Operations," are forward-looking statements. In some cases, 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 and 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® (mavorixafor), 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 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;
- 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 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 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 ("FDA") and European Commission designations, including, without limitation, Fast Track, Orphan Drug and Breakthrough Therapy;
- our commercialization, marketing and manufacturing capabilities and strategy;
- 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.

You should refer to the section titled "Risk Factors" in Part I, Item 1A, "Risk Factors" of our Annual Report on Form 10-K for the year ended December 31, 2025 for a discussion of important factors that may cause our actual results to differ materially from those expressed or implied by our forward-looking statements. As a result of these factors, we cannot assure you that the forward-looking statements in this Quarterly Report will prove to be accurate. Furthermore, if our forward-looking statements prove to be inaccurate, the inaccuracy may be material. In light of the significant uncertainties in these forward-looking statements, you should not regard these statements as a representation or warranty by us or any other person that we will achieve our objectives and plans in any specified time frame, or at all. We undertake no obligation to publicly update any forward-looking statements, whether as a result of new information, future events or otherwise, except as required by law. You should, therefore, not rely on these forward-looking statements as representing our views as of any date subsequent to the date of this Quarterly Report.

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, 2026	December 31, 2025
ASSETS		
Current assets:		
Cash and cash equivalents	$ 185,801	$ 217,049
Accounts receivable	1,470	573
Marketable securities	1,900	35,949
Inventory	5,507	4,479
Prepaid expenses and other current assets	3,456	3,527
Total current assets	198,134	261,577
Property and equipment, net	57	182
Goodwill	17,351	17,351
Intangible asset, net	12,824	9,250
Right-of-use assets	264	1,409
Other assets	3,186	692
Total assets	$ 231,816	$ 290,461
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 4,884	$ 5,696
Accrued expenses	8,973	18,603
Deferred revenue	938	464
Current portion of lease liability	189	994
Total current liabilities	14,984	25,757
Long-term debt, including accretion, net of discount	77,007	76,291
Warrant liability	29	977
Deferred revenue	391	621
Other liabilities	522	525
Total liabilities	92,933	104,171
Commitments and contingencies (Note 11)		
Stockholders' equity:		
Preferred stock, $0.001 par value. 10,000,000 shares authorized and no shares issued and outstanding as of September 30, 2026 and December 31, 2025, respectively	—	—
Common stock, $0.001 par value, 500,000,000 shares authorized as of September 30, 2026 and December 31, 2025, respectively; 100,903,502 and 90,906,920 shares issued and outstanding as of September 30, 2026 and December 31, 2025, respectively	101	91
Additional paid-in capital	789,932	780,862
Accumulated other comprehensive loss	—	(109)
Accumulated deficit	(651,150)	(594,554)
Total stockholders' equity	138,883	186,290
Total liabilities and stockholders' equity	$ 231,816	$ 290,461

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

(In thousands, except share and per share amounts)

(unaudited)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2026	2025	2026	2025
License and other revenue	$ 106	$ 199	$ 6,778	$ 28,293
Product revenue, net	2,773	1,566	7,615	4,252
Total revenue	2,879	1,765	14,393	32,545
Costs and operating expenses:				
Cost of revenue	513	351	2,728	5,393
Research and development	13,343	17,337	43,872	54,202
General and administrative	9,014	11,586	24,481	36,134
Total operating expenses	22,870	29,274	71,081	95,729
Loss from operations	(19,991)	(27,509)	(56,688)	(63,184)
Other (expense) income, net:				
Interest income	1,821	901	5,905	2,591
Interest expense	(2,194)	(2,257)	(6,492)	(6,690)
Change in fair value of warrant liability	340	(676)	948	12,796
Other income, net	(171)	(304)	(264)	(746)
Total other (expense) income, net	(204)	(2,336)	97	7,951
Loss before provision for income taxes	(20,195)	(29,845)	(56,591)	(55,233)
Provision for income taxes	3	(30)	5	41
Net loss	$ (20,198)	$ (29,815)	$ (56,596)	$ (55,274)
Net loss per share: basic and diluted	$ (0.16)	$ (0.69)	$ (0.45)	$ (2.87)
Weighted average shares outstanding: basic and diluted	126,523,631	43,272,773	126,326,320	19,242,848
Other comprehensive loss, net of tax:				
Net loss	$ (20,198)	$ (29,815)	$ (56,596)	$ (55,274)
Reclassification of accumulated currency translation adjustment due to substantial liquidation of foreign subsidiary	119	—	119	—
Change in net unrealized gains on marketable debt securities	4	20	(10)	4
Comprehensive loss	$ (20,075)	$ (29,795)	$ (56,487)	$ (55,270)

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				
Balance at December 31, 2024	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
Balance at March 31, 2025	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)
Balance at June 30, 2025	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)
Balance at September 30, 2025	**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				
Balance at December 31, 2025	90,906,920	$ 91	$ 780,862	$ (109)	$ (594,554)	$ 186,290
Vesting of restricted stock units	12,776	—	—			—
Exercise of pre-funded warrants	3,400,000	3	(2)			1
Stock-based compensation expense			2,413			2,413
Unrealized loss on marketable securities				(13)		(13)
Net loss					(20,241)	(20,241)
Balance at March 31, 2026	94,319,696	$ 94	$ 783,273	$ (122)	$ (614,795)	$ 168,450
Issuance of common stock under employee stock purchase plan	24,420	—	76			76
Exercise of pre-funded warrants	1,700,000	2	(2)			—
Vesting of restricted stock units	70,418	—	—			—
Stock-based compensation			3,086			3,086
Unrealized loss on marketable securities				(1)		(1)
Net loss					(16,157)	(16,157)
Balance at June 30, 2026	96,114,534	$ 96	$ 786,433	$ (123)	$ (630,952)	$ 155,454
Vesting of restricted stock units	225,463	$ —	—			—
Exercise of pre-funded warrants	4,563,505	$ 5	(5)			—
Stock-based compensation expense			3,504			3,504
Unrealized gains on marketable securities				4		4
Reclassification of currency translation adjustment				119		119
Net loss					(20,198)	(20,198)
Balance at September 30, 2026	**100,903,502**	**$ 101**	**$ 789,932**	**$ —**	**$ (651,150)**	**$ 138,883**

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)

	Nine Months Ended September 30,	
	2026	**2025**
Cash flows from operating activities:		
Net loss	$ (56,596)	$ (55,274)
Adjustments to reconcile net loss to net cash used in operating activities:		
Stock-based compensation expense	9,002	2,027
Depreciation and amortization expense	1,551	1,054
Non-cash lease expense	1,144	2,290
Accretion of debt discount	717	658
Change in fair value of warrant liability	(948)	(12,796)
Other	(69)	44
Changes in operating assets and liabilities:		
Accounts receivable	(897)	179
Inventory	(1,028)	(1,263)
Prepaid expenses, other current and non-current assets	(2,236)	862
Accounts payable	(815)	(3,621)
Accrued expenses and other long-term liabilities	(9,838)	(4,190)
Deferred revenue	243	1,381
Lease liabilities	(803)	(1,442)
Net cash used in operating activities	(60,573)	(70,091)
Cash flows from investing activities:		
Acquisition of intangible asset	(5,000)	(3,000)
Purchase of marketable securities	—	(61,487)
Sales and maturities of marketable securities	34,252	55,792
Net cash provided by (used in) investing activities	29,252	(8,695)
Cash flows from financing activities:		
Proceeds from issuance of shares of common stock under employee stock purchase plan	76	46
Proceeds from sales of shares of common stock, less issuance costs, and exercise of pre-funded warrants	1	92,490
Payments for debt issuance costs	(112)	—
Net cash (used in) provided by financing activities	(35)	92,536
Effect of exchange rate changes on cash, cash equivalents and restricted cash	(20)	210
Net (decrease) increase in cash, cash equivalents and restricted cash	(31,376)	13,960
Cash, cash equivalents and restricted cash at beginning of period	217,852	56,475
Cash, cash equivalents and restricted cash at end of period	$ 186,476	$ 70,435
Supplemental Cash Flow Information		
Issuance costs not yet paid related to sale of shares of common stock and pre-funded warrants	$ —	$ 222
Debt issuance cost not yet paid	$ 205	$ —

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 (the "Company"), is a biopharmaceutical company developing and commercializing novel therapeutics for the treatment of rare hematology diseases. The Company's primary asset, mavorixafor, 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. In addition, the European Commission has granted marketing authorization for mavorixafor capsules for the treatment of patients with WHIM syndrome in the European Union.

The Company continues to progress its global, pivotal, 52-week Phase 3 clinical trial, (the "4WARD" trial), which has been granted Fast Track designation by the FDA, to evaluate the efficacy, safety, and tolerability of oral, once-daily mavorixafor (with or without stable doses of granulocyte colony-stimulating factor ("G-CSF")) in people with primary chronic neutropenia (congenital, acquired autoimmune, or idiopathic) ("PCN") who are experiencing recurrent and/or serious infections. PCN 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). In August 2026, the Company received written responses from the FDA to its Type C meeting request seeking alignment on a revised sample size and associated statistical power and the size of the safety database to support a potential supplemental new drug application ("sNDA") for mavorixafor for the treatment of chronic neutropenia in 4WARD. The FDA stated that, from a statistical perspective, the reduction in sample size for the 4WARD trial from 176 to 126 participants maintains adequate overall power for the co-primary endpoints of the reduction in annualized infection rate and positive absolute neutrophil count response. In addition, the FDA indicated that the proposed safety database appears acceptable to support a potential sNDA, although its adequacy would remain a review issue. The Company expects to complete enrollment in the 4WARD trial by the end of 2026.

Basis of Presentation

The accompanying unaudited interim condensed consolidated financial statements for the three and nine months ended September 30, 2026 and 2025, respectively have been prepared in accordance with accounting principles generally accepted in the United States of America ("GAAP") for interim financial information and with the instructions to the Quarterly Report on Form 10-Q and Article 10 of Regulation S-X. Accordingly, certain information and footnote disclosures normally included in financial statements prepared in accordance with GAAP have been condensed or omitted pursuant to such rules and regulations. However, the Company believes that the disclosures are adequate to make the information presented not misleading. In the opinion of management, all adjustments, consisting only of normal recurring adjustments as necessary, for the fair statement of the Company's condensed financial position, condensed results of its operations and cash flows have been made. Operating results for the three and nine months ended September 30, 2026 are not necessarily indicative of the results that may be expected for the entire year or for any other subsequent interim period.

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, 2025 included in its Annual Report on Form 10-K filed with the Securities and Exchange Commission ("SEC") on March 17, 2026. The condensed consolidated balance sheet at December 31, 2025 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 Therapeutics, Inc., and X4 Pharmaceuticals (Austria) GmbH, which is incorporated in Vienna, Austria. During the three months ended September 30, 2026, the Company substantially liquidated the Austrian legal entity and, as a result, reclassified the remaining cumulative translation adjustments from the condensed consolidated balance sheet to the income statement. 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

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, 2026, the Company's net loss was $56.6 million and net cash used in operating activities was $60.6 million. As of September 30, 2026, the Company had $187.7 million of cash, cash equivalents and short-term marketable securities, and an accumulated deficit of $651.2 million.

Based on its current operating plan, the Company believes (a) that its current cash, cash equivalents and short-term marketable securities will be sufficient to fund its operations and debt obligations for at least the next 12 months and (b) it will continue to comply with all covenants under its loan agreements, as described in Note 9 and Note 16, 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 its 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, 2025 filed with the SEC on March 17, 2026. Since the date of those consolidated financial statements, there have been no material changes to the Company's significant accounting policies.

Restricted Cash

(in thousands)	As of September 30, 2026	As of December 31, 2025
Letter of credit security: Vienna, Austria lease	$ —	$ 224
Letter of credit security: Boston lease	580	579
Letter of credit security: Watertown lease	95	—
Total restricted cash	$ 675	$ 803

In connection with the Company's lease agreements for its facilities in Boston and Watertown, Massachusetts, the Company maintains letters of credit, which are secured by restricted cash, for the benefit of the respective landlords. As of December 31, 2025, restricted cash related to the Company's former Vienna, Austria lease, which the Company terminated effective November 30, 2025, was included in other current assets and was subsequently converted to unrestricted cash during the nine

months ended September 30, 2026. Restricted cash related to the Boston and Watertown leases are included in other current assets and other assets, respectively.

In accordance with the Company's Second Amended and Restated Loan and Security Agreement, as amended, (the "Hercules Loan Agreement") with Hercules Capital Inc., the Company was required at all times to maintain a minimum level of cash of $15.0 million in an account or accounts in which Hercules had a first priority security interest. The Hercules Loan Agreement was repaid in full and terminated on October 7, 2026. See Note 16.

Cash, Cash Equivalents, Restricted Cash and Marketable Securities

The following table provides a reconciliation of cash, cash equivalents, and restricted cash reported within the condensed consolidated balance sheets to the total of amounts shown in the Company's condensed consolidated statements of cash flows as of September 30, 2026 and December 31, 2025:

(in thousands)	September 30, 2026	December 31, 2025
Cash and cash equivalents	$ 185,801	$ 217,049
Restricted cash, current (included within prepaid expenses and other current assets)	580	803
Restricted cash (included in other assets)	95	—
Total cash, cash equivalents and restricted cash	$ 186,476	$ 217,852

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 evaluates its available-for-sale debt securities for impairment at each reporting date and concluded that no allowance for credit losses was required as of September 30, 2026 and December 31, 2025.

	Fair Value Measurements as of September 30, 2026 Using:			
(in thousands)	Level 1	Level 2	Level 3	Total
Cash equivalents—money market funds	$ 182,959	$ —	$ —	$ 182,959
Marketable securities—federal government agency notes	—	1,900	—	1,900
	$ 182,959	$ 1,900	$ —	$ 184,859

	Fair Value Measurements as of December 31, 2025 Using:			
(in thousands)	Level 1	Level 2	Level 3	Total
Cash equivalents—money market funds	$ 123,838	$ —	$ —	$ 123,838
Marketable securities—U.S. Treasury notes, U.S. Treasury bills, and federal government agency notes	—	35,949	—	35,949
	$ 123,838	$ 35,949	$ —	$ 159,787

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, 2026:

(in thousands)	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
Federal Government Agency securities	1,900	—	—	1,900
Total available-for-sale debt securities	$ 1,900	$ —	$ —	$ 1,900

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, 2025:

(in thousands)	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
U.S. Treasury securities	$ 7,959	$ 3	$ —	$ 7,962
Federal Government Agency securities	27,980	11	4	27,987
Total available-for-sale debt securities	$ 35,939	$ 14	$ 4	$ 35,949

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:

	Fair Value Measurements as of September 30, 2026 Using:			
(in thousands)	Level 1	Level 2	Level 3	Total
Liabilities:				
Embedded derivative liability	$ —	$ —	$ 10	$ 10
Class C warrant liability	—	—	29	29
	$ —	$ —	$ 39	$ 39

	Fair Value Measurements as of December 31, 2025 Using:			
(in thousands)	Level 1	Level 2	Level 3	Total
Liabilities:				
Embedded derivative liability	$ —	$ —	$ 10	$ 10
Class C warrant liability	—	—	977	977
	$ —	$ —	$ 987	$ 987

The following table provides a roll-forward for the nine months ended September 30, 2026 of the aggregate fair values of 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, 2025	$ 10	$ 977	$ 987
Change in fair value	—	(948)	(948)
Balance as of September 30, 2026	$ 10	$ 29	$ 39

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, 2026 and December 31, 2025, the fair value of this derivative liability was $10 thousand.

Class C Warrant Liability— In December 2022, the Company issued Class C warrants ("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.

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

	September 30, 2026	December 31, 2025
Common stock price	$2.90	$4.00
Risk-free interest rate	4.6 %	3.5 %
Expected term (in years)	1.2	1.9
Expected volatility	101.7 %	136.0 %
Expected dividend yield	— %	— %

Net Loss Per Share

Basic net loss per common share is calculated based on net loss divided by the weighted average number of shares outstanding for the period. The calculation of diluted loss per common share excludes the impact of potential common stock as their inclusion would be to reduce net loss per common share and are thus antidilutive.

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

	Three Months Ended September 30,		Nine Months Ended September 30,	
(in thousands, except share and per share data)	**2026**	**2025**	**2026**	**2025**
Numerator:				
Net loss	$ (20,198)	$ (29,815)	$ (56,596)	$ (55,274)
Denominator:				
Weighted average shares outstanding—basic and diluted	126,523,631	43,272,773	126,326,320	19,242,848
Net loss per share— basic and diluted	$ (0.16)	$ (0.69)	$ (0.45)	$ (2.87)

Basic and diluted weighted average shares of common stock outstanding for the three and nine months ended September 30, 2026 and 2025 include 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 $0.03 per share.

As of September 30, 2026 and September 30, 2025, pre-funded warrants to purchase 25.7 million and 47.4 million shares of common stock, respectively, were outstanding and were included in basic and diluted weighted average shares of common stock outstanding.

The Company excluded the following potential shares of common stock from the computation of diluted net loss per share 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,	
	2026	2025	2026	2025
Options to purchase shares of common stock	15,917	12,988	15,917	12,988
Unvested restricted stock units	484	99	484	99
Warrants to purchase shares of common stock (excluding pre-funded warrants, which are included in basic shares outstanding)	2,546	2,546	2,546	2,546
	18,947	15,633	18,947	15,633

Recently Issued Accounting Standards Not Yet Adopted

In November 2024, the FASB issued ASU 2024-03, *Disaggregation of Income Statement Expenses (Topic 220)* ("ASU 2024-03", or "DISE") 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 DISE are effective for annual reporting periods beginning after December 15, 2026, and interim reporting periods beginning after December 15, 2027. The disclosure requirements 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. Although the Company continues to evaluate the impact of the future adoption of ASU 2024-03 to its consolidated financial statements, the Company anticipates that it will adopt ASU 2024-03 prospectively as of its fiscal year ended December 31, 2027 and that such adoption will result in an additional footnote disclosure to the consolidated financial statements that will include further details of specific line items on its consolidated statement of operations.

2. Strategic Restructuring Liability

In 2025, the Company implemented two strategic restructuring actions designed to sharpen operational focus and align resources with the Company's long-term strategy to successfully complete the 4WARD trial in patients with moderate and severe PCN. These strategic restructuring actions resulted in an approximately 65% reduction in employee headcount.

The following table summarizes the Company's liability recognized in connection with severance benefits incurred under strategic restructuring initiatives:

(in thousands)	
Balance as of January 1, 2026	$ 1,526
Severance and other employee-related expenses (of which $86 is included in general and administrative expense and $149 is included in research and development expense)	235
Cash payments	(1,688)
Balance as of September 30, 2026 (included in accrued expenses)	$ 73

3. License Agreements

See Note 4 "License Agreements and Funding Arrangements" to the consolidated financial statements contained in the Company's Annual Report on Form 10-K for the year ended December 31, 2025 for a description of the Company's license agreements. There have been no changes to license agreements and funding arrangements for the nine months ended September 30, 2026, except as follows:

Under the Company's license agreement with Genzyme (the "Genzyme Agreement"), the Company is obligated to make milestone payments contingent upon the achievement of certain regulatory and sales milestones with respect to licensed products. During the nine months ended September 30, 2026, a $5.0 million regulatory milestone was paid after receipt of the European Medicines Agency's ("EMA") validation of the Company's Marketing Authorization Application ("MAA") for processing. The payment was recorded as a definite-lived intangible asset.

As of September 30, 2026, the Company is obligated to make future one-time sales milestone payments of $0.5 million, $1.5 million and $3.0 million on cumulative net sales of $50.0 million, $150.0 million and $300.0 million, respectively. As of September 30, 2026, the Company accrued $0.5 million of sales-based milestones as a component of the definite-lived intangible asset, as management has concluded that the achievement of this milestone is probable.

4. Revenue

Product Revenue, Net

During the three and nine months ended September 30, 2026, the Company recorded net product revenue of $2.8 million and $7.6 million, respectively, for the sale of the Company's drug product in the U.S. Net product revenue was $1.6 million and $4.3 million for the three and nine months ended September 30, 2025, respectively.

The following table summarizes the balances and activity in each of the product reserve accounts for the nine months ended September 30, 2026.

(in thousands)	Rebates and Discounts	Co-Pay Assistance	Product Returns	Total
Beginning balance at December 31, 2025	$ 418	$ 30	$ 10	$ 458
Provision related to revenue associated with sales processed in the nine month period ended September 30, 2026	726	17	30	773
Credits and payments made during the period	(556)	(86)	(22)	(664)
Balance as of September 30, 2026	$ 588	$ (39)	$ 18	$ 567

The provision for contractual discounts provided to the Company's customer is recorded as a reduction of accounts receivable. The provisions for contractual rebates and product returns are classified within accrued expenses and the provision for co-pay assistance payments is classified within prepaid and other current assets as of September 30, 2026.

The following table provides a rollforward of accounts receivable for the nine months ended September 30, 2026.

(in thousands)	Accounts Receivable
Beginning balance at December 31, 2025	$ 573
Increase in accounts receivable for drug product sales	9,292
Decrease in accounts receivable for cash collections	(8,395)
Balance as of September 30, 2026	$ 1,470

License and Other

During the first quarter of 2025, the Company entered into a license and supply agreement (the "Norgine Agreement") with Norgine Pharma UK Ltd. ("Norgine"). 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. To date, the Company has received a one-time, non-refundable, up-front payment of €28.5 million, and regulatory milestone payments of €5.5 million, including a €5.0 million regulatory milestone achieved in the second quarter of 2026. The one-time up-front payment and regulatory milestone payments 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 PCN, and d) the option for delivery of commercial and early access drug supply.

The following table summarizes the allocation of transaction price to the performance obligations under 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)		Revenue Recognized	
		Nine Months Ended September 30,	
Performance Obligation:	Allocation of Transaction Price	2026	2025
License	$ 33,096	$ 5,457	$ 27,639
Research and development services: WHIM	373	5	25
Research and development services: PCN	2,065	153	629
Total	35,534	5,615	28,293
Drug product supply		1,163	—
Total license and other revenue		6,778	28,293

The following table provides a rollforward of deferred revenue for the nine months ended September 30, 2026.

(in thousands)	Deferred Revenue
Beginning balance at December 31, 2025	$ 1,085
Increase for allocation of milestone transaction price to development services	401
Decrease for revenue recognized	(157)
Balance as of September 30, 2026	$ 1,329

As of September 30, 2026, deferred revenue related to the Norgine Agreement was $1.3 million, of which $0.9 million was current.

5. Inventory

Inventory consists of the following:

(in thousands)	September 30, 2026	December 31, 2025
Raw materials	$ 1,390	1,382
Work in process	3,861	2,518
Finished goods	256	579
Total inventory	$ 5,507	$ 4,479

6. Property and Equipment

Property and equipment, net consisted of the following:

(in thousands)	September 30, 2026	December 31, 2025
Leasehold improvements	$ 228	$ 228
Furniture and fixtures	1,081	1,035
Computer equipment	134	134
Lab equipment	—	17
	1,443	1,414
Less: Accumulated depreciation	(1,386)	(1,232)
	$ 57	$ 182

Depreciation expense related to property and equipment was approximately $125 thousand and $492 thousand for the nine months ended September 30, 2026 and 2025, respectively.

7. Intangible Assets, Net

The Company's net definite-lived intangible asset is comprised of the capitalization of certain milestone payments made or accrued related to its license agreement for the intellectual property contained in its drug product. As of September 30, 2026 and December 31, 2025, net definite-lived intangible assets included a gross intangible asset of $15.5 million and $10.5 million, respectively, less accumulated amortization of $2.7 million and $1.3 million, respectively, for a net intangible asset of $12.8 million and $9.3 million, respectively. 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, 2026, amortization expense for the next five years and beyond is summarized as follows (in thousands):

Year	Amortization expense
2026 (remainder of year)	277
2027	1,107
2028	1,107
2029	1,107
2030	1,107
2031	1,107
Thereafter	7,012
Total	$ 12,824

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 $0.3 million and $1.4 million for the three and nine months ended September 30, 2026, respectively, and $0.2 million and $0.6 million for the comparable prior year periods, respectively. Amortization expense is recorded as a component of cost of revenue on the condensed consolidated statements of operations and comprehensive loss.

8. Accrued Expenses

Accrued expenses consisted of the following:

(in thousands)	September 30, 2026	December 31, 2025
Accrued employee compensation and benefits	$ 3,577	4,303
Accrued external research and development expenses	2,632	12,235
Accrued royalty and milestone payments	110	144
Accrued professional fees	984	816
Accrued deferred financing fees	205	—
Other	1,465	1,105
	$ 8,973	$ 18,603

9. Long-Term Debt

Long-term debt consisted of the following:

(in thousands)	September 30, 2026	December 31, 2025
Principal amount of long-term debt	$ 75,000	$ 75,000
Debt discount, net of accretion	(215)	(412)
Cumulative accrual of end of term payments	2,222	1,703
Long-term debt	$ 77,007	$ 76,291

Hercules Loan Agreement

As of September 30, 2026, the Company was party to the Hercules Loan Agreement with Hercules Capital Inc., which provided for an aggregate term loan facility of up to $107.5 million, under which the Company had borrowed an aggregate of $75.0 million of term loans. The Hercules Loan Agreement is described in Note 11 to the consolidated financial statements contained in the Company's Annual Report on Form 10-K filed with the SEC on March 17, 2026.

The Company recognized interest expense under the Hercules Loan Agreement as follows:

(in thousands)	Three Months Ended September 30,		Nine Months Ended September 30,	
	2026	2025	2026	2025
Total interest expense	$ 2,194	$ 2,256	$ 6,490	$ 6,687
Non-cash interest expense	$ 248	$ 221	$ 717	$ 637

The annual effective interest rate on the Hercules Loan Agreement as of September 30, 2026 was 11.2%. There were no principal payments due or paid under the Hercules Loan Agreement during the three and nine months ended September 30, 2026 and 2025. As of September 30, 2026, future principal and accrued end-of-term payments of $77.0 million under the Hercules Loan Agreement are due on July 1, 2027.

On October 7, 2026, the Company executed a new Loan and Security Agreement (the "K2 Loan Agreement") with K2 HealthVentures LLC and retired the Hercules Loan Agreement. In accordance with ASC 470, *Debt*, as the Company has demonstrated both the intent and ability to refinance the Hercules Loan Agreement on a long-term basis prior to the issuance of these financial statements, the $77.0 million outstanding balance as of September 30, 2026 has been excluded from current liabilities and classified within long-term debt, including accretion, net of discount, on the condensed consolidated balance sheets. The K2 Loan Agreement is described in Note 16 of this report.

10. Leases

The Company has a lease agreement for its facility in Boston, Massachusetts, (the "Boston Lease"), which is currently the Company's principal executive office. There are no restrictions or financial covenants associated with this lease agreement. During the three months ended September 30, 2026, the Company amended the Boston Lease for one additional month through December 31, 2026, at which point the Boston Lease will expire.

On April 29, 2026, the Company entered into a lease agreement for approximately 11,000 square feet of office space in a building located in Watertown, Massachusetts (the "Watertown Lease"). The office space will replace the Company's current headquarters located in Boston, Massachusetts. The Company intends to move into the premises in late 2026 or early 2027 upon the completion of construction, at which point the Company will record a right-of-use asset and associated lease liability. Monthly rent payments under the lease will commence three months following the Company obtaining access to the space. Base rental payments will be approximately $0.3 million annually, plus certain operating expenses. The term of the lease will continue for 36 months following the commencement of rent payments, unless earlier terminated in accordance with the terms of the lease. The Company has the right to sublease the premises, subject to landlord consent. The Company also has the right to renew the lease for an additional 3 years at the then prevailing effective market rental rate. The Company was required to provide the landlord with a $0.1 million letter of credit, which is classified as restricted cash.

The components of lease expense for the three and nine months ended September 30, 2026 and 2025 were as follows:

(dollars in thousands)	Three Months Ended September 30,		Nine Months Ended September 30,	
Lease Cost	2026	2025	2026	2025
Fixed operating lease cost	$ 400	$ 142	$ 1,200	$ 1,714
Total lease expense	$ 400	$ 142	$ 1,200	$ 1,714
Other information				
Operating cash outflows from operating leases	$ 287	363	$ 861	$ 1,065
Weighted-average remaining lease term—operating leases	0.2	1.1	0.2	1.1
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, 2026 are as follows (in thousands):

Maturity of lease liabilities	Operating Leases
2026 (remainder of the year)	$ 191
Less: interest	(2)
Total operating lease liabilities as of September 30, 2026	$ 189

11. 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, 2026, the Company has approximately $1.1 million of such commitments in place subject to cancellation provisions.

License Agreements
See Note 4 to the Company's Annual Report on Form 10-K filed with the SEC on March 17, 2026 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, 2026 or December 31, 2025.

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.

12. Equity Transactions

ATM Sales Agreement

On May 6, 2026, the Company entered into an Open Market Sale Agreement℠ ("ATM"), under which it may sell up to $75.0 million of its common shares through an investment bank. Concurrently, the Company filed a registration statement on Form S-3 that registered the common shares issuable under the ATM. Through November 4, 2026, there have been no sales of common stock under the ATM. The Company terminated its previous ATM agreement on March 30, 2026.

13. Stock-Based Compensation

As of September 30, 2026, there is an aggregate of approximately 1.8 million shares of common stock available for issuance under the Company's equity incentive plans, including 0.1 million shares of common stock remaining 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,	
	2026	2025	2026	2025
Risk-free interest rate	4.3 %	3.9 %	3.9 %	3.9 %
Expected term (in years)	6.0	5.8	6.0	5.8
Expected volatility	108.3 %	108.9 %	109.8 %	108.9 %
Expected dividend yield	0 %	0 %	0 %	0 %

As of September 30, 2026, total unrecognized compensation expense related to unvested stock options and restricted stock units was $18.9 million, which is expected to be recognized over a weighted average period of 2.4 years.

Stock Options

The following table summarizes the Company's stock option activity for the nine months ended September 30, 2026:

	Number of Shares	Weighted Average Exercise Price	Weighted Average Contractual Term (Years)	Aggregate Intrinsic Value (in thousands)
Outstanding as of December 31, 2025	12,080,718	$ 2.34	9.6	$ 28,329
Granted	5,062,000	4.00		
Forfeited and expired	(1,225,970)	7.04		$ —
Outstanding as of September 30, 2026	15,916,748	$ 2.50	9.0	$ 15,549
Exercisable as of September 30, 2026	4,991,506	$ 2.48	8.8	$ 6,299
Vested and expected to vest as of September 30, 2026	14,196,032	$ 2.53	9.0	$ 13,850

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 for the nine months ended September 30, 2026 and 2025. The weighted average grant-date fair value per share of stock options granted during the nine months ended September 30, 2026 and 2025 was $3.36 and $1.35, respectively.

Restricted Stock Units

The following table summarizes the Company's restricted stock unit activity for the nine months ended September 30, 2026:

	Number of Shares	Weighted-Average Grant Date Fair Value
Unvested as of December 31, 2025	73,381	$ 15.48
Granted	773,016	4.50
Vested	(340,866)	4.69
Forfeited	(21,376)	18.73
Unvested as of September 30, 2026	484,155	$ 5.51

Outstanding restricted stock units include performance-based restricted stock units ("PRSUs"), which will vest 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 as follows:

	Three Months Ended September 30,		Nine Months Ended September 30,	
(in thousands)	2026	2025	2026	2025
Research and development expense	$ 375	$ 179	$ 1,573	$ 778
General and administrative expense	3,129	581	7,429	1,249
Total stock-based compensation	$ 3,504	$ 760	$ 9,002	$ 2,027

14. Income Taxes

The Company did not record a material U.S. federal, state or international provision or benefit for income taxes in its condensed consolidated statement of operations and comprehensive loss for the nine months ended September 30, 2026 and 2025. The Company continues to maintain a valuation allowance against all remaining net deferred tax assets. The Company believes that it is more likely than not that it will not realize a future tax benefit of these attributes as the Company expects to continue to generate operating losses. Ultimate realization of any deferred tax asset is dependent on the Company's ability to generate sufficient future taxable income in the appropriate tax jurisdiction before the expiration of carryforward periods, if any. The Company will continue to monitor the valuation allowance assessment throughout the year.

15. Segment Information

The Company has defined its Chief Operating Decision Maker ("CODM") as the 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 to monitor actual results as compared to forecast in assessing segment performance and allocation of resources.

The Company derives its revenue from the sale of XOLREMDI in the U.S. and from licensed rights and product sales of mavorixafor for other non-U.S. territories. The Company recognized $2.8 million and $7.6 million of revenue from its U.S. customer and $0.1 million and $6.8 million of revenue from a customer in the United Kingdom for the three and nine months ended September 30, 2026, respectively. The Company recognized $1.6 million and $4.3 million of revenue from its U.S. customer and $0.2 million and $28.3 million of revenue from its customer in the United Kingdom for the three and nine months ended September 30, 2025, respectively.

The measure of profit for the segment is net loss and consisted of the following for the three and nine months ended September 30, 2026 and 2025:

	Three Months Ended September 30,		Nine Months Ended September 30,	
(in thousands)	**2026**	**2025**	**2026**	**2025**
Revenue from external customers	$ 2,879	$ 1,765	$ 14,393	$ 32,545
Compensation expense, excluding stock-based compensation, stock appreciation rights compensation expense and severance expense	4,572	6,932	14,472	28,405
Direct research and development program expenses (X4P-001, mavorixafor)	8,749	10,314	29,573	28,139
Other segment items (a)	9,756	14,334	26,944	31,275
Net loss (measure of segment profit)	$ (20,198)	$ (29,815)	$ (56,596)	$ (55,274)

(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, stock appreciation rights compensation expense, severance expense, other (expense) income, 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 financial statements. As of September 30, 2026, the Company's single operating segment had long-lived assets, including property and equipment and right-of-use assets, of $0.3 million, which were located in the U.S. As of December 31, 2025, the operating segment's long-lived assets were $1.6 million, all of which were located in the U.S.

16. Subsequent Events

On October 7, 2026, the Company and its wholly owned subsidiary, X4 Therapeutics, Inc. (together with the Company, the "Borrowers") entered into the K2 Loan Agreement with K2 HealthVentures LLC, as administrative agent (in such capacity, the "Administrative Agent") and as a lender, the other lenders from time to time party thereto (together with K2 HealthVentures LLC, the "Lenders"), and Ankura Trust Company, LLC, as collateral trustee. The K2 Loan Agreement provides for term loans of up to $150.0 million, consisting of (i) a term loan in the aggregate principal amount of $80.0 million, which was funded on the closing date of October 7, 2026 (the "First Tranche Term Loan"), and (ii) up to an additional $70.0 million of term loans (the "Second Tranche Term Loan" and, together with the First Tranche Term Loan, the "Term Loans"), which may be made available at the Company's request, subject to review by the Administrative Agent of certain information from the Company and discretionary approval by the Lenders.

The Company used substantially all of the proceeds of the First Tranche Term Loan to repay in full all outstanding obligations under the Hercules Loan Agreement, including principal of $75.0 million, end-of-term fees of $2.8 million and early termination and other fees of $0.8 million. The proceeds of any Second Tranche Term Loan may be used for permitted acquisitions and permitted investments. Once repaid, the Term Loans may not be reborrowed.

The Term Loans bear cash interest at a variable annual rate equal to the greater of (i) 8.55% and (ii) the prime rate as reported in The Wall Street Journal plus 1.55%, payable monthly in arrears. In addition, the Term Loans accrue paid-in-kind interest at a

fixed rate of 1.0% per year. The K2 Loan Agreement provides for interest-only payments through October 1, 2029, which period will be extended to maturity if, among other conditions, the Company achieves first commercial sales in the United States of mavorixafor in PCN, followed by equal monthly installments of principal and interest. The Term Loans mature on October 1, 2030.

The Company may prepay all, but not less than all, of the Term Loans, subject to a prepayment fee and certain notice requirements. The Company is also required to pay the Lenders a final payment fee upon repayment of the Term Loans. The Company's obligations under the K2 Loan Agreement are secured by substantially all of the Borrowers' assets,
other than their intellectual property.

The K2 Loan Agreement contains customary representations and warranties and affirmative and negative covenants that, subject to specified exceptions, among other things, limit the ability of the Company to dispose of assets, change its business, management, ownership or business locations, merge or consolidate, incur indebtedness, grant liens, pay dividends or make other distributions or repurchase equity, make investments and acquisitions, enter into exclusive licenses and enter into transactions with affiliates. The K2 Loan Agreement also contains financial covenants that require the Company

(i) commencing October 1, 2027, at all times when the Company's market capitalization is less than $800.0 million, to maintain unrestricted cash and cash equivalents of at least 75% of the total outstanding obligations under the K2 Loan Agreement, which threshold decreases to 40% following meeting certain conditions, and

(ii) commencing April 1, 2029, to achieve trailing three-month net product revenue of at least 50% of the net product revenue set forth in the Company's board-approved projections.

The K2 Loan Agreement contains customary events of default, including payment defaults, insolvency events and a material adverse effect on the Borrowers' business, operations, properties, assets or condition (financial or otherwise). The Lenders may elect at any time following the closing date and prior to the repayment in full of the Term Loans to convert any portion of the principal amount of the Term Loans then outstanding, up to an aggregate of $15.0 million in principal amount, into shares of the Company's common stock at a conversion price of $3.2341 per share (subject to proportionate adjustment for stock splits, stock combinations, stock dividends, recapitalizations and similar events), subject to certain beneficial ownership limitations.

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.

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 granulocyte colony-stimulating factor ("G-CSF") in people with primary chronic neutropenia (congenital, acquired autoimmune, or idiopathic) ("PCN") who are experiencing recurrent and/or serious infections. Mavorixafor has been granted Fast Track designation for the treatment of PCN, which 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). PCN 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.

As part of a complete overhaul of the clinical operating infrastructure, we have transitioned management of the 4WARD trial to a premier Clinical Research Organization ("CRO") to further strengthen the study execution and support completion of enrollment. In August 2026, we received written responses from the U.S. Food and Drug Administration ("FDA") to our Type C meeting request seeking alignment on a revised sample size and associated statistical power and the size of the safety database to support a potential supplemental new drug application ("sNDA") for mavorixafor for the treatment of chronic neutropenia in 4WARD. The FDA stated that, from a statistical perspective, the reduction in sample size for the 4WARD trial from 176 to 126 participants maintains adequate overall power for the co-primary endpoints of the reduction in annualized infection rate and positive absolute neutrophil count response. In addition, the FDA indicated that the proposed safety database appears acceptable to support a potential sNDA, although its adequacy would remain a review issue. We expect to complete enrollment in the 4WARD trial by the end of 2026.

In October 2026, we announced the initiation of a global, Phase 2b clinical trial (the "4STEPS" trial) designed to evaluate whether G-CSF dosage can be safely reduced in patients with PCN after starting doses of mavorixafor while maintaining stable neutrophil counts. The trial is designed to enroll approximately 25 patients, with the first participant expected to be enrolled in the first quarter of 2027 and top-line data expected in the first quarter of 2028.

We currently have one commercially approved product, XOLREMDI® (mavorixafor), which has received accelerated approval in the United States from the 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 PCN disorder. We are committed to making XOLREMDI available to patients in need in the U.S. while maintaining our focus on our long-term strategy to successfully complete the 4WARD trial in patients with moderate and severe PCN.

Regulatory Update and Out-License Agreements

In January 2025, the EMA validated for processing our Marketing Authorization Application ("MAA") seeking regulatory approval to commercialize mavorixafor for WHIM syndrome in the European Union. On April 29, 2026, the European Commission granted marketing authorization for XOLREMDI® (mavorixafor) capsules for the treatment of patients with WHIM syndrome in the European Union. Pursuant to our license and supply agreement (the "Norgine Agreement") with Norgine Pharma UK Ltd. ("Norgine"), Norgine elected that we transfer the approved MAA to them. We completed this transfer in July 2026.

Results of Operations

The following table summarizes the results of our operations for the three and nine months ended September 30, 2026 and 2025:

(in millions)	Three Months Ended September 30,			Nine Months Ended September 30,		
	2026	2025	Change	2026	2025	Change
Revenue	$ 2.9	$ 1.8	$ 1.1	$ 14.4	$ 32.5	$ (18.1)
Costs and operating expenses:						
Cost of revenue	0.5	0.4	0.1	2.7	5.4	(2.7)
Research and development	13.3	17.3	(4.0)	43.9	54.2	(10.3)
General and administrative	9.1	11.6	(2.5)	24.5	36.1	(11.6)
Total operating expenses	22.9	29.3	(6.4)	71.1	95.7	(24.6)
Loss from operations	(20.0)	(27.5)	7.5	(56.7)	(63.2)	6.5
Total other (expense) income, net	(0.2)	(2.3)	2.1	0.1	8.0	(7.9)
Loss before income taxes	(20.2)	(29.8)	9.6	(56.6)	(55.2)	(1.4)
Provision for income taxes	—	—	—	—	(0.1)	0.1
Net loss	$ (20.2)	$ (29.8)	$ 9.6	$ (56.6)	$ (55.3)	$ (1.3)

Revenue

Product Revenue, Net

Net product sales were $2.8 million and $1.6 million for the three months ended September 30, 2026 and 2025, respectively, and were $7.6 million and $4.3 million for the nine months ended September 30, 2026 and 2025, respectively. Net product revenue growth over the prior year periods was primarily due to an increase in the number of patients who have been prescribed our drug product. Gross-to-net adjustments were approximately 9% of gross revenues in the three and nine months ended September 30, 2026. Co-pay assistance payments and rebates to U.S. government payors have comprised the majority of our gross-to-net revenue adjustments.

License and Other

During the three months ended September 30, 2026 and September 30, 2025, license and other revenue was primarily comprised of $0.1 million and $0.2 million, respectively, for provision of research and development services under the Norgine Agreement. During the nine months ended September 30, 2026, license and other revenue was comprised of $5.5 million of license revenue associated with the achievement of a regulatory milestone, $0.1 million for the provision of research and development services and $1.2 million for the sale of drug supply to Norgine to support their early-access programs and commercial sales. For the nine months ended September 30, 2025, license and other revenue was primarily comprised of $27.6 million in license revenue in connection with the delivery of a license upon the execution of the Norgine Agreement and $0.7 million for the provision of research and development services thereunder.

Cost of Revenue

Cost of revenue primarily consists of amortization of an intangible asset related to milestone payments associated with our Genzyme license agreement, cost of manufactured drug product sold, and sales-based or sublicense-based royalty payments due under our Genzyme license agreement. Cost of revenue increased $0.1 million in the three months ended September 30, 2026 as compared to the same period in the prior year due to an increase in net product sales and an increase in drug supply sales. Cost of revenue decreased $2.7 million in the nine months ended September 30, 2026, as compared to the same period in the prior year, primarily due to prior year royalties due under our Genzyme license agreement associated with sublicense income from the Norgine Agreement that did not recur in the current period, partially offset by higher intangible amortization and a higher volume of drug product sold in the current period.

Research and Development Expenses

Research and development expenses consist primarily of costs incurred in connection with the development of our one product candidate, including employee salaries and related expenses, clinical development expenses, and 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.

Substantially all of our research and development has been focused on our one product candidate, mavorixafor (X4P-001), specifically for the PCN indication in the U.S. 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.

	Three Months Ended September 30,			Nine Months Ended September 30,		
	2026	2025	Change	2026	2025	Change
(in millions)						
Direct research and development expenses by product candidate:						
Mavorixafor (X4P-001)	$ 8.7	$ 10.3	$ (1.6)	$ 29.6	$ 28.2	$ 1.4
Unallocated expense	4.6	7.0	(2.4)	14.3	26.0	(11.7)
Total research and development expenses	$ 13.3	$ 17.3	$ (4.0)	$ 43.9	$ 54.2	$ (10.3)

Research and development expenses decreased by $4.0 million and $10.3 million in the three and nine months ended September 30, 2026, respectively, as compared to the same periods in the prior year. The decrease was primarily due to lower compensation and related benefit costs as a result of strategic restructuring actions implemented in the prior year. During the nine months ended September 30, 2026, research and development expenses allocated to mavorixafor, primarily CRO costs, increased to $29.6 million as compared to $28.2 million in the prior year as we continue to advance our 4WARD trial. The increase in the current nine month period was offset by lower unallocated expenses in the current period, primarily due to lower compensation and related benefit costs as a result of lower head count in the research and development organizations relative to the prior year.

General and Administrative Expenses

General and administrative expenses consist primarily of salaries and related costs, including stock-based compensation, for personnel in executive, finance, and administrative functions. 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.

General and administrative expenses decreased by $2.5 million and $11.6 million for the three and nine months ended September 30, 2026, respectively, as compared to the same periods in the prior year. The decrease for the three month period was primarily due to a reduction in legal and IT costs, partially offset by higher stock-based compensation expense and sales and marketing costs, primarily related to PCN market assessment and preparation activities. The decrease for the nine month period was primarily due to a significant reduction in sales and marketing expenses related to our approved drug product, a reduction in outside legal expenses, and reductions in compensation costs due to lower headcount in general and administrative functions.

Other (Expense) Income, Net

	Three Months Ended September 30,			Nine Months Ended September 30,		
	2026	2025	Change	2026	2025	Change
(in millions)						
Interest income	$ 1.8	$ 0.9	$ 0.9	$ 5.9	$ 2.6	$ 3.3
Interest expense	(2.2)	(2.3)	0.1	(6.5)	(6.7)	0.2
Change in fair value of Class C warrant liability	0.3	(0.7)	1.0	0.9	12.8	(11.9)
Other income, net	(0.1)	(0.2)	0.1	(0.2)	(0.7)	0.5
Total other (expense) income, net	$ (0.2)	$ (2.3)	$ 2.1	$ 0.1	$ 8.0	$ (7.9)

Other expense, net, decreased approximately $2.1 million in the three months ended September 30, 2026 compared to the same period in the prior year primarily due to the higher interest income on our marketable security investment portfolio and higher gains in the current period on fair value adjustments related to our Class C warrants. Other income, net, decreased approximately $7.9 million in the nine months ended September 30, 2026 compared to the same period in the prior year primarily due to lower gains in the current period on fair value adjustments related to our Class C warrants, partially offset by higher interest income on our marketable security investment portfolio.

Liquidity and Capital Resources

Sources of Liquidity

To date, we have funded our operations primarily with proceeds from sales of common stock, warrants and pre-funded 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 from sales of common stock, warrants and pre-funded warrants through both public offerings and private placements. For example, most recently in October 2025, we completed an underwritten public offering of approximately 52.8 million shares of our common stock and pre-funded warrants to purchase up to 700,000 shares of our common stock for net proceeds of $145.6 million, after underwriting discounts and offering expenses (the "October 2025 Offering").

ATM Sales Agreement. On May 6, 2026, we entered into an Open Market Sale Agreement℠ ("ATM"), under which we may sell up to $75.0 million of our common shares through an investment bank. Through November 4, 2026, there have been no sales of our common stock under the ATM. We terminated our previous ATM agreement on March 30, 2026.

Hercules Loan Agreement. We were a party to a loan and security agreement (the "Hercules Loan Agreement"), which provided for a term loan facility of up to $107.5 million, under which we had borrowed an aggregate of $75.0 million of term loans to date, representing the maximum borrowings as of September 30, 2026. See Note 11 to our Annual Report on Form 10-K as filed with the SEC on March 17, 2026 for a full description of our Hercules Loan Agreement. In October 2026, we refinanced and retired the Hercules Loan Agreement by entering into a new loan agreement (the "K2 Loan Agreement"), which provides up to $150.0 million of term loan capacity and matures in October 2030. The K2 Loan Agreement requires interest-only payments through October 1, 2029, and principal and interest payments thereafter for 13 months. The interest-only period is extended if we meet certain operational milestones. See Note 16 to the condensed consolidated financial statements included in this Quarterly Report on Form 10-Q for more information on the K2 Loan Agreement.

K2 Loan Agreement. The first tranche term loan of $80.0 million was funded at the closing on October 7, 2026, and we used substantially all of the proceeds to repay in full all outstanding obligations under the Hercules Loan Agreement. The total payoff amount was approximately $78.7 million, consisting of $75.0 million of outstanding principal, accrued and unpaid interest, the end of term charge, the prepayment charge and related fees and expenses. The K2 Loan Agreement requires that we meet certain operational and financial covenants, including a minimum liquidity covenant commencing October 1, 2027, and a minimum net product revenue covenant commencing April 1, 2029, each as described in Note 16.

Historical Cash Flows

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

	Nine Months Ended September 30,	
	2026	2025
	(in millions)	
Net loss	$ (56.6)	$ (55.3)
Adjustments to reconcile net loss to net cash used in operating activities	11.4	(6.7)
Changes in operating assets and liabilities	(15.4)	(8.1)
Net cash used in operating activities	(60.6)	(70.1)
Net cash provided by (used in) investing activities	29.3	(8.7)
Net cash provided by financing activities	—	92.5
Effect of exchange rate changes on cash, cash equivalents and restricted cash	(0.1)	0.2
Net (decrease) increase in cash, cash equivalents and restricted cash	(31.4)	13.9
Cash, cash equivalents and restricted cash, beginning of period	217.9	56.5
Cash, cash equivalents and restricted cash, end of period	$ 186.5	$ 70.4

Operating Activities

During the nine months ended September 30, 2026, net cash used in operating activities was $60.6 million, primarily resulting from our net losses of $56.6 million adjusted for non-cash items of $11.4 million, primarily consisting of stock-based compensation, and changes in operating assets and liabilities of $15.4 million, primarily due to increases in accounts receivable due to increases in revenue, and decreases in accounts payable and accrued expenses due to timing of vendor payments. 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, which includes a $12.8 million gain for the adjustment of our Class C warrant liability to fair value. Net cash used in operating activities also includes $8.1 million of changes to operating assets and liabilities primarily related to a reduction in accounts payable and accrued expenses.

Investing Activities

During the nine months ended September 30, 2026, cash provided by investing activities of $29.3 million was primarily due to net maturities and sales of short-term marketable securities. During the nine months ended September 30, 2025, cash used in investing activities of $8.7 million primarily included net purchase of short-term marketable securities.

Financing Activities

During the nine months ended September 30, 2026, cash flows from financing activities were not significant. During the nine months ended September 30, 2025, cash provided by financing activities of $92.5 million was primarily due to sales of our common stock and pre-funded warrants in our August 2025 private placement, sales of our common stock through our ATM program and a common stock purchase agreement.

Capital Resources

Based on our cash, cash equivalents and marketable securities on hand as of November 4, 2026 and our current operating plan, we believe that our cash, cash equivalents and marketable securities will allow us to fund our operations and debt obligations for at least the next 12 months.

Capital Requirements

We expect to continue to incur operating losses as we advance our lead drug candidate through the 4WARD trial. 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 mavorixafor 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 nine months ended September 30, 2026, there were no material changes to our critical accounting policies as reported for the year ended December 31, 2025 as part of our Annual Report on Form 10-K. See Note 1 to the unaudited interim condensed consolidated financial statements included in this Quarterly Report on Form 10-Q under the heading *Recently Issued Accounting Standards Not Yet Adopted* for new accounting pronouncements or changes to the accounting pronouncements during the nine months ended September 30, 2026.

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, 2026, and has concluded that, based on such evaluation, our disclosure controls and procedures were effective as of September 30, 2026 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, 2026 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 I, Item 1A, "Risk Factors" of our Annual Report on Form 10-K for the year ended December 31, 2025. Except as set forth below, there have been no material changes from the risk factors disclosed in Item 1A of our Annual Report on Form 10-K for the year ended December 31, 2025. The risk factors set forth below should be read together with the risk factors described in our Annual Report on Form 10-K.

Risks Related to the Marketing and Commercialization of Our Product Candidates

The regulatory review and approval processes of the FDA and comparable foreign regulatory authorities are lengthy, time-consuming and inherently unpredictable, and if we are ultimately unable to obtain regulatory approval for our product candidates, including additional indications for mavorixafor, our business will be substantially harmed.

We are not permitted to market mavorixafor or any other product candidate in the United States until we receive approval of an NDA from the FDA, or in any foreign countries until we receive the requisite approval from such countries or jurisdictions, such as approval of the marketing authorization application in the European Union from the European Commission. Our future NDA submissions may receive a refusal to file response from the FDA, and even if filed by the FDA, we may receive a Complete Response Letter rather than approval for commercial marketing. In addition, we may be required by the FDA to conduct additional clinical trials and/or nonclinical studies to support potential approval. Successfully completing clinical trials and obtaining approval of an NDA is a complex, lengthy, expensive and uncertain process, and the FDA, or a comparable foreign regulatory authority, may delay, limit or deny approval of mavorixafor for the treatment of other indications for many reasons, including, among others:

- disagreement with the design or implementation and sufficiency of our clinical trials;
- failure to demonstrate the safety and efficacy of mavorixafor or any other product candidate for its proposed indications and that any clinical and other benefits of mavorixafor or any other product candidate outweigh its safety risks;
- deficiencies in the manufacturing or control processes or failure of third-party manufacturing facilities with which we contract for clinical and commercial supplies to comply with current cGMPs;
- insufficient data collected from clinical trials of mavorixafor or any other product candidate, or changes in the approval requirements that render its nonclinical and clinical data insufficient to support the filing of an NDA or to obtain regulatory approval; or
- changes in clinical practice in or approved products available for the treatment of the target patient population that could have an impact on the indications that we are pursuing for mavorixafor or our other product candidates.

For example, in August 2026, we received written responses from the FDA to our Type C meeting request regarding a reduction in the planned sample size of our Phase 3 4WARD trial of mavorixafor in chronic neutropenia from 176 to 126 participants. The FDA stated that, from a statistical perspective, the reduced sample size maintains adequate overall power for the trial's co-primary endpoints. The FDA also requested that we provide detailed information, including our assumptions and supporting justification, to show that the reduced sample size maintains adequate power for all key secondary endpoints. In addition, the FDA stated that our proposed safety database appears acceptable to support an sNDA but that its adequacy remains a review issue. We intend to provide the requested information to the FDA. Even if the 4WARD trial meets its co-primary endpoints, it may not achieve statistical significance on one or more of its key secondary endpoints.

The FDA or a comparable foreign regulatory authority may also require more information, including additional nonclinical or clinical data to support approval, which may delay or prevent approval of our commercialization plans, or cause us to abandon the development program. If our current or future product candidates receive regulatory approval, these product candidates may

be approved for fewer or more limited indications than we request, such approval may be contingent on the performance of costly post-marketing clinical trials, or we may not be allowed to include the labeling claims necessary or desirable for the successful commercialization of such product candidate.

Risks Related to Our Business Operations, Employee Matters and Managing Growth

Our term loan contains restrictions that limit our flexibility in operating our business.

Our K2 Loan Agreement is secured by a lien on substantially all of our assets, excluding intellectual property. This loan contains various covenants that limit our ability to engage in specified types of transactions. These covenants limit our ability to, among other things:

- dispose of assets;
- change our business, management, ownership or business locations;
- merge or consolidate;
- incur indebtedness;
- grant liens;
- pay dividends or make other distributions or repurchase equity;
- make investments and acquisitions;
- enter into exclusive licenses; or
- enter into transactions with affiliates

The K2 Loan Agreement also requires that (i) commencing October 1, 2027, at all times when our market capitalization is less than $800.0 million, we maintain unrestricted cash and cash equivalents of at least 75% of the total outstanding obligations under the K2 Loan Agreement, which threshold decreases to 40% following meeting certain conditions, and (ii) commencing April 1, 2029, we achieve trailing three-month net product revenue of at least 50% of the net product revenue set forth in our board-approved projections, and also subjects us to certain operational covenants.

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, 2026, 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).

Item 6. Exhibits

		Incorporated by Reference to:			
Exhibit No.	**Exhibit Description**	**Form**	**Exhibit No.**	**Filing Date**	**File No.**
3.1	Restated Certificate of Incorporation, as amended, as of September 1, 2022.	8-K	3.1	09/01/2022	001-38295

3.2	Certificate of Amendment to the Restated Certificate of Incorporation of X4 Pharmaceuticals, Inc.	8-K	3.1	04/24/2025	001-38
3.3	Amended and Restated By-laws of the Company	8-K	3.2	11/20/2017	001-38
4.1	Form of Common Stock Certificate	8-K	4.1	3/13/2019	001-38
10.1@	Second Amended and Restated 2017 Equity Incentive Plan	8-K	10.1	5/12/2026	001-38
10.2*	Loan and Security Agreement, dated October 7, 2026, by and among X4 Pharmaceuticals, Inc., X4 Therapeutics, Inc. and K2 HealthVentures LLC.				
31.1*	Certification of Principal Executive Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.				
31.2*	Certification of Principal Financial Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.				
32.1**	Certification of Principal Executive Officer and Principal Financial Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.				
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.

X4 PHARMACEUTICALS, INC.

Date: November 4, 2026

By: /s/ Adam R. Craig

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

Date: November 4, 2026

By: /s/ David Kirske

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

Exhibit 10.2

LOAN AND SECURITY AGREEMENT

This LOAN AND SECURITY AGREEMENT (as amended, restated, supplemented or otherwise modified from time to time, this "**Agreement**") dated as of October 7, 2026 (the "**Closing Date**") is entered into among **X4 PHARMACEUTICALS, INC.**, a Delaware corporation ("**Borrower Representative**"), **X4 THERAPEUTICS, INC.**, a Delaware corporation, and each other Person party hereto as a borrower from time to time (collectively, "**Borrowers**", and each, a "**Borrower**"), and each other Person party hereto as a guarantor from time to time (collectively with any other party to a Loan Document as a guarantor from time to time, "**Guarantors**" and each, a "**Guarantor**", and together with Borrowers, collectively, "**Loan Parties**", and each, a "**Loan Party**"), **K2 HEALTHVENTURES LLC** as a lender, and the other lenders from time to time party hereto (collectively, "**Lenders**", and each, a "**Lender**"), **K2 HEALTHVENTURES LLC**, as administrative agent for Lenders (in such capacity, together with its successors, "**Administrative Agent**"), and **ANKURA TRUST COMPANY, LLC**, as collateral trustee for the Secured Parties (in such capacity, together with its successors, "**Collateral Trustee**").

AGREEMENT

Borrower Representative, each Loan Party from time to time party hereto, Administrative Agent, Collateral Trustee and Lenders hereby agree as follows:

1.

1. ACCOUNTING AND OTHER TERMS

Accounting terms not defined in this Agreement shall be construed in accordance with GAAP, and calculations and determinations shall be made following GAAP, consistently applied. Capitalized terms not otherwise defined in this Agreement shall have the meanings set forth on Exhibit A. All other terms contained in this Agreement, unless otherwise indicated, shall have the meaning provided by the Code to the extent such terms are defined therein. As used in the Loan Documents, the word "shall" is mandatory, the word "may" is permissive, the word "or" is not exclusive, the words "includes" and "including" are not limiting, the singular includes the plural, and numbers denoting amounts that are set off in brackets are negative. Unless otherwise specified, all references in this Agreement or any Annex or Schedule hereto to a "Section," "subsection," "Exhibit," "Annex," or "Schedule" shall refer to the corresponding Section, subsection, Exhibit, Annex, or Schedule in or to this Agreement. For purposes of the Loan Documents, whenever a representation or warranty is made to a Person's knowledge or awareness, knowledge or awareness means the actual knowledge, after reasonable investigation, of any Responsible Officer of such Person.

2. LOAN AND TERMS OF PAYMENT

2.1 Promise to Pay. Each Borrower hereby unconditionally promises to pay each Lender, ratably, the outstanding principal amount of all Loans, accrued and unpaid interest, fees and charges thereon and to pay all Obligations as and when due in accordance with this Agreement.

2.2 Availability and Repayment or Conversion of the Loans.

(a) Availability.

(i) Subject to the occurrence of the Closing Milestone and the terms and conditions of this Agreement, each Lender agrees, severally and not jointly, to make to Borrowers an advance on or about the Closing Date in principal amount equal to its First Tranche Term Loan Commitment (the "**First Tranche Term Loan**"), provided that all or a portion of the proceeds of the First Tranche Term Loan shall be used to repay in full all of the Loan Parties' outstanding obligations and liabilities to Hercules Capital (the "**Hercules Obligations**"). Lenders' commitments to make the First Tranche Term Loan shall terminate upon the funding of the First Tranche Term Loan on or about the Closing Date.

(ii) Subject to satisfactory review by Administrative Agent of the Borrowers' financial and operating plan, approval by Lenders' investment committee, submission of a Loan Request, and the terms and conditions of this Agreement, each Lender may, in its sole and absolute discretion, severally and not jointly, make to Borrowers advances during the Second Tranche Availability Period in an

aggregate principal amount up to its Second Tranche Term Loan Commitment (the "**Second Tranche Term Loans**", and together with the First Tranche Term Loan, collectively, the "**Term Loans**", and each, a "**Term Loan**"). Lenders' commitment to make the Second Tranche Term Loans shall terminate upon the earlier of (i) the end of the Second Tranche Availability Period, and (ii) the date that Second Tranche Term Loans in an aggregate amount equal to the aggregate amount of the Second Tranche Term Loan Commitments have been funded; provided that no advances of Second Tranche Term Loans shall be made while an Event of Default has occurred and is continuing.

Borrowers shall use the proceeds of the Term Loans (i) to repay the Hercules Obligations and (ii) for working capital and general corporate purposes and, solely for Second Tranche Term Loans, Permitted Acquisitions and Permitted Investments. Once repaid, the Term Loans may not be reborrowed.

(b) Repayment. Commencing on the Amortization Date, and continuing thereafter on each Payment Date through the Term Loan Maturity Date, Borrowers shall make consecutive monthly payments of equal principal and interest, which would fully amortize the principal amount of the Term Loans and accrued interest thereon by the Term Loan Maturity Date, provided that if the Applicable Rate is adjusted or the Amortization Date is extended in accordance with the terms hereof, the amortization schedule and the required monthly installment shall be recalculated based on the adjusted Applicable Rate and/or the remaining number of Payment Dates through the Term Loan Maturity Date. Any and all unpaid Obligations, including principal and accrued and unpaid interest in respect of the Term Loans (including any Deferred Interest), the fees pursuant to the Fee Letter and any other fees and other sums, if any, shall be due and payable in full on the Term Loan Maturity Date. The Term Loans may only be prepaid in accordance with Sections 2.2(c) or (d).

(c) Mandatory Prepayment Upon an Acceleration. If the Loans are accelerated following the occurrence and during the continuance of an Event of Default, Borrowers shall immediately pay to Lenders, an amount equal to the sum of:

(i) all outstanding principal plus accrued and unpaid interest thereon (other than any Deferred Interest to be paid under clause (iii) below), plus

(ii) all amounts then due in accordance with the Fee Letter, plus

(iii) any Deferred Interest, plus

(iv) all other sums, if any, that shall have become due and payable, including interest at the Default Rate with respect to any past due amounts.

(d) Permitted Prepayment of Loans. Borrowers shall have the option to prepay all, but not less than all, of the Loans, provided Borrowers provide written notice (which may be conditional upon the consummation of an acquisition of Borrowers or similar transaction or a refinancing of the Obligations) to Administrative Agent of its election to prepay the Loans at least thirty (30) days prior to such prepayment (or such shorter period as Administrative Agent may approve in writing in its sole discretion), and pay, on the date of such prepayment, to Lenders, ratably, an amount equal to the sum of:

(i) all outstanding principal plus accrued and unpaid interest thereon (other than any Deferred Interest to be paid under clause (iii) below), plus

(ii) all amounts then due in accordance with the Fee Letter, plus

(iii) any Deferred Interest, plus

(iv) all other sums, if any, that shall have become due and payable, including interest at the Default Rate with respect to any past due amounts.

(e) Conversion at Lenders' Election.

(i) Conversion Election. Lenders may jointly elect at any time and from time to time after the Closing Date, prior to the payment in full of the Loans, to convert any portion of the principal amount of the Loans then outstanding (the "**Conversion Amount**") into shares of Common Stock ("**Conversion**

Shares") at the Conversion Price pursuant to a Conversion Election Notice, to be delivered at the direction of Lenders by the Administrative Agent to Borrower Representative, provided that the aggregate principal amount converted to shares of Common Stock in accordance with this Section 2.2(e) shall not exceed Fifteen Million Dollars ($15,000,000.00) (any such conversion, a "**Lender Conversion**"). A Conversion Election Notice, once delivered, shall be irrevocable unless otherwise agreed in writing by Borrower Representative and subject to subsection (ii) below, provided that, to the extent the transfer agent for the Common Stock is participating in the Depository Trust Company ("**DTC**") Fast Automated Securities Transfer Program and provided that the applicable Designated Holder is eligible to receive Conversion Shares through DTC, credit such aggregate number of Conversion Shares to which the Holder shall be entitled to the Holder's or its designee's balance account with DTC through its Deposit Withdrawal Agent Commission system. On the third trading day after a Conversion Election Notice has been duly delivered in accordance with the foregoing, Borrower Representative shall credit to each Designated Holder a number of Conversion Shares equal to (x) the Conversion Amount indicated in the applicable Conversion Election Notice divided by (y) the Conversion Price.

(ii) Reservation of Shares. Borrower Representative shall reserve from its duly authorized and unreserved shares of Common Stock not less than the number of shares that may be issuable pursuant to a conversion pursuant to this Section 2.2(e), provided that if at any time Borrower Representative no longer has sufficient number of authorized and unreserved shares of Common Stock not less than the number of Conversion Shares then issuable upon conversion of the then outstanding principal amount that may be converted pursuant to this Section 2.2(e) (without regard to any applicable cap on conversion pursuant to subsection (vi) and (vii) below), then Borrower Representative shall immediately take all action necessary to increase its authorized and unreserved shares of Common Stock to an amount sufficient to cure such shortfall. In the event that upon any delivery of a Conversion Election Notice there are insufficient authorized and unreserved shares of Common Stock to deliver in satisfaction of such Conversion Election Notice, then the applicable Lender may elect to void such Conversion Election Notice. Upon issuance of Conversion Shares pursuant to Section 2.2(e), such shares shall be validly issued, fully paid and non-assessable and free from all preemptive or similar rights, taxes, liens and charges with respect to the issue thereof, and shall be free of any restrictions on transfer, except for any restrictions under Federal or state securities laws.

(iii) Rule 144. With a view to making available to Designated Holders the benefits of Rule 144 (or its successor rule) and any other rule or regulation of the Securities and Exchange Commission (the "**SEC**") that may at any time permit Designated Holders to sell shares of Common Stock issued pursuant to a Conversion Election Notice to the public without registration, Borrower Representative shall use its commercially reasonable efforts to: (A) make and keep public information available, as those terms are understood and defined in Rule 144, until six (6) months after such date as all of Conversion Shares issued may be sold without restriction by Designated Holders pursuant to Rule 144 or any other rule of similar effect; (B) file with the SEC in a timely manner (or obtain extensions in respect thereof and file within the applicable grace period) all reports and other documents required of Borrower Representative under the Exchange Act; and (C) furnish to Designated Holders, upon request, as long as Designated Holders own any shares of Common Stock issued pursuant to a Conversion Election Notice, such information as may be reasonably requested in order to avail Designated Holders of any rule or regulation of the SEC that permits the selling of any Conversion Shares issued without registration.

(iv) Registration Rights. In connection with the option to convert in accordance with this Section 2.2(e), Borrower Representative hereby agrees that each Designated Holder shall have registration rights with respect to the Registrable Securities on the terms set forth on Schedule 4.

(v) Authorization. For so long as Designated Holders hold any shares of Common Stock issued pursuant to this Section 2.2(e), Borrower Representative shall use its commercially reasonable efforts to maintain the Common Stock's authorization for listing on a Trading Market, and Borrower Representative shall not take any action which could reasonably be expected to result in the delisting or suspension of the Common Stock on such national securities exchange on which the Common Stock is listed.

(vi) Limitations on Conversion.

(1) Beneficial Ownership. Notwithstanding anything herein to the contrary, Borrower Representative shall not issue Conversion Shares to a Designated Holder pursuant to this Section 2.2(e) if such Designated Holder has notified Borrower Representative in writing that, upon such issuance, the number of shares of Common Stock then beneficially owned by such Designated Holder and its Affiliates and any other persons or entities whose beneficial ownership of Common Stock would be aggregated with such Designated Holder for purposes of Section 13(d) of the Exchange Act would exceed 9.985% of the total number of shares of

Common Stock then issued and outstanding (the "**9.985% Cap**"); provided that the 9.985% Cap shall only apply to the extent that the Common Stock is deemed to constitute an "equity security" pursuant to Rule 13d-1(i) promulgated under the Exchange Act, provided further that Lenders shall have the right, upon 61 days' prior written notice to Borrower Representative, to waive the 9.985% Cap.

(2) Principal Market Regulation. Borrower Representative shall not issue Conversion Shares to a Designated Holder pursuant to this Section 2.2(e) if such Designated Holder has notified Borrower Representative in writing that the issuance of such shares together with any previously issued Conversion Shares, would result in (A) the issuance of more than 19.99% of the Common Stock outstanding as of the Closing Date or (B) such Designated Holder, together with its Affiliates and any other persons or entities whose beneficial ownership of Common Stock would be aggregated with such Designated Holder's for purposes of Section 13(d) of the Exchange Act, beneficially owning in excess of 19.99% of the then outstanding Common Stock.

(3) Beneficial Ownership Determination. For purposes of this Section 2.2(e), "group" has the meaning set forth in Section 13(d) of the Exchange Act and applicable regulations of the SEC, and the percentage held by each Designated Holder shall be determined in a manner consistent with the provisions of Section 13(d) of the Exchange Act. Upon the written request of Administrative Agent, Borrower Representative shall, within two (2) trading days, confirm to the Administrative Agent the number of shares of Common Stock then outstanding. As used herein, beneficial ownership shall be determined in accordance with Section 13(d) of the Exchange Act.

(vii) Certain Adjustments. If Borrower Representative declares or pays a dividend or distribution on the outstanding shares of Common Stock payable in additional shares of Common Stock or other securities or property (other than cash), then upon exercise of any conversion option in accordance with this Section 2.2(e), for each Conversion Share acquired, Designated Holder shall receive, without additional cost to Designated Holder, the total number and kind of securities and property which Designated Holder would have received had Designated Holder owned the Conversion Shares of record as of the date the dividend or distribution occurred. Upon any event whereby all of the outstanding shares of Common Stock are reclassified, converted, exchanged, combined, divided, substituted, or replaced for, into, with or by securities of a different type, class and/or series, then from and after the consummation of such event, the Conversion Shares issuable will be the number, class and series of securities that Designated Holder would have received had the Conversion Shares been outstanding on and as of the consummation of such event, and the Conversion Price shall be adjusted accordingly (as applicable). The provisions of this Section 2.2(e)(vii) shall similarly apply to successive reclassifications, exchanges, combinations substitutions, replacements or other similar events. Borrower Representative shall promptly notify Lenders of any event causing an adjustment pursuant to this Section 2.2(e)(vii), and at Lenders' request, shall deliver a certificate of adjustment, setting forth the adjustment and attaching calculations supporting the same, certified by a Responsible Officer.

(viii) No Fractional Shares. Upon conversion of the Conversion Amount into Conversion Shares, any fraction of a share will be rounded down to the next whole share of the Conversion Shares, and in lieu of such fractional shares to which the Designated Holder would otherwise be entitled, the Borrower Representative shall, at its option, either pay the Designated Holder cash equal to such fraction multiplied by the Conversion Price, or return such amount to principal under the Loan.

2.3 Payment of Interest.

(a) Interest Rate.

(i) Cash Interest Rate. Subject to Section 2.3(b), the outstanding principal amount of the Loans shall accrue interest from and after its Funding Date, at the Applicable Rate, and Borrowers shall pay such interest monthly in arrears on each Payment Date commencing on November 1, 2026.

(ii) Deferred Interest.

(1) The outstanding principal amount of each Term Loan shall accrue interest from and after its Funding Date at the Deferred Interest Rate (such accrued interest, the "**Deferred Interest**") and such interest shall be paid-in-kind (and not in cash) by adding such Deferred Interest to the outstanding principal balance of the Term Loans on each Payment Date following such Funding Date. All references

to outstanding principal herein shall refer to the original principal amount as increased from time to time on account of interest at the Deferred Interest Rate added to principal.

(2) Deferred Interest shall be deemed to constitute, and shall constitute, a portion of the outstanding principal balance of the Term Loans and, except as otherwise expressly set forth herein, shall be treated as such for all purposes of this Agreement and the other Loan Documents, including, without limitation, with respect to the accrual of interest thereon at the rates applicable thereto as set forth herein (such amounts, the "**Deferred Interest Principal**"). Any reference in this Agreement or any other Loan Document to any of the Term Loans or the outstanding principal balance of the Term Loans shall include capitalized Deferred Interest. For the avoidance of doubt, Deferred Interest Principal shall be *pari passu* with and shall constitute a portion of the applicable class of Loans for all purposes hereunder.

(b) Default Rate. Immediately upon the occurrence and during the continuance of an Event of Default, Obligations shall bear interest at a rate per annum which is five percentage points (5.0%) above the rate that is otherwise applicable thereto (the "**Default Rate**"). Fees and expenses which are required to be paid by Borrowers pursuant to the Loan Documents (including, without limitation, Secured Party Expenses) but are not paid when due shall bear interest until paid at a rate equal to the highest rate applicable to the Obligations. Payment or acceptance of the increased interest rate provided in this Section 2.3(b) is not a permitted alternative to timely payment and shall not constitute a waiver of any Event of Default or otherwise prejudice or limit any rights or remedies pursuant to the Loan Documents. Each Borrower agrees that interest at the Default Rate is a reasonable calculation of Lenders' lost profits in view of the difficulties and impracticality of determining actual damages resulting from an Event of Default.

(c) Payment; Interest Computation. Interest is payable monthly in arrears on the Payment Date of the following month and shall be computed on the basis of a 360-day year for the actual number of days elapsed. In computing interest, (i) all payments received after 3:00 p.m. Eastern Time on any day shall be deemed received at the opening of business on the next Business Day, and (ii) the date of the making of any Loan shall be included and the date of payment shall be excluded. Changes to the Applicable Rate based on changes to the Prime Rate, shall be effective as of the date, and to the extent, of such change.

(d) Maximum Interest. Notwithstanding any provision in this Agreement or any other Loan Document, it is the parties' intent not to contract for, charge or receive interest at a rate that is greater than the maximum rate permissible by law that a court of competent jurisdiction shall deem applicable hereto (the "**Maximum Rate**"). If a court of competent jurisdiction shall finally determine that a Borrower has actually paid to or for the benefit of Lenders an amount of interest in excess of the amount that would have been payable if all of the Obligations had at all times borne interest at the Maximum Rate, then such excess interest actually paid by Borrowers shall be applied as follows: first, to the payment of principal outstanding in respect of the Loans; second, after all principal is repaid, to the payment of accrued interest, third, to the payment of Secured Party Expenses and any other Obligations; and fourth, after all Obligations are repaid, the excess (if any) shall be refunded to Borrowers or paid to whomsoever may be legally entitled thereto, provided that amounts payable to Lenders, shall be paid ratably.

2.4 Fees and Charges. Borrowers shall pay to Administrative Agent, for the ratable benefit of the Secured Parties:

(a) Fees. The fees and charges as and when due in accordance with the Fee Letter; and

(b) Expenses. All Secured Party Expenses (including reasonable and documented out-of-pocket attorneys' fees and expenses for documentation and negotiation of this Agreement and the other Loan Documents) incurred through and after the Closing Date, when due (or, if no stated due date, within three (3) Business Days after demand by Administrative Agent).

2.5 Payments; Application of Payments; Automatic Payment Authorization; Withholding.

(a) All payments to be made by Borrowers under any Loan Document, including payments of principal and interest and all fees, charges, expenses, indemnities and reimbursements, shall be made in immediately available funds in Dollars, without setoff, recoupment or counterclaim, before 3:00 p.m. Eastern Time on the date when due. Payments of principal and/or interest received after 3:00 p.m. Eastern Time are considered received at the opening of business on the next Business Day. When a payment is due on a day that is not a

Business Day, the payment shall be due the next Business Day, and additional fees or interest, as applicable, shall continue to accrue until paid.

(b) No Borrower shall have a right to specify the order or the loan accounts to which a Lender shall allocate or apply any payments made by a Borrower to or for the benefit of such Lender or otherwise received by such Lender under this Agreement when any such allocation or application is not expressly specified elsewhere in this Agreement.

(c) Administrative Agent, on behalf of the Secured Parties, may initiate debit entries to any Deposit Accounts as authorized on the Automatic Payment Authorization for principal and interest payments or any other Obligations when due; provided, however, that so long as no Event of Default has occurred and is continuing, Administrative Agent shall provide Borrower Representative with prior written notice (which may be in the form of email notice) before debiting Borrowers' deposit accounts for amounts other than principal, interest and payments of regularly scheduled fees. These debits shall not constitute a set-off. If the ACH payment arrangement is terminated for any reason, Borrowers shall make all payments due hereunder at the applicable address specified in Section 10, or as otherwise notified by Administrative Agent in writing.

(d) Borrowers, Administrative Agent, Collateral Trustee and each Lender hereby agree to the terms and conditions set forth on Schedule 3 hereto.

2.6 Promissory Notes. Borrowers agree that: (a) upon written notice by or on behalf of any Lender to Borrowers that a promissory note or other evidence of indebtedness is requested by such Lender to evidence the Loans and other Obligations owing or payable to, or to be made by, such Lender, Borrowers shall promptly (and in any event within three (3) Business Days (or such later date as Administrative Agent may approve in writing in its sole discretion) of any such request) execute and deliver to such Lender an appropriate promissory note, in substantially the form attached hereto as Exhibit G, and (b) upon any Lender's written request, and in any event within three (3) Business Days (or such later date as Administrative Agent may approve in writing in its sole discretion) of any such request), the Borrowers shall execute and deliver to such Lender new notes and/or divide the notes in exchange for then existing notes in such smaller amounts or denominations as such Lender shall specify in its sole and absolute discretion; provided, that the aggregate principal amount of such new notes shall not exceed the aggregate principal amount of the applicable Loans made by such Lender; provided, further, that such promissory notes that are to be replaced shall then be deemed no longer outstanding hereunder and replaced by such new notes and returned to the Borrowers within a reasonable period of time after such Lender's receipt of the replacement notes. Regardless of whether or not any such promissory notes are issued, this Agreement shall evidence the Loans and other Obligations owing or payable by Borrowers to each Lender.

3. CONDITIONS OF LOANS

3.1 Conditions Precedent to Initial Loan. Each Lender's obligation to make the initial Loan is subject to the condition precedent that Lender shall have received, in form and substance satisfactory to Administrative Agent, such documents, and completion of such other matters, as Administrative Agent may reasonably deem necessary or appropriate, including, without limitation:

(a) duly executed signatures to this Agreement;

(b) duly executed signatures to the Fee Letter;

(c) [Reserved];

(d) [Reserved];

(e) a certificate of each Loan Party, duly executed by a Responsible Officer, certifying and attaching (i) the Operating Documents, (ii) resolutions duly approved by the Board, (iii) any resolutions, consent or waiver duly approved by the requisite holders of each Loan Party's Equity Interests, if applicable (or certifying that no such resolutions, consent or waiver is required), and (iv) a schedule of incumbency;

(f) a payoff letter with respect to the Hercules Obligations, together with evidence that (i) all Liens securing such Hercules Obligations will be terminated and (ii) the documents and/or filings evidencing the

perfection of such Liens, including, without limitation, any financing statements and/or control agreements, have or will concurrently with the First Tranche Term Loan, be terminated;

(g) the Perfection Certificate of Borrower Representative, together with the duly executed signature thereto;

(h) evidence satisfactory to Administrative Agent, that the insurance policies required by Section 6.5 are in full force and effect;

(i) evidence satisfactory to Administrative Agent that the Closing Milestone has occurred;

(j) a legal opinion of counsel to the Loan Parties;

(k) the original stock certificates representing any Shares, if any, together with a stock power or other appropriate instrument of transfer, duly executed by the holder of record of such Shares and in blank; and

(l) payment of the fees in accordance with the Fee Letter and Secured Party Expenses then due as specified in Section 2.4(a).

(m) The execution and delivery of this Agreement by each Lender and Administrative Agent shall serve as such Lender's and Administrative Agent's confirmation that the form and substance of the above mentioned Loan Documents are satisfactory to Administrative Agent.

3.2 Conditions Precedent to all Loans. Each Lender's obligations to make each Loan is subject to the following conditions precedent:

(a) except for the Term Loan made on the Closing Date, timely receipt of an executed Loan Request by Administrative Agent;

(b) the representations and warranties in this Agreement and the other Loan Documents shall be true, accurate, and complete in all material respects on the date of the Loan Request and on the Funding Date of each Loan; provided, however, that such materiality qualifier shall not be applicable to any representations and warranties that already are qualified or modified by materiality in the text thereof; and provided, further that those representations and warranties expressly referring to a specific date shall be true, accurate and complete in all material respects as of such date;

(c) no Default or Event of Default shall have occurred and be continuing or result from the Loan; and

(d) there has not been any event or circumstance that has had or could reasonably be expected to have a Material Adverse Effect, or any material adverse deviation by Borrowers from the most recent business plan of Borrowers presented to and accepted by Administrative Agent, as determined by Administrative Agent in Administrative Agent's sole but commercially reasonable discretion.

3.3 Covenant to Deliver.

(a) Loan Parties agree to deliver each item required to be delivered under this Agreement as a condition precedent to any Loan. Loan Parties expressly agree that a Loan made prior to the receipt of any such item shall not constitute a waiver by Administrative Agent of a Borrower's obligation to deliver such item, and the making of any Loan in the absence of a required item shall be in Administrative Agent's sole discretion.

(b) Loan Parties agree to deliver the items set forth on Schedule 2 hereto within the timeframe set forth therein (or by such other date as Administrative Agent may approve in writing), in each case, in form and substance reasonably acceptable to Administrative Agent.

3.4 Procedures for Borrowing. To obtain a Loan (other than the First Tranche Term Loan), Borrower Representative shall deliver a completed Loan Request to Administrative Agent (which may be delivered by email) no later than 3:00 p.m. Eastern Time, ten (10) Business Days (or such later date as Administrative Agent may approve in writing in its sole discretion) prior to the date such Loan is requested to be made. On the Funding

Date, each applicable Lender shall fund the applicable Loan in the manner requested by the Loan Request, provided that each of the conditions precedent to such Loan is satisfied.

4. CREATION OF SECURITY INTEREST

4.1 **Grant of Security Interest**. Each Loan Party hereby grants to Collateral Trustee, for the ratable benefit of the Secured Parties, to secure the payment and performance in full of all of the Obligations, a continuing security interest in, and pledges to Collateral Trustee, the Collateral, wherever located, whether now owned or hereafter acquired or arising, and all proceeds and products thereof. If this Agreement is terminated, Collateral Trustee's Lien in the Collateral shall continue until the Obligations (other than contingent indemnification obligations as to which no claim has been asserted or is known to exist and any other obligations which, by their terms, are to survive the termination of this Agreement) are repaid in full in cash.

4.2 **Priority of Security Interest**. Each Loan Party represents, warrants, and covenants that the security interest granted herein is and shall at all times continue to be a first priority perfected security interest in the Collateral (subject only to Permitted Liens). If a Loan Party shall acquire a commercial tort claim with a potential recovery in excess of Seven Hundred Fifty Thousand Dollars ($750,000.00), such Loan Party shall promptly notify Administrative Agent in writing and deliver such other information and documents as Administrative Agent may require to take any further action necessary or advisable to perfect Collateral Trustee's Lien in such commercial tort claim. If a Loan Party shall acquire a certificate with respect to Shares or any instrument, such Loan Party shall promptly notify Administrative Agent and deliver the same in original to the Collateral Trustee together with a stock power or instrument of transfer and any necessary endorsement, all in form satisfactory to Administrative Agent.

4.3 **Authorization to File Financing Statements**. Each Loan Party hereby authorizes Collateral Trustee or its designee (or the Administrative Agent, on behalf of the Collateral Trustee) to file at any time financing statements, continuation statements and amendments thereto with all appropriate jurisdictions to perfect or protect Collateral Trustee's interest or rights hereunder. Such financing statements may describe the Collateral as all assets of such Loan Party.

4.4 **Pledge of Collateral**. Each Loan Party hereby pledges, collaterally assigns and grants to Collateral Trustee, for the ratable benefit of the Secured Parties, a security interest in all the Equity Interests in which such Loan Party has any interest, including the Shares, together with all proceeds and substitutions thereof, all cash, stock and other moneys and property paid thereon, all rights to subscribe for securities declared or granted in connection therewith, and all other cash and noncash proceeds of the foregoing, as security for the performance of the Obligations. On the Closing Date or as required pursuant to Section 6.11, the certificate or certificates for such Equity Interests, to the extent certificated, will promptly be delivered to Collateral Trustee, accompanied by a stock power or other appropriate instrument of assignment duly executed in blank. To the extent required by the terms and conditions governing the Equity Interests in which a Loan Party has an interest, such Loan Party shall cause the books of each Person whose Equity Interests are part of the Collateral and any transfer agent to reflect the pledge of the Equity Interests. Upon the occurrence and during the continuance of an Event of Default hereunder, Collateral Trustee may effect the transfer of any securities included in the Collateral (including but not limited to the Equity Interests) into the name of Collateral Trustee or its transferee and cause new certificates representing such securities to be issued in the name of Collateral Trustee or its transferee. Each Loan Party will execute and deliver such documents, and take or cause to be taken such actions, as Administrative Agent may reasonably request to perfect or continue the perfection of Collateral Trustee's security interest in the Equity Interests. Each Loan Party shall be entitled to exercise any voting rights with respect to the Equity Interests in which it has an interest and to give consents, waivers and ratifications in respect thereof, unless following an Event of Default that is continuing, Collateral Trustee (acting at the direction of the Administrative Agent subject to the terms of the Collateral Trust Agreement) shall have given written notice to Borrower Representative suspending such rights, provided that: no such notice shall be required if a Loan Party has commenced an Insolvency Proceeding and, in any event, no vote shall be cast or consent, waiver or ratification given or action taken which would be inconsistent with any of the terms of this Agreement or which would constitute or create any violation of any of such terms. All such rights to vote and give consents, waivers and ratifications shall terminate upon notice given in accordance with the foregoing (if such notice is required) after the occurrence and during the continuance of an Event of Default.

5. REPRESENTATIONS AND WARRANTIES

Each Loan Party represents and warrants as follows:

5.1 Due Organization, Authorization; Power and Authority.

(a) Each Loan Party and each of its Subsidiaries are duly existing and in good standing as a Registered Organization in their respective jurisdictions of formation and are qualified and licensed to do business and are in good standing in any other jurisdiction in which the conduct of their respective business or ownership of property require that they be qualified except where the failure to do so could not reasonably be expected to have a Material Adverse Effect. In connection with this Agreement, Borrower Representative has delivered to Administrative Agent on the Closing Date a completed certificate signed by a Responsible Officer of Borrower Representative entitled "**Perfection Certificate**". Except to the extent Borrower Representative has provided notice of a change in accordance with Section 7.2, (i) each Loan Party's exact legal name is that indicated on the Perfection Certificate and on the signature page hereof; (ii) each Loan Party is an organization of the type and is organized in the jurisdiction set forth in the Perfection Certificate; (iii) the Perfection Certificate accurately sets forth each Loan Party's organizational identification number or accurately states that such Loan Party has none; (iv) the Perfection Certificate accurately sets forth each Loan Party's place of business, or, if more than one, its chief executive office as well as such Loan Party's mailing address (if different than its chief executive office); (v) except as set forth in the Perfection Certificate, each Loan Party (and each of its predecessors) has not, in the past five (5) years, changed its jurisdiction of formation, organizational structure or type, or any organizational number assigned by its jurisdiction; and (vi) all other information set forth on the Perfection Certificate pertaining to each Loan Party and each of its Subsidiaries is accurate and complete in all material respects (it being understood and agreed that each Loan Party may from time to time update certain information in the Perfection Certificate after the Closing Date to the extent permitted by one or more specific provisions in this Agreement).

(b) The execution, delivery and performance by each Loan Party of the Loan Documents to which it is a party have been duly authorized, and do not (i) conflict with such Loan Party's Operating Documents or other organizational documents, (ii) contravene, conflict with, constitute a default under or violate any material Requirement of Law, (iii) contravene, conflict or violate any applicable material order, writ, judgment, injunction, decree, determination or award of any Governmental Authority by which such Loan Party or any of its Subsidiaries or any of their property or assets may be bound or affected, (iv) require any action by, filing, registration, or qualification with, or Governmental Approval from, any Governmental Authority (except such Governmental Approvals which have already been obtained and are in full force and effect), or (v) conflict with, contravene, constitute a default or breach under, or result in or permit the termination or acceleration of, any material agreement by which such Loan Party is bound. No Loan Party is in default under any agreement to which it is a party or by which it is bound in which the default could reasonably be expected to have a Material Adverse Effect.

5.2 Collateral.

(a) Each Loan Party has good title to, rights in, and the power to transfer each item of the Collateral upon which it purports to grant a Lien hereunder, free and clear of any and all Liens except Permitted Liens.

(b) Except for the Collateral Accounts described in the Perfection Certificate or in a notice timely delivered pursuant to Section 6.6, no Loan Party has any Collateral Accounts at or with any bank, broker or other financial institution, and each Loan Party has taken such actions as are necessary to give Collateral Trustee a perfected security interest therein as required pursuant to the terms of Section 6.6(b). The Accounts are bona fide, existing obligations of the Account Debtors.

(c) The Collateral is located only at the locations identified in the Perfection Certificate and other Permitted Locations. The Collateral is not in the possession of any third party bailee (such as a warehouse) except as otherwise provided in the Perfection Certificate or as disclosed in writing pursuant to Section 6.12.

(d) Each Loan Party is the sole owner of the Intellectual Property that is material to the business of the Loan Parties, taken as a whole, and which it owns or purports to own except for (i) licenses constituting "Permitted Transfers", (ii) open-source software, (iii) over-the-counter software that is commercially available to the public, (iv) material Intellectual Property licensed to such Loan Party and noted on the Perfection Certificate or as disclosed pursuant to Section 6.7(b), and (v) immaterial Intellectual Property licensed to such Loan

Party. To the best of each Loan Party's knowledge, each Patent (other than patent applications) which it owns or purports to own and which is material to such Loan Party's business is valid and enforceable, and no part of the Intellectual Property which a Loan Party owns or purports to own and which is material to the Loan Parties' business has been judged invalid or unenforceable, in whole or in part. To the best of each Loan Party's knowledge, no claim has been made that any part of the Intellectual Property violates the rights of any third party except to the extent such claim could not reasonably be expected to have a Material Adverse Effect. Except as noted on the Perfection Certificate or as disclosed pursuant to Section 6.7(b), no Loan Party is a party to, nor is it bound by, any Restricted License. No Subsidiary which is not a Loan Party owns any material Intellectual Property. It will not be necessary to use any inventions of any of such Loan Party's employees or consultants (or Persons it currently intends to hire) made prior to their employment by such Loan Party. Each current and prior employee, consultant or other Affiliate thereof has entered into an invention assignment agreement or similar agreement with such Loan Party with respect to all intellectual property rights he or she owns that are related to the Loan Parties' business.

5.3 **Accounts; Material Agreements**. To the knowledge of the Loan Parties, the Accounts are bona fide existing obligations. The property or services giving rise to such Accounts have been delivered or rendered. No Loan Party has received any notice of actual or imminent insolvency of an Account Debtor with an Account that has a value in excess of Seven Hundred Fifty Thousand Dollars ($750,000.00) individually and in the aggregate. The material licenses and agreements to which any Loan Party or any of its Subsidiaries is a party is in good standing and in full force and effect and no Loan Party is in breach with respect thereto, except where such breach could not reasonably be expected to have a Material Adverse Effect. No material customer or supplier has terminated, significantly reduced or communicated its intent to do so to any Loan Party or any of its Subsidiaries.

5.4 **Litigation and Proceedings**. Except as set forth in the Perfection Certificate or as disclosed in writing pursuant to Section 6.2, there are no actions, suits, litigations or proceedings, at law or in equity, pending, or, to the knowledge of any Responsible Officer, threatened in writing, by or against any Loan Party or any of its Subsidiaries, officers or directors involving more than, individually or in the aggregate for all related proceedings, Seven Hundred Fifty Thousand Dollars ($750,000.00) or in which any adverse decision has had or could reasonably be expected to have any Material Adverse Effect.

5.5 **Financial Statements; Financial Condition**. All consolidated and consolidating (if applicable) financial statements for the Loan Parties and each of their Subsidiaries delivered to Administrative Agent fairly present in all material respects the consolidated and consolidating (if applicable) financial condition and results of operations of the Loan Parties and each of their Subsidiaries as of the respective dates and for the respective periods then ended, and there are no material liabilities (including any contingent liabilities) which are not reflected in such financial statements. There has not been any material deterioration in the consolidated and consolidating (if applicable) financial condition of the Loan Parties and each of their Subsidiaries or the Collateral since the date of the most recent financial statements submitted to Administrative Agent.

5.6 **Solvency**. The fair salable value of the assets (including goodwill minus disposition costs) of the Loan Parties and their Subsidiaries, on a consolidated basis, exceeds the fair value of liabilities of the Loan Parties' and their Subsidiaries, on a consolidated basis; no Loan Party is left with unreasonably small capital after the transactions in this Agreement; and each Loan Party is able to pay its debts (including trade debts) as they mature.

5.7 **Consents; Approvals**. Each Loan Party and each of their Subsidiaries have obtained all third party consents, approvals, waivers, made all declarations or filings with, given all notices to, and obtained all consents, licenses, permits or other approvals from all Governmental Authorities that are necessary (i) to enter into the Loan Documents and consummate the transactions contemplated thereby, and (ii) to continue their respective businesses as currently conducted, except (with respect to this clause (ii)) where failure to do so could not reasonably be expected to result in a Material Adverse Effect.

5.8 **Subsidiaries; Investments**. No Loan Party has any Subsidiaries, except as noted on the Perfection Certificate or as disclosed to Administrative Agent pursuant to Section 6.11 below. No Loan Party owns any stock, partnership, or other ownership interest or other Equity Interests except for Permitted Investments.

5.9 **Tax Returns and Payments.** Each Loan Party and each of its Subsidiaries have timely filed all required material tax returns and reports (or appropriate extensions therefor), and such Loan Party and each of its Subsidiaries has timely paid all material foreign, federal, state and local taxes, assessments, deposits and contributions owed by such Loan Party or such Subsidiary, as applicable, except (a) to the extent such taxes are being contested in good faith by appropriate proceedings promptly instituted and diligently conducted, so long as

such reserve or other appropriate provision, if any, as shall be required in conformity with GAAP shall have been made therefor, or (b) if such taxes, assessments, deposits and contributions do not, individually or in the aggregate, exceed Seven Hundred Fifty Thousand Dollars ($750,000.00). No Loan Party is aware of any claims or adjustments proposed for any prior tax years of such Loan Party or any of its Subsidiaries which could result in a material amount of additional taxes becoming due and payable by such Loan Party or Subsidiary.

5.10 **Shares.** Each Loan Party has full power and authority to create a first priority lien (subject only to Permitted Liens) on its Shares and no disability or contractual obligation exists that would prohibit such Loan Party from pledging its Shares pursuant to this Agreement. There are no subscriptions, warrants, rights of first refusal or other restrictions on transfer relative to, or options exercisable with respect to the Shares. The Shares have been and will be duly authorized and validly issued, and are fully paid and non-assessable. The Shares are not the subject of any present or threatened (in writing) suit, action, arbitration, administrative or other proceeding, and such Loan Party knows of no reasonable grounds for the institution of any such proceedings.

5.11 **Compliance with Laws**.

(a) No Loan Party or Subsidiary of a Loan Party is an "investment company" or an "affiliated person" of, or "promoter" or "principal underwriter" for, an "investment company", as such terms are defined in the Investment Company Act of 1940 as amended.

(b) No Loan Party or Subsidiary of a Loan Party is engaged, nor will it engage, principally or as one of its important activities, in the business of extending credit for the purpose of "purchasing" or "carrying" any "margin security" as such terms are defined in Regulation U of the Federal Reserve Board as now and from time to time hereafter in effect (such securities being referred to herein as "**Margin Stock**"). None of the proceeds of the Loans or other extensions of credit under this Agreement have been (or will be) used, directly or indirectly, for the purpose of purchasing or carrying any Margin Stock, for the purpose of reducing or retiring any Indebtedness which was originally incurred to purchase or carry any Margin Stock or for any other purpose which might cause any of the Loans or other extensions of credit under this Agreement to be considered a "purpose credit" within the meaning of Regulation T, U or X of the Federal Reserve Board.

(c) No Loan Party has taken or permitted to be taken any action which might cause any Loan Document to which it is a party to violate any regulation of the Federal Reserve Board. Neither the making of the Loans hereunder nor Borrowers' use of the proceeds thereof will violate the Trading with the Enemy Act, as amended, or any of the foreign assets control regulations of the United States Treasury Department (31 CFR, Subtitle B, Chapter V, as amended) or any enabling legislation or executive order relating thereto. No Loan Party, nor any of its Subsidiaries, nor any Affiliate of any Loan Party or of any Subsidiary, nor any present holder of Equity Interests of any of the foregoing (i) is a Person described or designated in the Specially Designated Nationals and Blocked Persons List of the Office of Foreign Assets Control of the United States Department of Treasury ("**OFAC**") or in Section 1 of the Anti-Terrorism Order or similar sanctions laws of any other Governmental Authority including of any other applicable jurisdiction, (ii) is a citizen or resident of any country or territory that is subject to embargo or trade sanctions enforced by OFAC, (iii) is, or will become, a Person whose property or interest in property is blocked or subject to blocking pursuant to Section 1 of the Anti-Terrorism Order, or (iv) engages in any dealings or transactions, or is otherwise associated, with any such Person.

(d) Each Loan Party and its Subsidiaries are in compliance, in all material respects, with the USA Patriot Act. No part of the proceeds from the Loans made hereunder has been (or will be) used, directly or indirectly, for any payments to any governmental official or employee, political party, official of a political party, candidate for political office, or anyone else acting in an official capacity, in order to obtain, retain or direct business or obtain any improper advantage, in violation of the United States Foreign Corrupt Practices Act of 1977, as amended.

(e) No Reportable Event or Prohibited Transaction, as defined in ERISA has occurred or is reasonably expected to occur, and no Loan Party has failed to meet the minimum funding requirements of ERISA. No Loan Party has violated any applicable environmental laws in any material respect, maintains any properties or assets which have been designated in any manner pursuant to any environmental protection statute as a hazardous materials disposal site, or has received any notice, summons, citation or directive from the Environmental Protection Agency or any other similar Governmental Authority.

5.12 **Products**. A complete and accurate list of the Products material to the Loan Parties' business, is set forth on the Perfection Certificate, as updated from time to time pursuant to the Compliance Certificate. Except as could not reasonably be expected to have a Material Adverse Effect, the Loan Parties and each of its Subsidiaries hold all required Governmental Approvals, a list of which is set forth on the Perfection Certificate, and all Governmental Approvals are in full force and effect. Except as could not reasonably be expected to have a Material Adverse Effect, there are no proceedings in progress, pending or, to such Loan Party's knowledge, threatened, that may result in revocation, cancellation, suspension, rescission or any adverse modification of any of any Governmental Approval nor, to the best of the knowledge, information and belief of such Loan Party, after due inquiry, are there any facts upon which proceedings could reasonably be based. Without limitation of the foregoing:

(a) Except as could not reasonably be expected to have a Material Adverse Effect, with respect to any Product being tested or manufactured, each Loan Party and each of its Subsidiaries has received, and such Product is the subject of, all Governmental Approvals needed in connection with the testing or manufacture of such Product as such testing is currently being conducted by or on behalf of a Loan Party or any of its Subsidiaries, and neither any Loan Party nor any of its Subsidiaries has received any written notice from any applicable Governmental Authority, that such Governmental Authority is conducting an investigation or review of (i) any Loan Party's or any of its Subsidiary's manufacturing facilities and processes for such Product which have disclosed any material deficiencies or violations of any Requirement of Law or the Governmental Approvals related to the manufacture of such Product, or (ii) any such Governmental Approval or that any such Governmental Approval has been revoked or withdrawn, nor has any such Governmental Authority issued any order or recommendation stating that the development, testing and/or manufacturing of such Product should cease.

(b) Except as could not reasonably be expected to have a Material Adverse Effect, with respect to any Product marketed or sold by a Loan Party or any of its Subsidiaries, such Loan Party or such Subsidiary, as applicable, has received, and such Product is the subject of, all Governmental Approvals needed in connection with the marketing and sales of such Product as currently being marketed or sold, and no Loan Party nor any of its Subsidiary has received any written notice from any applicable Governmental Authority, that such Governmental Authority is conducting an investigation or review of any such Governmental Approval or approval or that any such Governmental Approval has been revoked or withdrawn, nor has any such Governmental Authority issued any order or recommendation stating that such marketing or sales of such Product cease or that such Product be withdrawn from the marketplace;

(c) Except as disclosed in writing to the Administrative Agent by the Borrower Representative, there have been no adverse clinical test results in connection with a Product which have or could reasonably be expected to have a Material Adverse Effect; and

(d) There have been no Product recalls or voluntary Product withdrawals from any market, except as could not reasonably be expected to have a Material Adverse Effect.

5.13 **Royalty and Milestone Payments**. As of the Closing Date, except as set forth on Schedule 5 hereto, no Loan Party is obligated to make Royalty and Milestone Payments in excess of Seven Hundred Fifty Thousand Dollars ($750,000.00) in the aggregate per fiscal year.

5.14 **Full Disclosure**. No written representation, warranty or other statement of a Loan Party or any of its Subsidiaries in any certificate or written statement by or on behalf of a Loan Party or any of its Subsidiaries in connection with this Agreement, as of the date such representation, warranty, or other statement was made, taken together with all such written certificates and written statements given, contains any untrue statement of a material fact or omits to state a material fact necessary to make the statements contained in the certificates or statements not misleading in light of the circumstances under which they were made (it being recognized that the projections and forecasts provided by any Loan Party in good faith and based upon reasonable assumptions are not viewed as facts and that actual results during the period or periods covered by such projections and forecasts may differ from the projected or forecasted results).

6. AFFIRMATIVE COVENANTS

Each Loan Party shall, and shall cause each other Loan Party to, do all of the following:

6.1 **Government Compliance**. Except as otherwise permitted by Section 7.3, maintain its and all its Subsidiaries' legal existence and good standing in their respective jurisdictions of formation and maintain

qualification in each jurisdiction in which the failure to so qualify could reasonably be expected to have a Material Adverse Effect; comply, and cause each Subsidiary to comply, with all laws, ordinances and regulations to which it is subject except where a failure to do so could not reasonably be expected to have a Material Adverse Effect; obtain all of the Governmental Approvals required in connection with such Loan Party's business and for the performance by each Loan Party of its obligations under the Loan Documents to which it is a party and the grant of a security interest in accordance therewith, and comply with all terms and conditions with respect to such Governmental Approvals.

6.2 **Financial Statements, Reports, Certificates**. Provide Administrative Agent with the following:

(a) Monthly Financial Statements. Within thirty (30) days after the last day of each month, a company prepared consolidated and consolidating (if applicable) balance sheet, income statement and statement of cash flows covering the Loan Parties and each of their Subsidiaries' operations for such month, in form acceptable to Administrative Agent, certified by a Responsible Officer as having been prepared consistent with the Loan Parties' historical business practices.

(b) Quarterly Financial Statements. Within forty-five (45) days after the last day of each fiscal quarter, a company prepared consolidated and consolidating (if applicable) balance sheet, income statement and statement of cash flows covering the Loan Parties and each of their Subsidiaries' operations for such fiscal quarter, in form reasonably acceptable to Administrative Agent, certified by a Responsible Officer as having been prepared in accordance with GAAP, consistently applied, except for the absence of footnotes, and subject to normal year-end adjustments.

(c) Monthly Compliance Certificate. Within thirty (30) days after the last day of each month and together with the monthly financial statements, a duly completed Compliance Certificate signed by a Responsible Officer, certifying that as of the end of such month, the Loan Parties were in full compliance with all of the terms and conditions of this Agreement, and setting forth calculations showing compliance with the financial covenants set forth in this Agreement.

(d) Annual Operating Budget and Financial Projections. Within sixty (60) days after the end of each fiscal year of Borrower Representative (and within five (5) Business Days of any material modification thereto), an annual operating budget, on a consolidated and consolidating (if applicable) basis (including income statements, balance sheets and cash flow statements, by month) for the upcoming fiscal year of Borrower Representative, together with any related business forecasts used in the preparation thereof.

(e) Annual Audited Financial Statements. As soon as available, but no later than one hundred eighty (180) days after the last day of Borrower Representative's fiscal year, audited consolidated financial statements prepared in accordance with GAAP, consistently applied, together with an unqualified opinion on the financial statements from PwC or an independent certified public accounting firm reasonably acceptable to Administrative Agent, together with any management letter with respect thereto; provided that the inclusion of explanatory language casting doubt on Borrower Representative's ability to continue as a going concern due to the need to raise additional financing or refinance Indebtedness shall not cause such financial statements to be considered "qualified" for purposes of this subsection (e).

(f) Other Statements. Within five (5) Business Days of delivery, copies of all statements, reports and notices generally made available to all stockholders or to any holders of Subordinated Debt; provided, however, the foregoing may be subject to such exclusions and redactions as necessary in order to (A) preserve the confidentiality of highly sensitive proprietary information, (B) prevent impairment of the attorney-client privilege with respect to pending or threatened litigation, or (C) prevent an actual or potential conflict of interest between a Loan Party and a Secured Party. Each Loan Party shall provide such other information as Administrative Agent may reasonably request.

(g) SEC Filings. Within five (5) Business Days of filing, copies of all periodic and other reports, proxy statements and other materials filed by Borrower Representative with the Securities and Exchange Commission (other than in connection with changes in the beneficial ownership), provided that such filings shall be deemed to have been delivered on the date on which Borrower Representative posts such documents on Borrower Representative's website, subject to notification of the filing on the then-next Compliance Certificate.

(h) Legal Action Notice. A prompt report of any legal actions pending or threatened in writing against any Loan Party or any of its Subsidiaries that could result in damages or costs to any Loan Party or any of its Subsidiaries, individually or in the aggregate for all related proceedings, of Seven Hundred Fifty Thousand Dollars ($750,000.00) or more, or of any Loan Party or any of its Subsidiaries taking or threatening legal action against any third person with respect to a material claim, and with respect to any pending action or threatened action, a prompt report of any material development with respect thereto.

(i) Board Materials. Within five (5) Business Days after a meeting of Borrower Representative's Board, or any committee or subcommittee thereof or advisory board and in the same manner as it gives to the members of Borrower Representative's Board or any committee or subcommittee thereof or advisory board, copies of all materials that Borrower Representative provides to its Board or such committee or subcommittee or advisory board in connection with such meetings, including any reports with respect to the Loan Parties' operations or performance, and within five (5) Business Days after approval thereof by Borrower Representative's Board, minutes of such meetings; provided, however, the foregoing may be subject to such exclusions and redactions as necessary in order to (A) preserve the confidentiality of highly sensitive proprietary information, (B) prevent impairment of the attorney client privilege with respect to pending or threatened litigation, (C) prevent disclosure of information disclosure of which is prohibited pursuant to the order of any court or administrative agency in any pending legal, judicial or administrative proceeding, or otherwise as required by applicable law or compulsory legal process or to the extent required by governmental or regulatory authorities, or (D) prevent an actual or potential conflict of interest between a Loan Party and a Secured Party.

(j) Intellectual Property Report. Together with the Compliance Certificate delivered at the end of each fiscal quarter, a report in form reasonably acceptable to Administrative Agent, listing any applications or registrations that any Loan Party or any of its Subsidiaries has made or filed in respect of any Patents, Copyrights or Trademarks and the status of any outstanding applications or registrations, as well as any material change in any Loan Party or any of its Subsidiaries' Intellectual Property.

(k) Receivable and Aging Reports; Other Reports and Information. Together with the monthly financial reports, reports as to the following, in form reasonably acceptable to Administrative Agent: accounts receivable and accounts payable aging, and any other information related to the financial or business condition of any Loan Party as and when reasonably requested by Administrative Agent. The Administrative Agent may use Lumonic or any other reporting and administration platform designated by Administrative Agent, and Borrower will deliver through such platform any required reporting. In Administrative Agent's reasonable discretion and with prior notice to Borrower, Borrower Representative shall provide Administrative Agent with continuous online viewing access to the account balance and activity of each Deposit Account and Securities Account subject to an Account Control Agreement through such platform.

(l) Bank Account Statements. Together with the monthly financial statements delivered in accordance with subsection (a) above, a copy of the most recent account statement, with transaction detail, for each Deposit Account or Securities Account of a Loan Party or any of its Subsidiaries, or within five (5) Business Days, upon Administrative Agent's reasonable request, evidence reasonably satisfactory to Administrative Agent of the balance maintained in any such Deposit Account or Securities Account.

(m) Equity Financing Documents. Together with the next Compliance Certificate due after the consummation of any preferred stock financing, a copy of the documents entered into in connection with such financing.

(n) Product Related. Within five (5) Business Days of receipt, copies of all material correspondence, reports, documents and other filings with any Governmental Authority that could reasonably be expected to have a material adverse effect on any Governmental Approvals required for the manufacturing, marketing, testing or sale of Products or which could have a Material Adverse Effect.

(o) Royalty and Milestone Payments. Together with each Compliance Certificate, an updated schedule of reasonably expected Royalty and Milestone Payments, in substantially the same form as Schedule 5 hereto, to the extent any material change thereto.

(p) Information required to be delivered pursuant to this Section 6.2 (i) may be delivered electronically and if so delivered, shall be deemed to have been delivered on the date on which Borrower Representative posts such information, posted on its website or at https://www.sec.gov (or any successor website

thereto), subject to notification thereof in the next Compliance Certificate delivered, and (ii) when due on a day that is not a Business Day, shall be due the next Business Day.

6.3 **Inventory; Returns**. Keep all Inventory in good and marketable condition, free from material defects. Returns and allowances between a Loan Party and its Account Debtors shall follow such Loan Party's customary practices as they exist at the Closing Date. Borrower Representative shall promptly notify Administrative Agent of all returns, recoveries, disputes and claims that involve more than Seven Hundred Fifty Thousand Dollars ($750,000.00).

6.4 **Taxes; Pensions**. Timely file, and cause each of its Subsidiaries to timely file, all required material tax returns and reports and timely pay, and require each of its Subsidiaries to timely pay, all foreign, federal, state and local taxes, assessments, deposits and contributions owed by such Loan Party and each of its Subsidiaries, except for (a) deferred payment of any taxes contested pursuant to the terms of Section 5.9 and (b) such taxes, assessments, deposits and contributions that do not, individually or in the aggregate, exceed the amount set forth in Section 5.9, and shall deliver to Administrative Agent, on demand, appropriate certificates attesting to such payments, and pay all amounts necessary to fund all present pension, profit sharing and deferred compensation plans in accordance with their terms.

6.5 **Insurance**.

(a) Keep, and cause each Subsidiary to keep, its business and the Collateral insured for risks and in amounts standard for companies in the Loan Parties' industry and location and as Administrative Agent may reasonably request. Insurance policies shall be in a form, with financially sound and reputable insurance companies that are not Affiliates of any Loan Party, and in amounts that are reasonably satisfactory to Administrative Agent (and Administrative Agent hereby acknowledges and agrees that Borrower's insurance policies are in a form acceptable to Administrative Agent as of the Closing Date).

(b) Ensure that proceeds payable under any property policy with respect to Collateral are, at Administrative Agent's option, payable to Collateral Trustee, for the ratable benefit of the Secured Parties, on account of the Obligations. To that end, subject to Section 3.3 and Schedule 2 hereof, all property policies shall have a lender's loss payable endorsement showing Collateral Trustee as lender loss payable, and all liability policies shall show, or have endorsements showing, Collateral Trustee as an additional insured, in each case, in form satisfactory to Administrative Agent and as set forth on Exhibit E.

(c) Notwithstanding the foregoing, (i) so long as no Event of Default has occurred and is continuing, the Loan Parties shall have the option of applying the proceeds of any casualty policy up to Seven Hundred Fifty Thousand Dollars ($750,000.00), in the aggregate per fiscal year, toward the prompt replacement or repair of destroyed or damaged property; provided that any such replaced or repaired property (x) shall be of equal or like value as the replaced or repaired Collateral and (y) shall be deemed Collateral in which Collateral Trustee has been granted a first priority security interest and (ii) after the occurrence and during the continuance of an Event of Default, all such proceeds shall, at the option of Administrative Agent, be payable to Collateral Trustee, for the ratable benefit of the Secured Parties, on account of the Obligations.

(d) At Administrative Agent's reasonable request, Borrower Representative shall deliver certified copies of insurance policies and evidence of all premium payments. Subject to Section 3.3 and Schedule 2 hereof, each provider of any such insurance required under this Section 6.5 shall agree, by endorsement upon the policy or policies issued by it or by independent instruments furnished to Collateral Trustee, that it will give Collateral Trustee thirty (30) days prior written notice before any such policy or policies shall be canceled (or ten (10) days' notice for cancellation for non-payment of premiums).

(e) If any Loan Party fails to obtain insurance as required under this Section 6.5 or to pay any amount or furnish any required proof of payment upon Administrative Agent's request, Collateral Trustee may (at the direction of Administrative Agent) make all or part of such payment or obtain such insurance policies required in this Section 6.5, and take any action under the policies as Collateral Trustee deems prudent or as Administrative Agent may direct.

6.6 Deposit and Securities Accounts.

(a) Maintain Collateral Accounts only at the banks and other financial institutions identified in the Perfection Certificate or as disclosed pursuant to a notice timely delivered pursuant to subsection (b) below. Borrowers shall further maintain an ACH payment structure in favor of Administrative Agent, satisfactory to Administrative Agent (it being understood that the ACH payment structure in place as of the Closing Date is satisfactory to the Administrative Agent).

(b) Provide Administrative Agent ten (10) Business Days prior written notice before establishing any Collateral Account at or with any bank, broker or other financial institution, and upon opening such account, provide Administrative Agent with a written notice identifying the name, address of each bank or other institution, the name in which the account is held, a description of the purpose of the account, and the complete account number therefor. Subject to Section 3.3 and Schedule 2 hereof, for each Collateral Account (other than the Excluded Accounts) that any Loan Party at any time maintains, Loan Parties shall, within ten (10) Business Days of the opening of such Collateral Account, cause the applicable bank, broker or financial institution at or with which any Collateral Account is maintained to execute and deliver an Account Control Agreement or other appropriate instrument with respect to such Collateral Account to perfect Collateral Trustee's Lien in such Collateral Account in accordance with the terms hereunder.

6.7 Intellectual Property.

(a) Use commercially reasonable efforts to protect, defend and maintain the validity and enforceability of its Intellectual Property material to its business; promptly advise Administrative Agent in writing of material infringements or any other event that could reasonably be expected to materially and adversely affect the value of its Intellectual Property material to its business; not suffer any material claim of infringement that could reasonably be expected to have a Material Adverse Effect unless such claim is dismissed within thirty (30) days from initiation thereof or Borrower Representative has demonstrated to Administrative Agent's satisfaction that such proceedings are without merit and adequate reserves have been taken; and not allow any Intellectual Property material to the Loan Parties' business to be abandoned, forfeited or dedicated to the public without Administrative Agent's written consent.

(b) Provide written notice to Administrative Agent at least thirty (30) days (or such shorter period as Administrative Agent may approve in writing in its sole discretion) prior to any Loan Party entering or becoming bound by any Restricted License (other than off the shelf software and services that are commercially available to the public), and use commercially reasonable efforts to obtain, or cause such Loan Party to obtain, the consent of, or waiver in form satisfactory to Administrative Agent from any person whose consent or waiver is necessary for (i) any Restricted License to be deemed "Collateral" and for Collateral Trustee to have a security interest in it that might otherwise be restricted or prohibited by law or by the terms of any such Restricted License, and (ii) Collateral Trustee to have the ability in the event of a liquidation of any Collateral to dispose of such Restricted License together with other Collateral in accordance with Collateral Trustee's rights and remedies under this Agreement and the other Loan Documents.

6.8 Litigation Cooperation. From the Closing Date and continuing through the termination of this Agreement, make available to Administrative Agent, Collateral Trustee and any Lender, without expense to Administrative Agent, Collateral Trustee or such Lender, as applicable, during normal business hours and upon reasonable prior notice, each Loan Party and its officers, employees and agents and each Loan Party's books and records, to the extent that Administrative Agent, Collateral Trustee or such Lender may deem them reasonably necessary to prosecute or defend any third-party suit or proceeding instituted by or against Administrative Agent, Collateral Trustee or such Lender with respect to any Collateral or relating to such Loan Party; provided, however, that the foregoing shall be subject to such exclusions and redactions as necessary in order to (A) preserve the confidentiality of highly sensitive proprietary information, (B) prevent impairment of the attorney-client privilege or work product protection with respect to pending or threatened litigation, (C) prevent disclosure of information the disclosure of which is prohibited pursuant to the order of any court or administrative agency in any pending legal, judicial or administrative proceeding, or otherwise as required by applicable law or compulsory legal process or to the extent required by governmental or regulatory authorities, or (D) prevent disclosure of information subject to a bona fide confidentiality obligation owed to a third party.

6.9 Access to Collateral; Books and Records. Allow Administrative Agent, Collateral Trustee, or their respective agents, to inspect the Collateral and audit and copy such Loan Party's Books in accordance with this

Section 6.9. Such inspections or audits shall be conducted during normal business hours upon reasonable notice and no more often than once every six (6) months unless an Event of Default has occurred and is continuing in which case such inspections and audits shall occur as often as Administrative Agent shall determine is necessary. The foregoing inspections and audits shall be at Borrowers' expense.

6.10 Financial Covenants.

(a) **Minimum Unrestricted Cash**. Commencing as of October 1, 2027, maintain, at all times when Borrower Representative's Market Capitalization is less than Eight Hundred Million Dollars ($800,000,000.00), subject to periodic monthly reporting, Unrestricted Cash in an amount of at least the Minimum Cash Threshold.

(b) [*********]

(c) With respect thereto, the Loan Parties' failure to [*****] agreed in good faith upon between Administrative Agent and the Loan Parties with respect to any period from April 1, 2029, through and including the Term Loan Maturity Date, shall be an immediate Event of Default for which there shall be no grace or cure period.

6.11 Joinder of Subsidiaries; MSC Subsidiary.

(a) If a Loan Party or any of its Subsidiaries forms any direct or indirect Subsidiary or acquires any direct or indirect Subsidiary after the Closing Date, or at any time upon request of Administrative Agent with respect to any Subsidiary whether existing as of the Closing Date or thereafter created or acquired: (a) promptly, and in any event within ten (10) Business Days of creation, acquisition or request, as applicable, provide written notice to Administrative Agent together with certified copies of the Operating Documents for such Subsidiary, and (b) promptly, and in any event within thirty (30) days of acquisition, formation or creation, or upon Administrative Agent's request, as applicable: (i) take all such action as may be reasonably required by Administrative Agent to cause the applicable Subsidiary (other than any MSC Subsidiary) to either: (A) provide a joinder to this Agreement pursuant to which such Subsidiary becomes a Loan Party hereunder, or (B) guarantee the Obligations and grant a security interest in and to the Collateral of such Subsidiary (substantially as described on Exhibit B), in each case together with such Account Control Agreements and other documents, instruments and agreements reasonably requested by Administrative Agent, all in form and substance satisfactory to Administrative Agent (including being sufficient to grant Collateral Trustee, for the ratable benefit of the Secured Parties, a first priority Lien in the Collateral, subject to Permitted Liens in and to the assets of such Subsidiary), and (ii) pledge all of the direct or beneficial Equity Interests in such Subsidiary. Any document, agreement, or instrument executed or issued pursuant to this Section 6.11 shall be a Loan Document.

(b) Borrowers shall not permit Subsidiaries which are not Loan Parties (other than any MSC Subsidiary), in the aggregate to maintain (i) cash and other assets with an aggregate value for all such Subsidiaries in excess of 5.0% of consolidated assets, (ii) revenue in excess of 5.0% of consolidated revenues for any twelve month period then ended, (iii) any Intellectual Property which is material to the business of Borrowers as a whole, or (iv) any contracts which are material to the business of Borrowers as a whole, without causing one or more of such Subsidiaries to enter into a joinder or guaranty in form satisfactory to Administrative Agent with respect to the Obligations as Administrative Agent may request within fifteen days (or such other period as Administrative Agent may agree in writing), such that compliance with clauses (i) through (iv) shall be restored.

(c) At any time that the MSC Subsidiary maintains assets, Borrowers shall cause the MSC Investment Conditions to be met.

6.12 Property Locations.

(a) Provide to Administrative Agent at least ten (10) days' prior written notice before adding any new offices or business or Collateral locations, including warehouses (unless such new offices or business or Collateral locations qualify as Excluded Locations).

(b) With respect to any property or assets of a Loan Party located with a third party, including a bailee, datacenter or warehouse (other than Excluded Locations), the applicable Loan Party shall use commercially reasonable efforts to cause such third party to execute and deliver a Collateral Access Agreement for

such location, including an acknowledgment from each of the third parties that it is holding or will hold such property, subject to Collateral Trustee's security interest.

(c) With respect to any property or assets of a Loan Party located on leased premises (other than Excluded Locations), the applicable Loan Party shall use commercially reasonable efforts to cause such third party to execute and deliver a Collateral Access Agreement for such location.

6.13 Management Rights. Any representative of Administrative Agent shall have the right to meet with management and officers of Borrowers at reasonable times and intervals to discuss such books of account and records. In addition, Administrative Agent shall be entitled at reasonable times and intervals to consult with and advise the management and officers of Borrowers concerning significant business issues affecting Borrowers. Such consultations shall not unreasonably interfere with any Loan Party's business operations.

6.14 Right to Invest. In connection with each Qualified Financing consummated after the Closing Date, subject in all respects to compliance with applicable securities laws and rules of the Trading Market, Borrower Representative agrees to use commercially reasonable efforts to provide Designated Holders or their respective assignees or nominees reasonably acceptable to Borrower Representative with the opportunity to invest in each such Qualified Financing (or if the Qualified Financing is an underwritten public offering pursuant to a registration statement under the Securities Act, to use commercially reasonable efforts to cause the underwriters for such offering to offer Designated Holders an allocation of securities in such offering), on the same terms, conditions and pricing afforded to other investors participating in such Qualified Financing; provided, that the maximum aggregate investment amount by Designated Holders for all participation in Qualified Financings pursuant to this Section 6.14 shall be [*******] (or, in the case of a registered, underwritten public offering, such lesser amount corresponding to the securities allocated to Designated Holders by the underwriters, if any); provided, further, that the definitive agreements with respect to any Qualified Financing in which a Designated Holder participates shall limit such Designated Holder's participation to such amount and shall not require the prior approval of the stockholders of Borrower Representative under applicable rules of any stock exchange or market on which Common Stock is then traded. Borrower Representative shall provide reasonable advance written notice to Administrative Agent of a Qualified Financing, and if a Designated Holder desires to exercise its right to participate in such Qualified Financing, Designated Holder shall cooperate to consummate its investment in such closing promptly upon receipt of documentation with respect thereto. Borrower Representative shall not take any action to avoid or seek to avoid the observance or performance of any of the obligations pursuant to this Section 6.14, but will at all times in good faith assist in the carrying out the same and take all such action as may be necessary or appropriate, but only to the extent permitted by law, to protect the rights of Designated Holders and their respective assignees or nominees hereunder against impairment. For the avoidance of doubt, the right to invest pursuant to this Section 6.14 shall terminate upon the repayment in full of the Obligations and termination of the Loan Agreement.

6.15 Further Assurances. Execute any further instruments and take further action as Administrative Agent or Collateral Trustee reasonably request to perfect or continue Collateral Trustee's Lien in the Collateral or to effect the purposes of this Agreement.

7. NEGATIVE COVENANTS

No Loan Party shall, or shall cause or permit any of its Subsidiaries to, do any of the following:

7.1 Dispositions. Convey, sell, lease, transfer, assign, or otherwise dispose of (collectively, "**Transfer**") all or any part of its business or property, except for Permitted Transfers.

7.2 Changes in Business, Management, Ownership, or Business Locations(a) Engage in any business other than the businesses currently engaged in by such Person, as applicable, or reasonably related thereto; (b) cease doing business, or liquidate or dissolve; provided that a Subsidiary that is not a Loan Party may liquidate or dissolve so long as all of such Subsidiary's assets are transferred to a Loan Party free and clear of any Liens (other than Permitted Liens); (c) fail to provide notice to Administrative Agent of any Key Person departing from or ceasing to be employed by a Loan Party within ten (10) days thereof; (d) permit or suffer a Change in Control; or (e) without at least ten (10) days (or such shorter period as Administrative Agent may approve in writing in its sole discretion) prior written notice to Administrative Agent (i) change its jurisdiction of organization, (ii) change its organizational structure or type, (iii) change its legal name, or (iv) change its organizational number (if any) assigned by its jurisdiction of organization.

7.3 **Mergers or Acquisitions.** Other than in connection with a Permitted Acquisition, merge or consolidate with any other Person (except if concurrently with, and as a condition to the effectiveness of, the closing of such merger or consolidation, the Obligations (other than contingent indemnification obligations as to which no claim has been asserted or is known to exist and any other obligations which, by their terms, are to survive the termination of this Agreement) shall be repaid in full, in cash), or acquire all or substantially all of the capital stock or property of another Person or business line of another Person (including, without limitation, by the formation of any Subsidiary) or enter into any agreement to do any of the same, provided that (a) a Subsidiary may (i) merge or consolidate into another Subsidiary or into a Loan Party that in any such merger or consolidation involving a Loan Party, such Loan Party shall be the surviving entity and (ii) liquidate or dissolve so long as the assets of such Subsidiary are transferred to a Loan Party and (b) Loan Parties or their Subsidiaries may organize new Subsidiaries, subject to the terms of Permitted Investments.

7.4 **Indebtedness**. Create, incur, assume, or be liable for any Indebtedness, other than Permitted Indebtedness.

7.5 **Encumbrance**. Create, incur, allow, or suffer any Lien on any of its property, or assign or convey any right to receive income, including the sale of any Accounts, except for Permitted Liens, or otherwise permit any Collateral not to be subject to the first priority security interest granted herein, except in connection with Permitted Liens permitted to have priority over Collateral Trustee's Lien, or enter into any agreement, document, instrument or other arrangement (except with or in favor of Collateral Trustee) with any Person which directly or indirectly prohibits or has the effect of prohibiting any Loan Party or Subsidiary from assigning, mortgaging, pledging, granting a security interest in or upon, or encumbering any of such Loan Party's or Subsidiary's Intellectual Property, except in connection with: (a) restrictions in the Ordinary Course of Business in connection with licenses of Intellectual Property constituting a Permitted Transfer with respect to the Intellectual Property subject to such license, (b) customary restrictions and conditions contained in any agreement relating to any Transfer not prohibited hereunder (in which case such restrictions or conditions shall relate only to the applicable property) or otherwise relating to a Transfer that is conditioned upon the amendment, restatement or replacement of this Agreement or the payment in full of the Obligations hereunder, (c) any restriction existing in any agreement with any holder of a Permitted Lien restricting the transfer or encumbrance of the property subject to such Permitted Lien; (d) customary anti-assignment provisions found in contractual obligations entered into in the Ordinary Course of Business; (e) customary restrictions in leases, subleases, licenses or asset sale agreements and other similar contracts otherwise permitted hereby so long as such restrictions relate solely to the assets subject thereto; and (f) restrictions arising in connection with cash or other deposits permitted under the definition of "Permitted Indebtedness" or "Permitted Liens" and limited to such cash or deposit.

7.6 **Maintenance of Collateral Accounts**. Maintain any Collateral Account except pursuant to the terms of Section 6.6(b).

7.7 **Distributions; Investments**. (a) Pay any dividends or make any distribution or payment or redeem, retire or purchase any Equity Interests provided that (i) Borrower Representative may convert any of its convertible Equity Interests (including warrants) into other Equity Interests issued by Borrower Representative pursuant to the terms of such convertible securities or otherwise in exchange thereof, (ii) Borrower Representative may convert Subordinated Debt issued by Borrower Representative into Equity Interests issued by Borrower Representative pursuant to the terms of such Subordinated Debt and to the extent permitted under the terms of the applicable subordination or intercreditor agreement; (iii) Borrower Representative or any Subsidiary thereof may pay dividends solely in Equity Interests of Borrower Representative or such Subsidiary, as applicable; (iv) Borrower Representative may make cash payments in lieu of fractional shares; (v) Borrower Representative may repurchase the Equity Interests issued by Borrower Representative pursuant to stock repurchase agreements approved by Borrower Representative's Board so long as an Event of Default does not exist at the time of such repurchase and would not exist after giving effect to such repurchase, provided that the aggregate amount of all such repurchases does not exceed Seven Hundred Fifty Thousand Dollars ($750,000.00) per fiscal year; (vi) any Subsidiary may (directly or indirectly) pay dividends, or make distributions or other payments, in respect of Equity Interests to a Loan Party; and (vii) Borrower Representative and each of its Subsidiaries may make cashless repurchases of its Equity Interests deemed to occur upon exercise of stock options or warrants or similar rights if such Equity Interests represent a portion of the exercise price of such options or warrants or similar rights; or (b) directly or indirectly make any Investment (including, without limitation, by the formation of any Subsidiary), other than Permitted Investments.

7.8 **Transactions with Affiliates**. Directly or indirectly enter into or permit to exist any material transaction with any Affiliate of a Loan Party, except for (a) transactions that are in the Ordinary Course of Business

and on fair and reasonable terms that are no less favorable to such Person than would be obtained in an arm's length transaction with a non-affiliated Person; (b) bona fide rounds of Subordinated Debt or equity financing by existing investors in Borrower Representative for capital raising purposes, (c) reasonable and customary director, officer and employee compensation (including deferred compensation) and other customary benefits including retirement, health, stock option and other benefit plans and indemnification arrangements approved by Borrower Representative's Board, (d) transactions among Loan Parties and (e) transactions expressly permitted pursuant to Section 7.4 and Section 7.7.

7.9 Subordinated Debt; Payments of Royalty and Milestone Payments. (a) Make or permit any payment on any Subordinated Debt, except as permitted pursuant to the terms of the subordination, intercreditor, or other similar agreement to which such Subordinated Debt is subject, or (b) amend any provision in any document relating to the Subordinated Debt which would increase the amount thereof, provide for earlier or greater principal, interest, or other payments thereon, or adversely affect the subordination thereof to the Obligations; (c) make or permit payment in respect of any Royalty and Milestone Payments in excess of Seven Hundred Fifty Thousand Dollars ($750,000.00) per fiscal year except in accordance with Schedule 5, as the same may be updated from time to time, subject to Administrative Agent's reasonable review and approval, and (d) amend or modify any agreement giving rise to Royalty and Milestone Payments if as a result thereof, such payments would be increased or the due date thereof would be accelerated, except as set forth in an updated Schedule 5 delivered from time to time by Borrower Representative, subject to Administrative Agent's reasonable review and approval.

7.10 Compliance. Become an "investment company" or a company controlled by an "investment company", under the Investment Company Act of 1940, as amended, or undertake as one of its important activities extending credit to purchase or carry margin stock (as defined in Regulation U of the Board of Governors of the Federal Reserve System), or use the proceeds of any Loan for that purpose; take any action or fail to take any action (or suffer any other Person to do so), to the extent the same would cause the representations set forth in Section 5.11(c) to be untrue; fail to meet the minimum funding requirements of ERISA, permit a Reportable Event or Prohibited Transaction, as defined in ERISA, to occur that could, in each case, reasonably be expected to have a Material Adverse Effect on any Loan Party's business or operations; fail to comply with the Federal Fair Labor Standards Act or violate any other law or regulation, if the violation could reasonably be expected to have a Material Adverse Effect; withdraw from participation in, permit partial or complete termination of, or permit the occurrence of any other event with respect to, any present pension, profit sharing and deferred compensation plan which could reasonably be expected to result in any liability of a Loan Party or any of its Subsidiaries, including any liability to the Pension Benefit Guaranty Corporation or its successors or any other governmental agency.

8. EVENTS OF DEFAULT

Any one of the following shall constitute an event of default (an "**Event of Default**") under this Agreement:

8.1 Payment Default. Any Loan Party fails to pay any Obligations after such Obligations are due and payable (other than as a result of Administrative Agent's failure to debit such Loan Party's account from which Administrative Agent has authorization to debit and such Loan Party has sufficient funds on deposit therein on the date due, so long as, in case of such failure, payment is made within three (3) Business Days of the earlier of Administrative Agent's written notice or the date any Loan Party becomes aware of such failure).

8.2 Covenant Default.

(a) A Loan Party fails or neglects to perform any obligation in Section 3.3(b), Section 4.2, Section 6.2, Section 6.4, Section 6.5, Section 6.6, or Section 6.10 or violates any covenant in Section 7;

(b) Borrower Representative fails to deliver Conversion Shares when due, and such failure continues for three (3) Business Days; or

(c) A Loan Party fails or neglects to perform, keep, or observe any other term, provision, condition, covenant or agreement contained in this Agreement or any Loan Documents, and as to any default (other than those specified in this Section 8) under such other term, provision, condition, covenant or agreement that can be cured, has failed to cure the default within ten (10) days after the occurrence thereof.

8.3 **Material Adverse Effect**. An event or circumstance has occurred which could reasonably be expected to have a Material Adverse Effect.

8.4 **Attachment; Levy; Restraint on Business**.

(a) (i) The service of process seeking to attach, by trustee or similar process, any funds of a Loan Party or of any of its Subsidiaries, or (ii) a notice of Lien or levy is filed against the assets of any Loan Party or any of its Subsidiaries by any Governmental Authority, and the same under clauses (i) and (ii) hereof are not, within twenty (20) days after the occurrence thereof, discharged or stayed (whether through the posting of a bond or otherwise); provided, however, no Loans shall be made during any twenty (20) day cure period; or

(b) (i) Any material portion of the assets of a Loan Party or any of its Subsidiaries is attached, seized, levied on, or comes into possession of a trustee or receiver, or (ii) any court order enjoins, restrains, or prevents a Loan Party or any of its Subsidiaries from conducting all or any material part of its business.

8.5 **Insolvency**. (a) A Loan Party or any of its Subsidiaries, as a whole, is unable to pay its debts (including trade debts) as they become due or otherwise becomes insolvent, the realizable value of the Loan Parties' assets is less than the aggregate sum of its liabilities, or the Loan Parties; (b) a Loan Party or any of its Subsidiaries begins an Insolvency Proceeding; or (c) an Insolvency Proceeding is begun against a Loan Party or any of its Subsidiaries and is not dismissed or stayed within forty-five (45) days (but no Loans shall be made while any of the conditions described in this Section 8.5 exist and/or until any Insolvency Proceeding is dismissed).

8.6 **Other Agreements**. There is, under any agreement to which a Loan Party or any of its Subsidiaries is a party with a third party or parties, (a) any default resulting in a right by such third party or parties, after giving effect to all applicable notice and grace periods (if any) whether or not exercised, to accelerate the maturity of any Indebtedness in an amount individually or in the aggregate in excess of Seven Hundred Fifty Thousand Dollars ($750,000.00) (except if such third party is restricted from accelerating the maturity of such Indebtedness, including pursuant to the terms of a subordination or similar agreement entered into with respect to the Obligations); or (b) any breach or default by a Loan Party or a Subsidiary of such Loan Party, the result of which could reasonably be expected to have a Material Adverse Effect; provided, however, that an Event of Default under this Section 8.6 caused by the occurrence of a breach or default under such other agreement shall be cured or waived for purposes of this Agreement upon Administrative Agent receiving written notice from the party asserting such breach or default of such cure or waiver of the breach or default under such other agreement, if at the time of such cure or waiver under such other agreement (x) Administrative Agent has not declared an Event of Default under this Agreement and/or exercised any rights with respect thereto; (y) any such cure or waiver does not result in an Event of Default under any other provision of this Agreement or any other Loan Document; and (z) in connection with any such cure or waiver under such other agreement, the terms of any agreement with such third party are not modified or amended in any manner which could in the good faith business judgment of Administrative Agent be materially less advantageous to the Loan Parties.

8.7 **Judgments; Penalties**. One or more fines, penalties or final judgments, orders or decrees for the payment of money in an amount, individually or in the aggregate, of at least Seven Hundred Fifty Thousand Dollars ($750,000.00) (not covered by independent third-party insurance as to which liability has been accepted by such insurance carrier) shall be rendered against a Loan Party or any of its Subsidiaries by any Governmental Authority, and the same are not, within twenty (20) days after the entry, assessment or issuance thereof, vacated, or after execution thereof, stayed or bonded pending appeal, (provided that no Loans will be made prior to the vacation, stay, or bonding of such fine, penalty, judgment, order or decree).

8.8 **Misrepresentations**. Any Loan Party or any Person acting for such Loan Party makes any representation, warranty, or other statement now or later in this Agreement, any other Loan Document or in any writing delivered to Administrative Agent, Collateral Trustee or any Lender or to induce Administrative Agent, Collateral Trustee or any Lender to enter this Agreement or any other Loan Document, and such representation, warranty, or other statement is incorrect in any material respect when made.

8.9 **Subordinated Debt**. Any Subordination Agreement governing any Subordinated Debt shall for any reason be revoked or invalidated or otherwise cease to be in full force and effect, any party thereto shall be in breach thereof or contest in any manner the validity or enforceability thereof or deny that it has any further obligation thereunder, or the Obligations shall for any reason not have the priority contemplated by this Agreement.

8.10 **Governmental Approval**. Any Governmental Approval shall have been revoked, rescinded, suspended, modified in an adverse manner or not renewed for a full term, and such revocation, rescission, suspension, modification or non-renewal has, or could reasonably be expected to have, a Material Adverse Effect.

8.11 **Guaranty**. Any guaranty of any Obligations terminates or ceases for any reason to be in full force and effect other than pursuant to the terms thereof.

9. COLLATERAL TRUSTEE'S RIGHTS AND REMEDIES

9.1 **Acceleration**. Upon the occurrence and during the continuance of an Event of Default, Administrative Agent, is entitled, without notice or demand, to declare all Obligations immediately due and payable (but if an Event of Default described in Section 8.5 occurs all Obligations are immediately due and payable without any action by Administrative Agent), and to stop advancing money or extending credit for any Borrower's benefit under this Agreement (and each Lender's Commitment shall be deemed terminated as long as an Event of Default has occurred and is continuing).

9.2 **Rights**. Upon the occurrence and during the continuance of an Event of Default, Collateral Trustee is entitled, at the direction of Administrative Agent, subject to the terms of the Collateral Trust Agreement, without notice or demand, to do any or all of the following, to the extent not prohibited by applicable law:

(a) verify the amount of, demand payment of and performance under, and collect any Accounts and General Intangibles, settle or adjust disputes and claims directly with Account Debtors for amounts on terms and in any order that Administrative Agent may determine is advisable, and notify any Person owing a Loan Party money of Collateral Trustee's security interest in such funds;

(b) make any payments and do any acts it considers necessary or reasonable to protect the Collateral and/or its security interest in the Collateral;

(c) ratably apply to the Obligations any amount held by Collateral Trustee owing to or for the credit or the account of a Loan Party;

(d) ship, reclaim, recover, store, finish, maintain, repair, prepare for sale, advertise for sale, and sell the Collateral;

(e) deliver a notice of exclusive control, any entitlement order, or other directions or instructions pursuant to any Account Control Agreement or similar agreements providing control of any Collateral;

(f) demand and receive possession of any Loan Party's Books; and

(g) exercise all rights and remedies available to Collateral Trustee under the Loan Documents or at law or equity, including all remedies provided under the Code (including disposal of the Collateral pursuant to the terms thereof).

(h) Loan Parties shall assemble the Collateral if Collateral Trustee requests and make it available as Collateral Trustee designates. Collateral Trustee may enter premises where the Collateral is located, take and maintain possession of any part of the Collateral, and pay, purchase, contest, or compromise any Lien which appears to be prior or superior to its security interest and pay all expenses incurred. Each Loan Party grants Collateral Trustee a license to enter and occupy any of its premises, without charge, to exercise any of Collateral Trustee's rights or remedies. Collateral Trustee is hereby granted a non-exclusive, royalty-free license or other right to use, without charge, a Loan Party's labels, Patents, Copyrights, mask works, rights of use of any name, trade secrets, trade names, Trademarks, and advertising matter, or any similar property as it pertains to the Collateral, in completing production of, advertising for sale, and selling any Collateral and, in connection with Collateral Trustee's exercise of its rights under this Section, a Loan Party's rights under all licenses and all franchise agreements inure to Collateral Trustee's benefit. If, after the acceleration of the Obligations, a Loan Party receives proceeds of Collateral, such Loan Party shall deliver such proceeds to Collateral Trustee, for the ratable benefit of the Secured Parties, to be applied to the Obligations.

9.3 **Power of Attorney**. Each Loan Party hereby irrevocably appoints Collateral Trustee (and any of Collateral Trustee's partners, managers, officers, agents or employees) as its lawful attorney-in-fact, with full power

of substitution, exercisable upon the occurrence and during the continuance of an Event of Default, to: (a) send requests for verification of Accounts or notify Account Debtors of Collateral Trustee's security interest and Liens in the Collateral; (b) endorse such Loan Party's name on any checks or other forms of payment or security; (c) sign such Loan Party's name on any invoice or bill of lading for any Account or drafts against Account Debtors schedules and assignments of Accounts, verifications of Accounts, and notices to Account Debtors; (d) settle and adjust disputes and claims about the Accounts directly with Account Debtors, for amounts and on terms Administrative Agent or Collateral Trustee determine reasonable; (e) make, settle, and adjust all claims under such Loan Party's insurance policies; (f) pay, contest or settle any Lien, charge, encumbrance, security interest, and adverse claim in or to the Collateral, or any judgment based thereon, or otherwise take any action to terminate or discharge the same; (g) transfer the Collateral into the name of Collateral Trustee or a third party as the Code permits; and (h) dispose of the Collateral. Each Loan Party further hereby appoints Collateral Trustee (and any of Collateral Trustee's partners, managers, officers, agents or employees) as its lawful attorney-in-fact, with full power of substitution, regardless of whether or not an Event of Default has occurred and is continuing to: (i) sign such Loan Party's name on any documents and other Security Instruments necessary to perfect or continue the perfection of, or maintain the priority of, Collateral Trustee's security interest in the Collateral, (ii) take all such actions which such Loan Party is required, but fails to do under the covenants and provisions of the Loan Documents; and (iii) take any and all such actions as Collateral Trustee may reasonably determine to be necessary or advisable for the purpose of maintaining, preserving or protecting the Collateral or any of the rights, remedies, powers or privileges of Collateral Trustee under this Agreement or the other Loan Documents. Collateral Trustee's foregoing appointment as each Loan Party's attorney in fact, and all of Collateral Trustee's rights and powers are coupled with an interest and are irrevocable until all Obligations (other than contingent indemnification obligations as to which no claim has been asserted or is known to exist and any other obligations which, by their terms, are to survive the termination of this Agreement) have been fully repaid, in cash, and otherwise fully performed and all commitments to make Loans hereunder have been terminated.

9.4 **Protective Payments**. If a Loan Party fails to obtain the insurance called for by Section 6.5 or fails to pay any premium thereon or fails to pay any other amount which such Loan Party is obligated to pay under this Agreement or any other Loan Document or which may be required to preserve the Collateral, Collateral Trustee may (at the direction of Administrative Agent) obtain such insurance or make such payment, and all amounts so paid by Collateral Trustee are Secured Party Expenses and immediately due and payable, bearing interest at the then highest rate applicable to the Obligations, and secured by the Collateral. Collateral Trustee will make reasonable efforts to provide Borrower Representative with notice of Collateral Trustee obtaining such insurance at the time it is obtained or within a reasonable time thereafter. No payments by Collateral Trustee are deemed an agreement to make similar payments in the future or Collateral Trustee's waiver of any Event of Default.

9.5 **Application of Payments and Proceeds Upon Default**. If an Event of Default has occurred and is continuing, Collateral Trustee shall have the right to apply in any order any funds in its possession, whether payments, proceeds realized as the result of any collection of Accounts or other disposition of the Collateral, or otherwise, to the Obligations, for the ratable benefit of the Secured Parties. Collateral Trustee shall pay any surplus to Borrowers by credit to the Deposit Account designated by Borrowers or as directed by a court of competent jurisdiction. Borrowers shall remain liable to Collateral Trustee and Lenders for any deficiency. If Collateral Trustee, as directed by Administrative Agent in Administrative Agent's good faith business judgment, directly or indirectly, enters into a deferred payment or other credit transaction with any purchaser at any sale of Collateral, Collateral Trustee may, at the direction of Administrative Agent, either reduce the Obligations by the principal amount of the purchase price or defer the reduction of the Obligations until the actual receipt by Collateral Trustee of cash or immediately available funds therefor.

9.6 **Collateral Trustee's Liability for Collateral**. So long as Collateral Trustee accords treatment to the Collateral in its possession substantially equal to the treatment which it accords its own property, Collateral Trustee shall not be liable or responsible for: (a) the safekeeping of the Collateral; (b) any loss or damage to the Collateral; (c) any diminution in the value of the Collateral; or (d) any act or default of any carrier, warehouseman, bailee, or other Person, except to the extent that any of the foregoing has been found by a final, non-appealable judgment of a court of competent jurisdiction to be the result of the Collateral Trustee's gross negligence or willful misconduct. Loan Parties bear all risk of loss, damage or destruction of the Collateral.

9.7 **No Waiver; Remedies Cumulative**. Any failure by Administrative Agent, Collateral Trustee or any Lender, at any time or times, to require strict performance by each Loan Party of any provision of this Agreement or any other Loan Document shall not waive, affect, or diminish any right of Administrative Agent, Collateral Trustee or any Lender thereafter to demand strict performance and compliance herewith or therewith. Secured Parties' rights and remedies under this Agreement and the other Loan Documents are cumulative. Secured

Parties' have all rights and remedies provided under the Code, by law, or in equity. Any Secured Party's exercise of one right or remedy is not an election and shall not preclude any Secured Party from exercising any other remedy under this Agreement or other remedy available at law or in equity, and any waiver of any Event of Default is not a continuing waiver. Any delay in exercising any remedy is not a waiver, election, or acquiescence.

9.8 **Demand Waiver**. Each Loan Party waives presentment, demand, notice of default or dishonor, notice of payment and nonpayment, release, compromise, settlement, extension, or renewal of accounts, documents, instruments or chattel paper.

9.9 **Shares**. Each Loan Party recognizes that Collateral Trustee may be unable to effect a public sale of any or all the Shares, by reason of certain prohibitions contained in federal securities laws and applicable state securities laws or otherwise, and may be compelled to resort to one or more private sales thereof to a restricted group of purchasers which will be obliged to agree, among other things, to acquire such securities for their own account for investment and not with a view to the distribution or resale thereof. Each Loan Party acknowledges and agrees that any such private sale may result in prices and other terms less favorable than if such sale were a public sale and, notwithstanding such circumstances, agrees that any such private sale shall be deemed to have been made in a commercially reasonable manner. Collateral Trustee shall be under no obligation to delay a sale of any of the Shares for the period of time necessary to permit the issuer thereof to register such securities for public sale under federal securities laws or under applicable state securities laws, even if such issuer would agree to do so.

10. NOTICES

All notices, consents, requests, approvals, demands, or other communication by any party to this Agreement or any other Loan Document must be in writing and shall be deemed to have been validly served, given, or delivered: (a) upon the earlier of actual receipt and three (3) Business Days after deposit in the U.S. mail, first class, registered or certified mail return receipt requested, with proper postage prepaid; (b) upon confirmation of receipt, when sent by electronic mail transmission; (c) one (1) Business Day after deposit with a reputable overnight courier with all charges prepaid; or (d) when delivered, if hand-delivered by messenger, all of which shall be addressed to the party to be notified and sent to the address, or email address indicated below. Administrative Agent, Collateral Trustee, Lenders and Loan Parties may change their respective mailing or electronic mail addresses by giving the other party written notice thereof in accordance with the terms of this Section 10.

If to Loan Parties	**X4 PHARMACEUTICALS, INC.** **X4 THERAPEUTICS, Inc.** 61 North Beacon Street, 4th Floor Boston, MA 02134 Attention: David Kirske Email: [***]
With a copy, not constituting notice, to:	Gibson, Dunn & Crutcher LLP 200 Park Avenue New York, NY 10166-0193 Attention: Jin Hee Kim Email: [***]
If to Collateral Trustee:	**ANKURA TRUST COMPANY, LLC** 140 Sherman Street, Fourth Floor Fairfield, CT 06824 Attention: Beth Micena Email: [***]

With a copy, not constituting notice, to:	**ROPES & GRAY LLP** Prudential Tower 800 Boylston Street Boston, MA 02199 Attention: Milap Patel Email: [***]
If to Administrative Agent or Lenders:	**K2 HEALTHVENTURES LLC** 855 Boylston Street, 10th Floor Boston, MA 02116 *For Loan Requests, monthly reporting, Compliance Certificates, and other regular reporting deliverables*: Attention: Finance Email: finance@k2hv.com; [***] *For all other notices*: Attention: Legal Notices Email: legal@k2hv.com
With a copy to (but not constituting notice, and excluding Loan Requests and regular reporting):	**MORRISON & FOERSTER LLP** 200 Clarendon Street Floor 21 Boston, Massachusetts 02116 Attn: David A. Ephraim, Esquire Fax: (617) 648-4730 Email: [***]

11. CHOICE OF LAW, VENUE AND JURY TRIAL WAIVER

Except as otherwise expressly provided in any of the Loan Documents, this Agreement and the other Loan Documents shall be governed by, and construed in accordance with, the laws of the State of New York without regard to principles of conflicts of law. Each Loan Party hereby submits to the exclusive jurisdiction of the State and Federal courts in New York County, City of New York, New York; provided, however, that nothing in this Agreement shall be deemed to operate to preclude Collateral Trustee from bringing suit or taking other legal action in any other jurisdiction to realize on the Collateral or any other security for the Obligations, or to enforce a judgment or other court order in favor of Administrative Agent, Collateral Trustee or any Lender. Each Loan Party expressly submits and consents in advance to such jurisdiction in any action or suit commenced in any such court, and each Loan Party hereby waives any objection that it may have based upon lack of personal jurisdiction, improper venue, or forum non conveniens and hereby consents to the granting of such legal or equitable relief as is deemed appropriate by such court. Each Loan Party hereby waives personal service of the summons, complaints, and other process issued in such action or suit and agrees that service of such summons, complaints, and other process may be made by registered or certified mail addressed to such Loan Party at the address set forth in, or subsequently provided by such Loan Party in accordance with, Section 10 and that service so made shall be deemed completed upon the earlier to occur of such Loan Party's actual receipt thereof or three (3) Business Days after deposit in the U.S. mails, proper postage prepaid. Each Loan Party hereby expressly waives any claim to assert that the laws of any other jurisdiction govern this Agreement.

12. TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, EACH OF THE PARTIES HERETO EACH WAIVE THEIR RIGHT TO A JURY TRIAL OF ANY CLAIM OR CAUSE OF ACTION ARISING OUT OF OR BASED UPON THIS AGREEMENT, THE LOAN DOCUMENTS OR ANY CONTEMPLATED TRANSACTION, INCLUDING CONTRACT, TORT, BREACH OF DUTY AND ALL OTHER CLAIMS. THIS WAIVER IS A MATERIAL INDUCEMENT FOR THE PARTIES TO ENTER INTO THIS AGREEMENT. NOTWITHSTANDING ANYTHING TO THE CONTRARY CONTAINED IN THIS AGREEMENT OR ANYWHERE ELSE, EACH LOAN PARTY AGREES THAT IT SHALL NOT SEEK FROM ADMINISTRATIVE AGENT, COLLATERAL TRUSTEE OR ANY LENDER UNDER ANY THEORY OF LIABILITY (INCLUDING ANY THEORY IN TORTS), ANY SPECIAL, INDIRECT, CONSEQUENTIAL OR PUNITIVE DAMAGES. EACH PARTY HAS REVIEWED THIS WAIVER WITH ITS COUNSEL.

This Section 11 shall survive the termination of this Agreement.

13. GENERAL PROVISIONS

13.1 Termination Prior to Term Loan Maturity Date; Survival; Release of Collateral. All covenants, representations and warranties made in this Agreement continue in full force until this Agreement has terminated pursuant to its terms and all Obligations (other than contingent indemnification obligations as to which no claim has been asserted or is known to exist and any other obligations which, by their terms, are to survive the termination of this Agreement) have been satisfied in full, in cash and all commitments to extend credit pursuant to this Agreement have terminated (such date, the "**Discharge Date**"). So long as Borrowers have satisfied the Obligations (other than contingent indemnification obligations as to which no claim has been asserted or is known to exist and any other obligations which, by their terms, are to survive the termination of this Agreement), this Agreement and any remaining commitments to extend credit may be terminated prior to the Term Loan Maturity Date by Borrowers, by written notice of termination to Lenders. Those obligations that are expressly specified in this Agreement as surviving this Agreement's termination shall continue to survive notwithstanding this Agreement's termination. Promptly after the Discharge Date, Administrative Agent shall direct Collateral Trustee to deliver evidence of the release of Collateral. Collateral Trustee hereby agrees that any Liens granted to Collateral Trustee by the Loan Parties on any Collateral shall be automatically released (a) in accordance with this Section 12.1, upon the satisfaction in full, in cash, of the Obligations and termination of this Agreement (other than contingent indemnification obligations as to which no claim has been asserted or is known to exist and any other obligations which, by their terms, are to survive the termination of this Agreement), (b) if such Collateral is sold, transferred or otherwise disposed of by a Loan Party pursuant to any sale, transfer or other disposition that is made in compliance with, and subject to the terms and conditions of, this Agreement, with Administrative Agent confirming such permitted disposition in writing to Collateral Trustee, or (c) if required to effect any sale, transfer or other disposition of such Collateral in connection with any exercise of remedies by Administrative Agent or Collateral Trustee pursuant to Section 9. Any such release shall not in any manner discharge, affect, or impair the Obligations or any Liens (other than those expressly being released) upon (or obligations of any Loan Party in respect of) all interests retained by Secured Parties in Borrower or any of its Subsidiaries or the Collateral. Upon Borrower Representative's reasonable request and at Borrower Representative's sole cost and expense, Administrative Agent and/or the Collateral Trustee, as applicable, shall execute, deliver or authorize such documents as may be reasonably required to evidence any release described above. Any such release shall be without recourse to or representation or warranty by the Collateral Trustee of any kind.

13.2 Successors and Assigns.

(a) Successors and Assigns Generally. This Agreement binds and is for the benefit of the successors and permitted assigns of each party. No Loan Party may assign this Agreement or any rights or obligations under it without Lenders' prior written consent (which may be granted or withheld in each Lender's discretion). Each Lender has the right, without the consent of or notice to Loan Parties, to sell, transfer, assign, negotiate, or grant participation in all or any part of, or any interest in, such Lender's obligations, rights, and benefits under this Agreement and the other Loan Documents. Notwithstanding the foregoing, prior to the occurrence of an Event of Default that is continuing, Administrative Agent and each Lender shall not assign any interest in the Loan Documents to any Person who in the reasonable estimation of Administrative Agent is (a) a direct competitor of the Loan Parties, or (b) a distressed debt fund.

(b) Assignment by Lenders. Each Lender may at any time assign to one or more eligible assignees all or a portion of its rights and obligations under this Agreement (including all or a portion of its commitment and the Loans at the time owing to it), subject to any restrictions on such assignment set forth in the other Loan Documents. Each such Lender shall notify the Administrative Agent of such assignment and deliver to the Administrative Agent a copy of any assignment and assumption agreement entered into in connection thereto. Notwithstanding anything herein to the contrary, any pledge or assignment of all or a portion of the rights, or a security interest in such rights, of K2 HealthVentures LLC as a Lender made to an Affiliate of K2 HealthVentures LLC, shall only be made to K2 HealthVentures Equity Trust LLC.

(c) Register; Participant Register. Administrative Agent, acting solely for this purpose as an agent of the Loan Parties, shall maintain at one of its offices in the United States a register for the recordation of the names and addresses of the Lenders, and the Commitments of, and principal amounts (and stated interest) of the Term Loans owing to each Lender pursuant to the terms hereof from time to time (the "**Register**"). The entries in the Register shall be conclusive absent manifest error, and the Loan Parties, Administrative Agent and the Lenders shall treat each Person whose name is recorded in the Register pursuant to the terms hereof as Lender hereunder for all purposes of this Agreement. The Register shall be available for inspection by the Loan Parties, any Lender and the Collateral Trustee at any reasonable time and from time to time upon reasonable prior notice. Each Lender that

sells a participation shall, acting solely for this purpose as a non-fiduciary agent of the Loan Parties, maintain a register on which it enters the name and address of each participant and the principal amounts (and stated interest) of each participant's interest in the Term Loans or other obligations under the Loan Documents (the "**Participant Register**"); provided that no Lender shall have any obligation to disclose all or any portion of the Participant Register (including the identity of any participant or any information relating to a participant's interest in any commitments, loans or its other obligations under any Loan Document) to any Person except to the extent that such disclosure is necessary to establish that such commitment, loan or other obligation is in registered form under Section 5f.103-1(c) of the United States Treasury Regulations. The entries in the Participant Register shall be conclusive absent manifest error, and such Lender shall treat each Person whose name is recorded in the Participant Register as the owner of such participation for all purposes of this Agreement notwithstanding any notice to the contrary. For the avoidance of doubt, Administrative Agent (in its capacity as Administrative Agent) shall have no responsibility for maintaining a Participant Register.

13.3 **Indemnification**. Each Loan Party agrees to indemnify, defend and hold Administrative Agent, Collateral Trustee and each Lender and their respective directors, officers, employees, agents, attorneys, or any other Person affiliated with or representing Lender (each, an "**Indemnified Person**") harmless against: (i) all obligations, demands, claims, and liabilities (including such claims, costs, expenses, damages and liabilities based on liability in tort, including strict liability in tort) (collectively, "**Claims**") claimed or asserted by any other party in connection with the transactions contemplated by the Loan Documents; and (ii) all losses or expenses (including Secured Party Expenses) in any way suffered, incurred, or paid by such Indemnified Person as a result of, following from, consequential to, or arising from transactions among Administrative Agent, Collateral Trustee, Lenders and Loan Parties (including reasonable and documented out-of-pocket attorneys' fees and expenses), except for Claims and/or losses to the extent directly caused by such Indemnified Person's gross negligence or willful misconduct as determined by a final, non-appealable judgment of a court of competent jurisdiction. Each Loan Party agrees to pay, and to save Administrative Agent, Collateral Trustee and each Lender harmless from, any and all liabilities with respect to, or resulting from any delay in paying, any and all excise, sales or other similar taxes (excluding taxes imposed on or measured by the net income of Administrative Agent, Collateral Trustee or Lender) that may be payable or determined to be payable with respect to any of the Collateral or this Agreement. This Section 12.3 shall survive until all statutes of limitation with respect to the Claims, losses, and expenses for which indemnity is given shall have run. This Section 12.3 shall not apply with respect to Taxes other than any Taxes that represent losses, claims, damages, etc. arising from any non-Tax claim.

13.4 **Borrower Liability**. If any Person is joined to this Agreement as a Borrower, the following provisions shall apply: Each Borrower hereunder shall be jointly and severally obligated to repay all Loans made hereunder, regardless of which Borrower actually receives said Loan, as if each Borrower hereunder directly received all Loans. Each Borrower waives (a) any suretyship defenses available to it under the Code or any other applicable law, and (b) any right to require Collateral Trustee to: (i) proceed against any Borrower or any other person; (ii) proceed against or exhaust any security; or (iii) pursue any other remedy. Collateral Trustee may exercise or not exercise any right or remedy it has against any Borrower or any security it holds (including the right to foreclose by judicial or non-judicial sale) without affecting any Borrower's liability. Notwithstanding any other provision of this Agreement or other related document, each Borrower irrevocably waives all rights that it may have at law or in equity (including, without limitation, any law subrogating Borrower to the rights of Collateral Trustee under this Agreement) to seek contribution, indemnification or any other form of reimbursement from any other Borrower, or any other Person now or hereafter primarily or secondarily liable for any of the Obligations, for any payment made by such Borrower with respect to the Obligations in connection with this Agreement or otherwise and all rights that it might have to benefit from, or to participate in, any security for the Obligations as a result of any payment made by a Borrower with respect to the Obligations in connection with this Agreement or otherwise. Any agreement providing for indemnification, reimbursement or any other arrangement prohibited under this Section shall be null and void. If any payment is made to a Borrower in contravention of this Section, such Borrower shall hold such payment in trust for Lenders and such payment shall be promptly delivered to Administrative Agent, for the ratable benefit of the Secured Parties, for application to the Obligations, whether matured or unmatured.

13.5 **Time of Essence**. Time is of the essence for the performance of all Obligations in this Agreement.

13.6 **Severability of Provisions**. Each provision of this Agreement is severable from every other provision in determining the enforceability of any provision.

13.7 **Correction of Loan Documents**. Administrative Agent may correct patent errors and fill in any blanks in the Loan Documents consistent with the agreement of the parties, so long as Administrative Agent provides Loan Parties with written notice of such correction and allows Loan Parties at least ten (10) days to object

to such correction. In the event of such objection, such correction shall not be made except by an amendment signed by both Administrative Agent and the Loan Parties.

13.8 Amendments in Writing; Waiver; Integration. No purported amendment or modification of any Loan Document, or waiver, discharge or termination of any obligation under any Loan Document, shall be effective except, pursuant to an agreement in writing by the parties thereto, and in case of this Agreement, pursuant to an agreement in writing entered into by Borrowers, Administrative Agent, the Required Lenders and Collateral Trustee, provided that Collateral Trustee's approval shall not be required for any amendment or supplement that has the effect solely of (i) adding or maintaining Collateral, securing additional Obligations that are otherwise permitted by the terms of this Agreement to be secured by the Collateral or preserving, perfecting or establishing the priority of the Liens thereon or the rights of Collateral Trustee therein; (ii) curing any ambiguity, defect or inconsistency; (iii) providing for the assumption of a Borrower's or Guarantor's Obligations under any Loan Document in the case of a merger or consolidation or sale of all or substantially all of the assets of a Borrower or Guarantor, as applicable; (iv) making any change that would provide any additional rights or benefits to the Administrative Agent, any Lender or Collateral Trustee or that does not adversely affect the legal rights under this Agreement or any other Loan Document of Collateral Trustee; or (v) to the extent the Collateral Trust Agreement provides that Collateral Trustee's approval is not required. It is agreed that any change to (i) the definition of "Designated Holder", (ii) the rights of a Designated Holder, or (iii) the final sentence of Section 12.2(b) (and any change to this Agreement that would modify the consent required pursuant to this sentence) shall require the consent of the Collateral Trustee. Without limiting the generality of the foregoing, no oral promise or statement, nor any action, inaction, delay, failure to require performance or course of conduct shall operate as, or evidence, an amendment, supplement or waiver or have any other effect on any Loan Document. Any waiver granted shall be limited to the specific circumstance expressly described in it, and shall not apply to any subsequent or other circumstance, whether similar or dissimilar, or give rise to, or evidence, any obligation or commitment to grant any further waiver. The Loan Documents represent the entire agreement about this subject matter and supersede prior negotiations or agreements. All prior agreements, understandings, representations, warranties, and negotiations among the parties about the subject matter of the Loan Documents merge into the Loan Documents.

13.9 Counterparts; Electronic Execution of Documents. This Agreement and any other Loan Documents, except to the extent otherwise required pursuant to the terms thereof, may be executed in any number of counterparts and by different parties on separate counterparts, each of which, when executed and delivered, is an original, and all taken together, constitute one Agreement. The words "execution," "signed," "signature" and words of like import in any Loan Document shall be deemed to include electronic signatures or the keeping of records in electronic form, each of which shall be of the same legal effect, validity and enforceability as a manually executed signature or the use of a paper-based recordkeeping systems, as the case may be, to the extent and as provided for in any applicable law, including, without limitation, any state law based on the Uniform Electronic Transactions Act. Delivery of an executed counterpart of a signature page of any Loan Document by electronic means including by email delivery of a ".pdf" format data file shall be effective as delivery of an original executed counterpart of such Loan Document.

13.10 Confidentiality.

(a) In handling any confidential information of any Loan Party and its Subsidiaries, Administrative Agent, Collateral Trustee and each Lender agree to hold in confidence and not disclose the Loan Parties' confidential information except as expressly provided herein, and shall exercise the same degree of care that it exercises for its own proprietary information, to protect such confidential information, but in no event less than a reasonable degree of care; provided, however that disclosure of information may be made: (a) to its Subsidiaries or Affiliates; (b) to prospective transferees or purchasers of any interest in the Loans (provided, however, that any prospective transferee or purchaser shall have entered into an agreement containing provisions substantially the same as those in this Section 12.10); (c) as required by law, regulation, subpoena, or other order and in connection with reporting obligations applicable to Administrative Agent, Collateral Trustee or such Lender, including pursuant to the Exchange Act, (d) to Administrative Agent, Collateral Trustee or such Lender's regulators or as otherwise required in connection with any examination or audit; (e) as Administrative Agent, Collateral Trustee or such Lender considers appropriate in connection with the exercise of remedies with respect to the Obligations; and (f) to third-party service providers of Administrative Agent, Collateral Trustee or such Lender so long as such service providers are bound by confidentiality terms not more permissive than the terms hereof. Confidential information does not include information that is either: (i) in the public domain or in Administrative Agent, Collateral Trustee or any Lender's possession when disclosed to Administrative Agent, Collateral Trustee or such Lender, as applicable, or becomes part of the public domain (other than as a result of its disclosure by Administrative Agent, Collateral Trustee or such Lender in violation of this Agreement) after disclosure to Administrative Agent, Collateral Trustee

or such Lender, as applicable; or (ii) disclosed to Administrative Agent, Collateral Trustee or such Lender by a third party, if Administrative Agent, Collateral Trustee or such Lender, as applicable, does not know that the third party is prohibited from disclosing the information. The provisions of this paragraph shall survive the termination of this Agreement.

(b) No party hereto shall publicize or use another party's name or logo, or hyperlink to such other parties' website, describe the relationship of the parties or the transaction contemplated by this Agreement, in written and oral presentations, advertising, promotional and marketing materials, client lists, public relations materials or on its web site (together, the "**Publicity Materials**") without prior written notice to the party that is the subject of the proposed Publicity Materials, together with a draft (or, if Publicity Materials are not proposed to be delivered in written form, an outline of the content to be included) so as to provide such subject party a reasonable opportunity to review prior to publication, and each party agrees, in connection with any Publicity Materials proposed by such party to reasonably consider requested changes or corrections requested by the party that is the subject of such Publicity Materials in good faith, and upon request, to provide the final form prior to publication or other dissemination.

13.11 **Borrower Representative**. Each of the Borrowers hereby appoints Borrower Representative to act as its exclusive agent for all purposes under the Loan Documents (including, without limitation, with respect to all matters related to the borrowing and repayment of any Loan). Each of the Borrowers acknowledges and agrees that (a) Borrower Representative may execute such documents on behalf of any Borrower as Borrower Representative deems appropriate in its sole discretion and each Borrower shall be bound by and obligated by all of the terms of any such document executed by Borrower Representative on its behalf, (b) any notice or other communication delivered hereunder to Borrower Representative shall be deemed to have been delivered to each Borrower and (c) Administrative Agent, Collateral Trustee and any Lender shall accept (and shall be permitted to rely on) any document or agreement executed by Borrower Representative on behalf of Borrowers (or any of them). Each Borrower must act through the Borrower Representative for all purposes under this Agreement and the other Loan Documents. Notwithstanding anything contained herein to the contrary, to the extent any provision in this Agreement requires any Borrower to interact in any manner with Administrative Agent, Collateral Trustee or any Lender, such Borrower shall do so through Borrower Representative.

13.12 **Captions**. The headings used in this Agreement are for convenience only and shall not affect the interpretation of this Agreement.

13.13 **Construction of Agreement**. The parties mutually acknowledge that they and their attorneys have participated in the preparation and negotiation of this Agreement. In cases of uncertainty this Agreement shall be construed without regard to which of the parties caused the uncertainty to exist.

13.14 **Relationship**. The relationship of the parties to this Agreement is determined solely by the provisions of this Agreement. The parties do not intend to create any agency, partnership, joint venture, trust, fiduciary or other relationship with duties or incidents different from those of parties to an arm's-length contract.

13.15 **Third Parties**. Nothing in this Agreement, whether express or implied, is intended to: (a) confer any benefits, rights or remedies under or by reason of this Agreement on any persons other than the express parties to it and their respective permitted successors and assigns; (b) relieve or discharge the obligation or liability of any person not an express party to this Agreement; or (c) give any person not an express party to this Agreement any right of subrogation or action against any party to this Agreement.

13.16 **Appointment of Collateral Trustee.**

(a) Each Lender hereby appoints Collateral Trustee to act on behalf of the Secured Parties as collateral trustee under this Agreement and the other Loan Documents, and to hold and enforce any and all Liens on Collateral granted by any of the Loan Parties to secure any of the Obligations, all in accordance with the terms of the Collateral Trust Agreement. The provisions of this Section 12.16 are solely for the benefit of Collateral Trustee, Administrative Agent and Lenders and no Loan Party nor any other Person shall have any rights as a third-party beneficiary of any of the provisions hereof. Collateral Trustee shall not have any duties or responsibilities except for those expressly set forth in this Agreement and the other Loan Documents, together with such powers as are reasonably related thereto. The duties of Collateral Trustee shall be mechanical and administrative in nature and Collateral Trustee shall not have, or be deemed to have, by reason of this Agreement any other Loan Document or otherwise a fiduciary relationship in respect of any other Secured Party. The Collateral Trustee may resign or be

removed or replaced, and a successor Collateral Trustee may be appointed in accordance with the terms and subject to the conditions of the Collateral Trust Agreement.

(b) Each Lender hereby agrees that upon receipt of instruction from the Administrative Agent, Collateral Trustee shall be entitled to take or refrain from taking such action, and shall be entitled to take all such actions set forth in the Collateral Trust Agreement.

(c) Neither Collateral Trustee nor any of its Affiliates nor any of their respective directors, officers, agents, employees, or advisors shall be liable for any action taken or omitted to be taken by it or them under or in connection with this Agreement or the other Loan Documents, except for damages solely caused by its or their own gross negligence or willful misconduct as determined by a court of competent jurisdiction in a final, non-appealable judgment. Without limitation of the generality of the foregoing, Collateral Trustee: (i) may consult with legal counsel, accountants and other experts and consultants selected by it and shall not be liable for any action taken or omitted to be taken in good faith by it in accordance with the advice of such counsel, accountants, experts or consultants; (ii) makes no warranty or representation to any other Secured Party and shall not be responsible to any other Secured Party for any statements, warranties or representations made in or in connection with this Agreement or the other Loan Documents; (iii) shall not have any duty to ascertain or to inquire as to the performance or observance of any of the terms, covenants or conditions of this Agreement or the other Loan Documents on the part of any Loan Party or to inspect the Collateral (including the books and records of any Loan Party); (iv) shall not be responsible to any other Secured Party for the due execution, legality, validity, enforceability, genuineness, sufficiency or value of this Agreement or the other Loan Documents or any other instrument or document furnished pursuant hereto or thereto; and (v) shall incur no liability under or in respect of this Agreement or the other Loan Documents by acting upon any notice, consent, certificate or other instrument or writing (which may be by email, telecopy, telegram, cable or telex) believed by it to be genuine and signed or sent by the proper party or parties.

13.17 Appointment of Administrative Agent.

(a) Each Lender hereby appoints Administrative Agent to act on behalf of Lenders as administrative agent under this Agreement and the other Loan Documents. The provisions of this Section 12.17 are solely for the benefit of Administrative Agent and Lenders and no Loan Party nor any other Person shall have any rights as a third party beneficiary of any of the provisions hereof. In performing its functions and duties under this Agreement, Administrative Agent does not assume and shall not be deemed to have assumed any obligation toward or relationship of agency or trust with or for any Loan Party or any other Person. Administrative Agent shall not have any duties or responsibilities except for those expressly set forth in this Agreement and the other Loan Documents, together with such powers as are reasonably related thereto. The duties of Administrative Agent shall be mechanical and administrative in nature and Administrative Agent shall not have, or be deemed to have, by reason of this Agreement, any other Loan Document or otherwise a fiduciary relationship in respect of any Lender.

(b) If Administrative Agent shall request instructions from Lenders with respect to any act or action (including failure to act) in connection with this Agreement or any other Loan Document, then Administrative Agent shall be entitled to refrain from such act or taking such action unless and until it shall have received instructions from the Required Lenders, and Administrative Agent shall incur no liability to any Person by reason of so refraining. Administrative Agent shall be fully justified in failing or refusing to take any action hereunder or under any other Loan Document for any reason. Without limiting the foregoing, no Lender shall have any right of action whatsoever against Administrative Agent as a result of Administrative Agent's acting or refraining from acting hereunder or under any other Loan Document in accordance with the instructions of Lenders.

(c) Administrative Agent may perform any and all of its duties and exercise its rights and powers hereunder by or through any one or more sub-agents appointed by Administrative Agent. Administrative Agent and any such sub-agent may perform any and all of its duties and exercise its rights and powers by or through their respective related parties. The exculpatory provisions of this Section 12.17 shall apply to any such sub-agent and to the related parties of such Administrative Agent and any such sub-agent. No Administrative Agent shall be responsible for the negligence or misconduct of any sub-agent except to the extent that a court of competent jurisdiction determines in a final and non-appealable judgment that such Administrative Agent acted with gross negligence or willful misconduct in the selection of such sub-agents.

(d) Neither Administrative Agent nor any of its Affiliates nor any of their respective directors, officers, agents or employees shall be liable for any action taken or omitted to be taken by it or them under or in connection with this Agreement or the other Loan Documents, except for damages solely caused by its or their

own gross negligence or willful misconduct as finally determined by a court of competent jurisdiction. Without limitation of the generality of the foregoing, Administrative Agent: (i) may consult with legal counsel, independent chartered accountants and other experts and consultants selected by it and shall not be liable for any action taken or omitted to be taken in good faith by it in accordance with the advice of such counsel, accountants, experts or consultants; (ii) makes no warranty or representation to any Lender and shall not be responsible to any Lender for any statements, warranties or representations made in or in connection with this Agreement or the other Loan Documents; (iii) shall not have any duty to ascertain or to inquire as to the performance or observance of any of the terms, covenants or conditions of this Agreement or the other Loan Documents on the part of any Loan Party or to inspect the Collateral (including the books and records) of any Loan Party; (iv) shall not be responsible to any Lender for the due execution, legality, validity, enforceability, genuineness, sufficiency or value of this Agreement or the other Loan Documents or any other instrument or document furnished pursuant hereto or thereto; and (v) shall incur no liability under or in respect of this Agreement or the other Loan Documents by acting upon any notice, consent, certificate or other instrument or writing (which may be by email, telecopy, telegram, cable or telex) believed by it to be genuine and signed or sent by the proper party or parties.

(e) With respect to its Commitments and Loans hereunder, Administrative Agent shall have the same rights and powers under this Agreement and the other Loan Documents as any other Lender and may exercise the same as though it were not Administrative Agent; and the term "Lender" or "Lenders" shall, unless otherwise expressly indicated, include Administrative Agent in its individual capacity (to the extent it holds any Obligations owing to Lenders or Commitments hereunder). Administrative Agent and each of its Affiliates may lend money to, invest in, and generally engage in any kind of business with, any Loan Party, any of their Affiliates and any Person who may do business with or own securities of any Loan Party or any such Affiliate, all as if Administrative Agent was not Administrative Agent and without any duty to account therefor to Lenders. Administrative Agent and its Affiliates may accept fees and other consideration from any Loan Party for services in connection with this Agreement or otherwise without having to account for the same to Lenders.

(f) Each Lender acknowledges that it has, independently and without reliance upon Administrative Agent or any other Lender, made its own credit and financial analysis of the Loan Parties and its own decision to enter into this Agreement. Each Lender also acknowledges that it will, independently and without reliance upon Administrative Agent or any other Lender and based on such documents and information as it shall deem appropriate at the time, continue to make its own credit decisions in taking or not taking action under this Agreement. Each Lender acknowledges the potential conflict of interest of each other Lender as a result of Lenders holding disproportionate interests in the Loans, and expressly consents to, and waives any claim based upon, such conflict of interest.

(g) Each Lender agrees to indemnify Administrative Agent (to the extent not reimbursed by Loan Parties and without limiting the obligations of Loan Parties hereunder), ratably according to its respective Pro Rata Share, from and against any and all liabilities, obligations, losses, damages, penalties, actions, judgments, suits, costs, expenses or disbursements of any kind or nature whatsoever which may be imposed on, incurred by, or asserted against Administrative Agent in any way relating to or arising out of this Agreement or any other Loan Document or any action taken or omitted by Administrative Agent in connection therewith; provided, however, that no Lender shall be liable for any portion of such liabilities, obligations, losses, damages, penalties, actions, judgments, suits, costs, expenses or disbursements resulting solely from Administrative Agent's gross negligence or willful misconduct as finally determined by a court of competent jurisdiction. Without limiting the foregoing, each Lender agrees to reimburse Administrative Agent promptly upon demand for its ratable share of any out-of-pocket expenses (including reasonable and documented counsel fees) incurred by Administrative Agent in connection with the preparation, execution, delivery, administration, modification, amendment or enforcement (whether through negotiations, legal proceedings or otherwise) of, or legal advice in respect of rights or responsibilities under, this Agreement and each other Loan Document, to the extent that Administrative Agent is not reimbursed for such expenses by the Loan Parties.

(h) Administrative Agent may resign at any time by giving not less than thirty (30) days' prior written notice thereof to Lenders, Collateral Trustee and Borrower Representative. Upon any such resignation, Lenders shall have the right to appoint a successor Administrative Agent that may be the Collateral Trustee. If no successor Administrative Agent shall have been so appointed by Lenders and shall have accepted such appointment within thirty (30) days after Administrative Agent's giving notice of resignation, then Administrative Agent may, on behalf of Lenders, appoint a successor Administrative Agent, which shall be a Lender or Collateral Trustee, if a Lender or Collateral Trustee is willing to accept such appointment, or otherwise shall be a commercial bank or financial institution or a subsidiary of a commercial bank or financial institution if such commercial bank or financial institution has combined capital of at least Three Hundred Million Dollars ($300,000,000.00). If no

successor Administrative Agent has been appointed pursuant to the foregoing, by the 30th day after the date such notice of resignation was given by the resigning Administrative Agent, such resignation shall become effective and Lenders shall thereafter perform all the duties of Administrative Agent hereunder until such time, if any, as Lenders appoint a successor Administrative Agent as provided above. Upon the acceptance of any appointment as Administrative Agent hereunder by a successor Administrative Agent, such successor Administrative Agent shall succeed to and become vested with all the rights, powers, privileges and duties of the resigning Administrative Agent. Upon the earlier of the acceptance of any appointment as Administrative Agent hereunder by a successor Administrative Agent or the effective date of the resigning Administrative Agent's resignation, the resigning Administrative Agent shall be discharged from its duties and obligations under this Agreement and the other Loan Documents, except that any indemnity, expense reimbursement or other rights in favor of such resigning Administrative Agent shall continue. After any resigning Administrative Agent's resignation hereunder, the provisions of this Section 12.17 shall inure to its benefit as to any actions taken or omitted to be taken by it while it was Administrative Agent under this Agreement and the other Loan Documents. Notwithstanding the foregoing, as long as K2 HealthVentures LLC is a Lender pursuant to this Agreement, K2 HealthVentures LLC shall not resign as Administrative Agent unless a successor Administrative Agent is appointed concurrently with such resignation, which successor Administrative Agent shall have the wherewithal to perform, and shall succeed to and become vested with all the rights, powers, privileges and duties of the resigning Administrative Agent under this Agreement and the other Loan Documents.

(i) In addition to any rights now or hereafter granted under applicable law and not by way of limitation of any such rights, upon the occurrence and during the continuance of any Event of Default, with the prior written consent of Administrative Agent, each Lender and each holder of any Obligation is hereby authorized at any time or from time to time, without notice to any Loan Party or to any other Person, any such notice being hereby expressly waived, to set off and to appropriate and to apply any and all balances held by it at any of its offices for the account of any Loan Party or any Subsidiary of a Loan Party (regardless of whether such balances are then due to such Loan Party or such Subsidiary) and any other properties or assets any time held or owing by that Lender or that holder to or for the credit or for the account of any Loan Party or any Subsidiary of a Loan Party against and on account of any of the Obligations which are not paid when due. Any Lender or holder of any Obligation exercising a right to set off or otherwise receiving any payment on account of the Obligations in excess of its Pro Rata Share thereof in accordance with the terms of this Agreement relating to the priority of the repayment of the Obligations shall purchase for cash (and the other Lenders or holders shall sell) such participations in each such other Lender's or holder's Pro Rata Share of the Obligations as would be necessary to cause such Lender to share the amount so set off or otherwise received with each other Lender or holder in accordance with their respective Pro Rata Shares and in accordance with the terms of this Agreement relating to the priority of the repayment of the Obligations. Each Loan Party agrees, to the fullest extent permitted by law, that (i) any Lender or holder may exercise its right to set off with respect to amounts in excess of its Pro Rata Share of the Obligations and may sell participations in such amount so set off to other Lenders and holders and (ii) any Lender or holders so purchasing a participation in the Loans made or other Obligations held by other Lenders or holders may exercise all rights of set-off, bankers' Lien, counterclaim or similar rights with respect to such participation as fully as if such Lender or holder were a direct holder of the Loans and the other Obligations in the amount of such participation. Notwithstanding the foregoing, if all or any portion of the set-off amount or payment otherwise received is thereafter recovered from Lender that has exercised the right of set-off, the purchase of participations by that Lender shall be rescinded and the purchase price restored without interest.

(j) Nothing in this Agreement or the other Loan Documents shall be deemed to require Administrative Agent to advance funds on behalf of any Lender or to relieve any Lender from its obligation to fulfill its Commitments hereunder or to prejudice any rights that Borrowers may have against any Lender as a result of any default by such Lender hereunder. To the extent that Administrative Agent advances funds to Borrowers on behalf of any Lender and is not reimbursed therefor on the same Business Day as such advance is made, Administrative Agent shall be entitled to retain for its account all interest accrued on such advance until reimbursed by the applicable Lender.

(k) If Administrative Agent pays an amount to a Lender under this Agreement in the belief or expectation that a related payment has been or will be received by Administrative Agent from Borrowers and such related payment is not received thereby, then Administrative Agent will be entitled to recover such amount from such Lender on demand without set-off, counterclaim or deduction of any kind.

(l) If Administrative Agent determines at any time that any amount received thereby under this Agreement shall be returned to Borrowers or paid to any other Person pursuant to any insolvency law or otherwise, then, notwithstanding any other term or condition of this Agreement or any other Loan Document,

Administrative Agent will not be required to distribute any portion thereof to any Lender. In addition, each Lender will repay to Administrative Agent on demand any portion of such amount that Administrative Agent has distributed to such Lender, together with interest at such rate, if any, as Administrative Agent is required to pay to Borrowers or such other Person, without set-off, counterclaim or deduction of any kind.

(m) Administrative Agent will use reasonable efforts to provide Lenders with any written notice of Event of Default received by Administrative Agent from, or delivered by Administrative Agent to, any Loan Party; provided, however, that Administrative Agent shall not be liable to any Lender for any failure to do so, except to the extent that such failure is attributable solely to Administrative Agent's gross negligence or willful misconduct as finally determined by a court of competent jurisdiction.

(n) Anything in this Agreement or any other Loan Document to the contrary notwithstanding, each Lender hereby agrees with each other Lender and with Administrative Agent that no Lender shall take any action to protect or enforce its rights arising out of this Agreement or any other Loan Document (including exercising any rights of set-off) without first obtaining the prior written consent of the Required Lenders, it being the intent of Lenders that any such action to protect or enforce rights under this Agreement and the other Loan Documents shall be taken in concert and at the direction or with the consent of Administrative Agent at the request of Required Lenders.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

[SIGNATURE PAGE TO LOAN AND SECURITY AGREEMENT]

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed as of the Closing Date.

BORROWER:
X4 PHARMACEUTICALS, INC.

By: /s/ David Kirske
Name: David Kirske
Title: Chief Financial Officer, Treasurer and Secretary

X4 THERAPEUTICS, INC.

By: /s/ David Kirske
Name: David Kirske
Title: Chief Financial Officer, Treasurer and Secretary

[SIGNATURE PAGE TO LOAN AND SECURITY AGREEMENT]

COLLATERAL TRUSTEE:

ANKURA TRUST COMPANY, LLC

By: /s/ Beth Micena
Name: Beth Micena
Title: Managing Director

[SIGNATURE PAGE TO LOAN AND SECURITY AGREEMENT]

ADMINISTRATIVE AGENT:

K2 HEALTHVENTURES LLC

By: /s/ Ben Bang
Name: Ben Bang
Title: General Counsel

LENDER:

K2 HEALTHVENTURES LLC

By: /s/ Ben Bang
Name: Ben Bang
Title: General Counsel

EXHIBIT A

DEFINITIONS

As used in this Agreement, the following capitalized terms have the following meanings:

"**9.985% Cap**" has the meaning set forth in Section 2.2(e)(vi).

"**Account**" means any "account" as defined in the Code with such additions to such term as may hereafter be made, and includes, without limitation, all accounts receivable and other sums owing to a Loan Party.

"**Account Control Agreement**" means any control agreement entered into among the depository institution at which a Loan Party maintains a Deposit Account or the securities intermediary or commodity intermediary at which a Loan Party maintains a Securities Account or a Commodity Account, one or more Loan Parties, and Collateral Trustee pursuant to which Collateral Trustee, for the ratable benefit of the Secured Parties, obtains control (within the meaning of the Code) over such Deposit Account, Securities Account, or Commodity Account.

"**Account Debtor**" means any "account debtor" as defined in the Code with such additions to such term as may hereafter be made.

"**Administrative Agent**" has the meaning set forth in the preamble.

"**Affiliate**" means, with respect to any Person, each other Person that owns or controls, directly or indirectly the Person, any Person that controls or is controlled by or is under common control with the Person, and each of that Person's senior executive officers, directors, partners and, for any Person that is a limited liability company, that Person's managers and members.

"**Agreement**" has the meaning set forth in the preamble.

"**Amortization Date**" means October 1, 2029, provided that if (a) no Event of Default has occurred and is continuing, and (b) upon the occurrence of the Extension Milestone Event, the Amortization Date shall be October 1, 2030.

"**Anti-Terrorism Order**" means Executive Order No. 13,224 as of September 24, 2001, Blocking Property and Prohibiting Transactions with Persons Who Commit, Threaten to Commit or Support Terrorism, 66 U.S. Fed. Reg. 49,079 (2001), as amended.

"**Applicable Rate**" means a variable annual rate equal to the greater of (i) eight and fifty-five hundredths of one percent (8.55%) and (ii) the sum of (A) the Prime Rate, plus (B) one and fifty-five hundredths of one percent (1.55%).

"**Austrian Subsidiary**" means X4 Pharmaceuticals (Austria) GmbH, a limited liability company organized under the laws of Austria.

"**Automatic Payment Authorization**" means the Automatic Payment Authorization in substantially the form of Exhibit F.

"**Board**" means, with respect to any Person, the board of directors, board of managers, managers or other similar bodies or authorities performing similar governing functions for such Person.

"**Books**" are all of each applicable Loan Party's books and records including ledgers, federal and state tax returns, records regarding such Loan Party's assets or liabilities, the Collateral, business operations or financial condition, and all computer programs or storage or any equipment containing such information.

"**Borrower**" and "**Borrowers**" has the meaning set forth in the preamble.

"**Borrower Representative**" has the meaning set forth in the preamble.

"**Business Day**" means any day that is not a Saturday, Sunday or a day on which commercial banks in the State of New York are required or permitted to be closed.

"**Cash Equivalents**" means (a) marketable direct obligations issued or unconditionally guaranteed by the United States or any agency or any State thereof having maturities of not more than one (1) year from the date of acquisition; (b) commercial paper maturing no more than one (1) year after its creation and having the highest rating from either Standard & Poor's Ratings Group or Moody's Investors Service, Inc.; (c) certificates of deposit issued by any bank with assets of at least Five Hundred Million Dollars ($500,000,000.00) maturing no more than one year from the date of investment therein; and (d) money market funds at least ninety-five percent (95%) of the assets of which constitute Cash Equivalents of the kinds described in clauses (a) through (c) of this definition.

"**Change in Control**" means any of the following (or any combination of the following) whether arising from any single transaction event or series of related transactions or events that, individually or in the aggregate, result in: (a) any "person" or "group" (within the meaning of Section 13(d) and 14(d)(2) of the Exchange Act) becoming the "beneficial owner" (as defined in Rule 13d-3 under the Exchange Act), directly or indirectly, of a sufficient number of Equity Interests of Borrower Representative ordinarily entitled to vote in the election of directors, empowering such "person" or "group" to elect a majority of the members of the Board of Borrower Representative, who did not have such power before such transaction; (b) the Transfer of all or substantially all assets of Borrowers or of a material business line of Borrowers; or (c) Borrower Representative ceasing to own and control, free and clear of any Liens (other than Permitted Liens), directly or indirectly, all of the Equity Interests in each of its Subsidiaries (other than, in the case of any foreign Subsidiaries, any nominal Equity Interests held by directors to comply with local law) or failing to have the power to direct or cause the direction of the management and policies of each such Subsidiary.

"**Claims**" has the meaning set forth in Section 12.3.

"**Closing Date**" has the meaning set forth in the preamble.

"**Closing Milestone**" means that Borrower Representative shall have delivered, on or prior to Closing Date, written correspondences from the FDA, including official meeting minutes or written responses provided in connection with a Type C meeting, reflecting the FDA's agreement with, or absence of objection to, the requested sample size reduction of the 4WARD Phase 3 study in moderate to severe chronic neutropenia, in each case in form and substance satisfactory to Administrative Agent in its sole and absolute discretion.

"**Code**" means the Uniform Commercial Code, as the same may, from time to time, be enacted and in effect in the State of New York; provided, that, to the extent that the Code is used to define any term herein or in any Loan Document and such term is defined differently in different Articles or Divisions of the Code, the definition of such term contained in Article or Division 9 shall govern; provided further, that in the event that, by reason of mandatory provisions of law, any or all of the attachment, perfection, or priority of, or remedies with respect to, Collateral Trustee's Lien on any Collateral is governed by the Uniform Commercial Code in effect in a jurisdiction other than the State of New York, the term "**Code**" shall mean the Uniform Commercial Code as enacted and in effect in such other jurisdiction solely for purposes of the provisions thereof relating to such attachment, perfection, priority, or remedies and for purposes of definitions relating to such provisions.

"**Collateral**" means any and all properties, rights and assets of each Loan Party described on Exhibit B, and any collateral securing the Obligations pursuant to any Guaranty or pursuant to any other Loan Document.

"**Collateral Access Agreement**" means an agreement with respect to a Loan Party's leased location or bailee location, in each case in form and substance reasonably satisfactory to Administrative Agent and Collateral Trustee.

"**Collateral Account**" means any Deposit Account, Securities Account, or Commodity Account of a Loan Party.

"**Collateral Trust Agreement**" means that certain Collateral Trust Agreement, dated as of the Closing Date, between Collateral Trustee and Administrative Agent, as amended, restated, supplemented or otherwise modified from time to time.

"**Collateral Trustee**" has the meaning set forth in the preamble.

"**Commitment**" means, as to any Lender, the aggregate principal amount of Loans committed to be made by such Lender, as set forth on Schedule 1 hereto.

"**Commodity Account**" means any "commodity account" as defined in the Code with such additions to such term as may hereafter be made.

"**Common Stock**" means the common stock, $0.001 par value per share, of Borrower Representative, and any other class, series or other type of security into or for which the outstanding shares of such common stock may be converted, exchanged or substituted.

"**Compliance Certificate**" means that certain certificate in the form attached hereto as Exhibit D.

"**Contingent Obligation**" means, for any Person, any direct or indirect liability, contingent or not, of that Person for (a) any indebtedness, lease, dividend, letter of credit or other obligation of another such as an obligation, in each case, directly or indirectly guaranteed, endorsed, co-made, discounted or sold with recourse by that Person, or for which that Person is directly or indirectly liable; (b) any obligations for undrawn letters of credit for the account of that Person; and (c) all obligations from any interest rate, currency or commodity swap agreement, interest rate cap or collar agreement, or other agreement or arrangement designated to protect a Person against fluctuation in interest rates, currency exchange rates or commodity prices. The amount of a Contingent Obligation is the stated or determined amount of the primary obligation for which the Contingent Obligation is made or, if not determinable, the maximum reasonably anticipated liability for it determined by the Person in good faith; but the amount may not exceed the maximum of the obligations under any guarantee or other support arrangement.

"**Conversion Amount**" has the meaning set forth in Section 2.2(e)(i).

"**Conversion Election Notice**" means a notice in the form attached hereto as Exhibit H.

"**Conversion Price**" means $3.2341; provided, that in the event that on or after the Closing Date, a stock split, stock combination, reclassification, payment of stock dividend, recapitalization or other similar transaction of such character that the outstanding shares of Common Stock shall be changed into or become exchangeable for a larger or smaller number of shares is consummated (each, a "**Stock Event**"), then, without duplication of any adjustment to the Conversion Price in connection with such Stock Event pursuant to Section 2.2(e)(vii), the Conversion Price shall be proportionately increased or decreased as necessary to reflect the proportionate change in shares of Common Stock issued and outstanding as a result of such Stock Event.

"**Conversion Shares**" has the meaning set forth in Section 2.2(e)(i).

"**Convertible Securities**" means convertible notes, simple agreements for future equity (SAFEs) or other convertible securities (other than priced shares).

"**Copyrights**" means any and all copyright rights, copyright applications, copyright registrations and like protections of a Person in each work of authorship and derivative work thereof, whether published or unpublished and whether or not the same also constitutes a trade secret.

"**Default**" means any circumstance, event or condition that, with the giving of any notice, the passage of time, or both, would be an Event of Default.

"**Default Rate**" has the meaning set forth in Section 2.3(b).

"**Deferred Interest**" has the meaning set forth in Section 2.3(a)(ii).

"**Deferred Interest Principal**" has the meaning set forth in Section 2.3(a)(ii).

"**Deferred Interest Rate**" means an annual rate of one percent (1.0%).

"**Deposit Account**" means any "deposit account" as defined in the Code with such additions to such term as may hereafter be made, and includes any checking account, savings account or certificate of deposit.

"**Designated Holder**" means a Lender or any Affiliate designated by a Lender in the Conversion Election Notice or with respect to any exercise of a right to invest pursuant hereto, provided that the Designated Holder for K2 HealthVentures LLC and any successor, transferee or assignee thereof as Lender, which is an Affiliate of K2 HealthVentures LLC, shall be K2 HealthVentures Equity Trust LLC.

"**Dollars**," "**dollars**" or use of the sign "**$**" means only lawful money of the United States and not any other currency, regardless of whether that currency uses the "$" sign to denote its currency or may be readily converted into lawful money of the United States.

"**DTC**" has the meaning set forth in Section 2.2(e)(i).

"**Equipment**" means all "equipment" as defined in the Code with such additions to such term as may hereafter be made, and includes without limitation all machinery, fixtures, goods, vehicles (including motor vehicles and trailers), and any interest in any of the foregoing.

"**Equity Interests**" means, with respect to any Person, any of the shares of capital stock of (or other ownership, membership or profit interests in) such Person, any of the warrants, options or other rights for the purchase or acquisition from such Person of shares of capital stock of (or other ownership, membership or profit interests in) such Person, any of the securities convertible into or exchangeable for shares of capital stock of (or other ownership, membership or profit interests in) such Person or warrants, rights or options for the purchase or acquisition from such Person of such shares (or such other interests), and any of the other ownership, membership or profit interests in such Person (including partnership, member or trust interests therein), whether voting or nonvoting, and whether or not such shares, warrants, options, rights or other interests are outstanding on any date of determination.

"**ERISA**" means the Employee Retirement Income Security Act of 1974, and its regulations.

"**Event of Default**" has the meaning set forth in Section 8.

"**Exchange Act**" means the US Securities Exchange Act of 1934, as amended (or any successor statute).

"**Excluded Account**" means (i) any Deposit Account used exclusively for payroll, payroll taxes and other employee wage and benefit payments to or for the benefit of such Loan Party's employees and identified to Administrative Agent as such in the Perfection Certificate or following the Closing Date in the Compliance Certificate, provided that the aggregate balance maintained in such account shall not exceed the aggregate amount of payroll, payroll taxes and other employee wage and benefit payments to be made in the then next payroll period and (ii) Deposit Accounts or cash collateral accounts permitted pursuant to clause (k) of the definition of "Permitted Liens".

"**Excluded Locations**" means the following locations where Collateral may be located from time to time: (a) locations where mobile office equipment (e.g. laptops, mobile phones and the like) may be located with employees in the Ordinary Course of Business, and (b) other locations where, in the aggregate for all such locations, less than Seven Hundred Fifty Thousand Dollars ($750,000.00) of Collateral is located.

"**Excluded Property**" means, with respect to any Loan Party: (a) any interest of a Loan Party as a lessee or sublessee under a real property lease, (b) rights held under a license that are not assignable by their terms without the consent of the licensor thereof (but only to the extent such restriction on assignment is enforceable under applicable law), (c) any interest of a Loan Party as a lessee under an Equipment lease if such Loan Party is prohibited by the terms of such lease from granting a security interest in such lease or under which such an assignment or Lien would cause a default to occur under such lease; provided, however, that upon termination of such prohibition, such interest shall immediately become Collateral without any action by any Loan Party or any Secured Party, (d) motor vehicles and other assets subject to certificates of title, (e) Deposit Accounts or cash collateral accounts securing cash management services permitted pursuant to clause (k) of the definition of "Permitted Liens"; provided however, that at all times the Collateral shall include all Accounts and all proceeds of the foregoing.

"**Extension Milestone Event**" means that Borrower Representative shall have delivered evidence prior to October 1, 2029, satisfactory to Administrative Agent in its commercially reasonable discretion, that Borrower has achieved first commercial sales in the United States for Mavorixafor in moderate to severe chronic neutropenia.

"**FDA**" means the United States Food and Drug Administration, or any successor thereto.

"**Federal Reserve Board**" means the Board of Governors of the Federal Reserve System, or any successor thereto.

"**Fee Letter**" means that certain letter agreement, dated as of the date hereof, by and among Borrowers, Administrative Agent and Lenders, as amended, restated, supplemented or otherwise modified from time to time.

"**First Tranche Term Loan**" has the meaning set forth in Section 2.2(a)(i).

"**First Tranche Term Loan Commitment**" means, as to any Lender, the original principal amount of the First Tranche Term Loan committed to be made by such Lender, as set forth on Schedule 1 hereto.

"**Funding Date**" means any date on which a Loan is made to or for the account of a Borrower which shall be a Business Day.

"**GAAP**" means generally accepted accounting principles set forth in the opinions and pronouncements of the Accounting Principles Board of the American Institute of Certified Public Accountants and statements and pronouncements of the Financial Accounting Standards Board or in such other statements by such other Person as may be approved by a significant segment of the accounting profession, which are applicable to the circumstances as of the date of determination, provided, however, that if there occurs after the Closing Date any change in GAAP that affects in any respect the calculation of any covenant or threshold in this Agreement, Lenders and Borrower Representative shall negotiate in good faith amendments to the provisions of this Agreement that relate to the calculation of such covenant or threshold with the intent of having the respective positions of Lender and Borrowers after such change in GAAP conform as nearly as possible to their respective positions as of the Closing Date, and, until any such amendments have been agreed upon, such covenants and thresholds shall be calculated as if no such change in GAAP has occurred.

"**General Intangibles**" means all "general intangibles" as defined in the Code in effect on the Closing Date with such additions to such term as may hereafter be made, and includes without limitation, all Intellectual Property, claims, income and other tax refunds, security and other deposits, payment intangibles, contract rights, options to purchase or sell real or personal property, rights in all litigation presently or hereafter pending (whether in contract, tort or otherwise), insurance policies (including without limitation key man, property damage, and business interruption insurance), payments of insurance and rights to payment of any kind.

"**Governmental Approval**" means any consent, authorization, approval, order, license, franchise, permit, certificate, accreditation, registration, filing or notice, of, issued by, from or to, or other act by or in respect of, any Governmental Authority, including for the testing, manufacturing, marketing and sales of its Product.

"**Governmental Authority**" means any nation or government, any state or other political subdivision thereof, any agency, authority, instrumentality, regulatory body, court, central bank or other entity exercising executive, legislative, judicial, taxing, regulatory or administrative functions of or pertaining to government, any securities exchange and any self-regulatory organization.

"**Guarantor**" means any Person providing a Guaranty with respect to the Obligations or providing collateral, security or other credit support for all or any portion of the Obligations.

"**Guaranty**" means any guarantee of all or any part of the Obligations, as the same may from time to time be amended, restated, modified or otherwise supplemented.

"**Hercules Obligations**" has the meaning set forth in Section 2.2(a)(i).

"**Indebtedness**" means (a) indebtedness for borrowed money or the deferred price of property or services (other than accounts payable in the Ordinary Course of Business not more than sixty (60) days past due), (b) any reimbursement and other obligations for surety bonds and letters of credit, (c) obligations evidenced by notes, bonds, debentures or similar instruments, (d) capital lease obligations, and (e) Contingent Obligations.

"**Indemnified Person**" has the meaning set forth in Section 12.3.

"**Insolvency Proceeding**" means any proceeding by or against any Person under the United States Bankruptcy Code, or any other bankruptcy or insolvency law, including assignments for the benefit of creditors, compositions, extensions generally with its creditors, or proceedings seeking reorganization, arrangement, or other relief.

"**Intellectual Property**" means, with respect to any Loan Party (or, as applicable, any of its Subsidiaries), all of such Loan Party's or Subsidiary's right, title, and interest in and to the following:

(a) its Copyrights, Trademarks and Patents;

(b) any and all trade secrets and trade secret rights, including, without limitation, any rights to unpatented inventions, know-how, operating manuals;

(c) any and all source code;

(d) any and all design rights which may be available to such Person;

(e) any and all claims for damages by way of past, present and future infringement of any of the foregoing, with the right, but not the obligation, to sue for and collect such damages for said use or infringement of the Intellectual Property rights identified above; and

(f) all amendments, renewals and extensions of any of the Copyrights, Trademarks or Patents.

"**Inventory**" means all "inventory" as defined in the Code in effect on the Closing Date with such additions to such term as may hereafter be made.

"**Investment**" means any beneficial ownership interest in any Person (including stock, partnership interest or other securities or Equity Interests), and any loan, advance or capital contribution to any Person, or the acquisition of all or substantially all of the assets or properties of another Person.

"**Key Person**" means the Chief Executive Officer, President and Chief Financial Officer of Borrower Representative.

"**Lender**" has the meaning set forth in the preamble.

"**Lender Conversion**" has the meaning set forth in Section 2.2(e)(i).

"**Lien**" means a claim, mortgage, deed of trust, levy, charge, pledge, security interest or other encumbrance of any kind, whether voluntarily incurred or arising by operation of law or otherwise against any property.

"**Loan Documents**" means, collectively, this Agreement and any schedules, exhibits, certificates, notices, and any other documents related to this Agreement, the Fee Letter, the Collateral Trust Agreement, the Automatic Payment Authorization, the Account Control Agreements, the Collateral Access Agreements, any Subordination Agreement, any note, or notes or guaranties executed by a Loan Party, and any other present or future agreement by a Loan Party with or for the benefit of any Secured Party in connection with this Agreement, all as amended, modified, supplemented, extended or restated from time to time.

"**Loan Party**" or "**Loan Parties**" has the meaning set forth in the preamble.

"**Loan Request**" means a request for a Loan pursuant to this Agreement in substantially the form attached hereto as Exhibit C.

"**Loans**" means, collectively, the Term Loans, and any other loan from time to time made under this Agreement, and "**Loan**" means any of the foregoing.

"**Margin Stock**" has the meaning set forth in Section 5.11(b).

"**Market Capitalization**" means, as of any date of determination, the product of (a)(i) the number of outstanding shares of Common Stock of Borrower Representative, plus (ii) the number of shares of Common Stock of Borrower Representative issuable on conversion of all outstanding shares (if any) of pre-funded warrants of Borrower Representative, in each case as publicly disclosed in the most recent filing of Borrower Representative with the SEC as outstanding as of such date, and (b) the volume-weighted average price of a share of Common Stock over the ten (10) consecutive trading days prior to (and including) such date.

"**Material Adverse Effect**" means (a) a material impairment in the perfection or priority of the Lien in the Collateral pursuant to the Loan Documents to which the Loan Parties are a party or in the value of the Collateral; or (b) a material adverse effect upon: (i) the business, operations, properties, assets or condition (financial or otherwise) of the Loan Parties as a whole; (ii) the prospect of repayment of any part of the Obligations; or (iii) the ability to enforce any rights or remedies with respect to any Obligations, in each case, as determined by Administrative Agent.

"**Maximum Rate**" has the meaning set forth in Section 2.3(d) hereof.

"**Minimum Cash Modification Date**" is the date that is six (6) months following the occurrence of the Extension Milestone Event.

"**Minimum Cash Threshold**" means (a) at all times prior to the Minimum Cash Modification Date, seventy-five percent (75.0%) of the total outstanding Obligations of the Borrowers to the Lenders and (b) at all times after the Minimum Cash Modification Date, forty percent (40.0%) of the total outstanding Obligations of the Borrowers to the Lenders.

"**MSC Investment Conditions**" means that, as of any date of determination, the Loan Parties, in the aggregate, maintain unrestricted cash in Collateral Accounts subject to Account Control Agreements in favor of Collateral Trustee in an amount equal to or greater than the lesser of (i) the aggregate amount of all cash and Cash

Equivalents of the Loan Parties and their Subsidiaries, on a consolidated basis, or (ii) one hundred twenty percent (120.0%) of the then-outstanding Obligations of the Loan Parties to the Secured Parties.

"**MSC Subsidiary**" means, individually and collectively, (i) X4 Pharmaceuticals Security Corporation, a Massachusetts securities corporation and/or (ii) any wholly-owned Subsidiary incorporated in the Commonwealth of Massachusetts or the State of Delaware for the purpose of holding Investments as a Massachusetts security corporation under 830 CMR 63.38B.1 of the Massachusetts tax code and applicable regulations (as the same may be amended, modified or replaced from time to time), and identified as such to Administrative Agent from time to time.

"**Net Product Revenue**" means, for any period of determination, Borrowers' consolidated net revenue (determined in accordance with GAAP), attributable to direct commercial sales of Borrowers' Products (which, for the avoidance of doubt, shall not include any royalty or profit sharing revenue or any upfront or milestone-based payments in connection with business development or licensing transactions).

"**Obligations**" means all of Borrowers' and each other Loan Party's obligations to pay the Loans when due, including principal, interest, fees, Secured Party Expenses, the fees pursuant to the Fee Letter, the Deferred Interest Principal, and any other amounts due to be paid by a Loan Party, and each Loan Party's obligation to perform its duties under the Loan Documents, and any other debts, liabilities and other amounts any Loan Party owes to any Secured Party at any time, whether under the Loan Documents or otherwise, including, without limitation, interest or Secured Party Expenses accruing after Insolvency Proceedings begin (whether or not allowed), and any debts, liabilities, or obligations of any Loan Party assigned to any Secured Party, which shall be treated as secured or administrative expenses in the Insolvency Proceedings to the extent permitted by applicable law.

"**OFAC**" has the meaning set forth in Section 5.11(c).

"**Operating Documents**" means, for any Person, such Person's formation documents, as certified by the Secretary of State (or equivalent agency) of such Person's jurisdiction of formation, organization or incorporation on a date that is no earlier than thirty (30) days prior to the Closing Date and, (a) if such Person is a corporation, its bylaws in current form, (b) if such Person is a limited liability company, its limited liability company agreement or operating agreement (or similar agreement), and (c) if such Person is a partnership, its partnership agreement (or similar agreement), each of the foregoing with all current amendments, restatements and modifications thereto.

"**Ordinary Course of Business**" means, in respect of any transaction involving any Person, the ordinary course of such Person's business as conducted by any such Person in accordance with (a) the usual and customary customs and practices in the kind of business in which such Person is engaged, and (b) the past practice and operations of such Person, and in each case, undertaken by such Person in good faith and not for purposes of evading any covenant or restriction in any Loan Document.

"**Patents**" means all patents, patent applications and like protections of a Person including without limitation improvements, divisions, continuations, renewals, reissues, extensions and continuations-in-part of the same and all rights therein provided by international treaties or conventions.

"**Payment Date**" means the first calendar day of each month.

"**Perfection Certificate**" has the meaning set forth in Section 5.1.

"**Permitted Acquisition**" and "**Permitted Acquisitions**" means a transaction whereby Borrower acquires, or permits any of its Subsidiaries to acquire, all or substantially all of the capital stock or property of another Person, which satisfies each of the following conditions, unless otherwise approved or waived by the Lenders in their sole discretion:

(a) such transaction shall only involve parties being in the same or a substantially similar line of business as Borrower;

(b) the target of such acquisition shall be an entity organized under the laws of the United States and shall have its principal place of business in the United States;

(c) no Event of Default has occurred and is continuing or would exist after giving effect to the transaction and Administrative Agent and each Lender has received satisfactory evidence that Borrower is in compliance with all terms and conditions of this Agreement (including compliance with each financial covenant set forth in this Agreement, determined as of the last day of the most recently ended measurement period for which financial statements have been delivered, as if such acquisition had occurred on the first day of such period);

(d) the acquisition is approved by the Board (or equivalent control group) of all parties to the transaction;

(e) the total aggregate consideration paid or payable (including the maximum potential amount of any earn-out obligations, purchase price holdbacks, seller debt and other deferred purchase price) by Borrower and its Subsidiaries (with balance sheet cash and/or a portion of the Second Tranche Loans) in connection with any individual transaction and all transactions during the term of the Agreement does not exceed [*******]

(f) Borrower provides Lenders (i) written notice of the transaction at least fifteen (15) days before the closing of the transaction, and (ii) copies, which may be in draft format, of the acquisition agreement and other material documents relative to the contemplated transaction and such other financial information, financial analysis, documentation or other information relating to such transaction as any Lender shall reasonably request before the closing of the transaction;

(g) to the extent the acquisition is an acquisition of capital stock, Borrower is a surviving legal entity after completion of the contemplated transaction;

(h) the contemplated transaction is consensual and non-hostile;

(i) no Change in Control shall result from the acquisition;

(j) no Indebtedness will be incurred, assumed, or would exist with respect to Borrower or its Subsidiaries as a result of the contemplated transaction, other than Permitted Indebtedness, and no Liens will be incurred, assumed, or would exist with respect to the assets of Borrower or its Subsidiaries as a result of the contemplated transaction, other than Permitted Liens;

(k) any Person whose capital stock is acquired or any Subsidiary that acquires assets in such contemplated transaction shall, within thirty (30) days of the consummation of the transaction, become a co-borrower or guarantor hereunder, and shall grant a first priority Lien in all of its assets to Collateral Trustee, all on documentation acceptable to Administrative Agent and Collateral Trustee in their sole discretion;

(l) such acquisition shall not reasonably be expected to result in a Material Adverse Effect; and

(m) Borrower shall have delivered to Administrative Agent, prior to the date on which the definitive documentation for such acquisition is entered into (or such later date as is agreed), a certificate of a Responsible Officer of Borrower, in form and substance reasonably satisfactory to Administrative Agent, certifying that all of the requirements set forth in this definition have been satisfied or will be satisfied on or prior to the closing of such purchase or other acquisition.

"**Permitted Indebtedness**" means:

(a) each Loan Party's Indebtedness under this Agreement and the other Loan Documents;

(b) Indebtedness existing on the Closing Date and shown on the Perfection Certificate, provided that (i) to the extent the amount of such type of Indebtedness is limited pursuant to a clause of this defined term, amounts existing on the Closing Date or any permitted refinancing thereof shall count towards such limit, (ii) to the extent such Indebtedness is required to be repaid on the Closing Date, in accordance with a payoff letter delivered as a condition to closing, such Indebtedness shall not constitute

Permitted Indebtedness after such repayment, and (iii) to the extent any such Indebtedness is required to be made subject to the terms of a Subordination Agreement as of the Closing Date or thereafter, pursuant to the terms of this Agreement, such Indebtedness shall be permitted only to the extent the applicable Subordination Agreement is in effect;

(c) Subordinated Debt;

(d) unsecured Indebtedness and accrued liabilities to trade creditors incurred in the Ordinary Course of Business;

(e) Indebtedness incurred as a result of endorsing negotiable instruments received in the Ordinary Course of Business;

(f) Indebtedness secured by Liens permitted under clause (c) and (o) of the definition of "Permitted Liens" hereunder;

(g) Indebtedness incurred in connection with the Loan Parties' letters of credit from financial institutions in the Ordinary Course of Business in an aggregate amount outstanding not to exceed Six Hundred Seventy-Five Thousand Dollars ($675,000.00) at any time;

(h) other unsecured Indebtedness not otherwise permitted pursuant to this defined term, in an aggregate amount outstanding not to exceed Seven Hundred Fifty Thousand Dollars ($750,000.00);

(i) extensions, refinancings, modifications, amendments and restatements of any items of Permitted Indebtedness described in clause (b) above, provided that the principal amount thereof is not increased (excluding customary fees, costs and expenses) or the terms thereof are not modified to impose more burdensome terms upon a Borrower or any of its Subsidiaries, as the case may be, provided that nothing in this definition or otherwise in this Agreement or any other Loan Document shall (x) be construed as evidencing an intention or agreement on the part of the Collateral Trustee that the Collateral Trustee's Liens or the Obligations be or have been subordinated to any Permitted Liens, or (y) cause any such subordination to occur;

(j) to the extent constituting Indebtedness, Permitted Investments;

(k) Indebtedness in respect of workers' compensation claims, payment obligations in connection with health, disability or other types of social security benefits, unemployment or other insurance obligations, reclamation and statutory obligations, in each case incurred in the Ordinary Course of Business, in an aggregate amount not to exceed Seven Hundred Fifty Thousand Dollars ($750,000.00) at any time;

(l) Indebtedness incurred in connection with cash management services, including corporate credit cards, letters of credit, bank guaranties and similar instruments, in an aggregate amount not to exceed Seven Hundred Fifty Thousand Dollars ($750,000.00) at any time; and

(m) any Indebtedness arising in connection with the monetization of Mavorixafor's net product sales in an arm's length transaction with a third-party investor satisfactory to Administrative Agent in its commercially reasonable discretion; provided that such third-party investor has entered into an intercreditor agreement in favor of the Secured Parties in form and substance satisfactory to Administrative Agent in its sole discretion.

"**Permitted Investments**" means:

(a) Investments (including, without limitation, Subsidiaries) existing on the Closing Date and shown on the Perfection Certificate;

(b) (i) Investments consisting of Cash Equivalents, and (ii) any Investments permitted by Borrower Representative's investment policy, as amended from time to time, provided that such investment policy (and any such amendment thereto) has been approved in writing by Lenders (it being acknowledged and agreed that Borrower Representative's investment policy as in effect on the Closing Date is approved by Lenders);

(c) Investments consisting of repurchases of Borrower Representative's Equity Interests from former employees, officers, consultants and directors of Borrower Representative to the extent permitted under Section 7.7;

(d) Investments (i) among Loan Parties, (ii) among Subsidiaries that are not Loan Parties, (iii) by any Subsidiary that is not a Loan Party in a Loan Party and (iv) by a Loan Party in Subsidiaries (including Austrian Subsidiary) which are not Loan Parties in an aggregate amount per fiscal year not to exceed Seven Hundred Fifty Thousand Dollars ($750,000.00);

(e) Investments not to exceed Seven Hundred Fifty Thousand Dollars ($750,000.00) outstanding in the aggregate at any time consisting of (i) travel advances and employee relocation loans and other employee loans and advances in the Ordinary Course of Business, and (ii) loans not involving the net transfer of cash proceeds to employees, officers or directors relating to the purchase of Equity Interests of Borrower Representative pursuant to employee stock purchase plans or other similar agreements approved by Borrower Representative's Board;

(f) Investments (including debt obligations) received in connection with the bankruptcy or reorganization of customers or suppliers and in settlement of delinquent obligations of, and other disputes with, customers or suppliers arising in the Ordinary Course of Business;

(g) Investments consisting of Deposit Accounts in which Collateral Trustee has a first priority perfected security interest;

(h) Investments in any MSC Subsidiary, so long as an Event of Default has not occurred and is continuing at the time of such Investment or would result immediately from such Investment, provided that the MSC Investment Conditions are satisfied;

(i) Investments not otherwise permitted pursuant to this defined term, in an aggregate amount not to exceed Seven Hundred Fifty Thousand Dollars ($750,000.00) per fiscal year;

(j) Investments consisting of accounts receivable of, or prepaid royalties and other credit extensions, to customers and suppliers who are not Affiliates, in the Ordinary Course of Business; provided that this subsection (j) shall not apply to Investments of a Loan Party in any Subsidiary;

(k) Investments consisting of the formation of Subsidiaries, so long as the Loan Parties and such Subsidiaries comply with Section 6.11 hereof;

(l) Investments constituting Permitted Acquisitions; and

(m) Investments consisting of the endorsement of negotiable instruments for deposit or collection, deposits for utilities, landlords to secure office space and other like persons, or in connection with workers' compensation or similar deposits, or similar transactions, in each case, in the Ordinary Course of Business.

"**Permitted Liens**" means:

(a) Liens arising under this Agreement and the other Loan Documents;

(b) Liens existing on the Closing Date and shown on the Perfection Certificate, provided that (i) to the extent the amount of Indebtedness secured by such type of Lien is limited pursuant to a clause of this defined term, amounts existing on the Closing Date or any permitted refinancing thereof shall count towards such limit, (ii) to the extent the Indebtedness secured by such a Lien is required to be repaid on the Closing Date, in accordance with a payoff letter delivered as a condition to closing, such Lien shall not constitute Permitted Lien after the repayment of the associated Indebtedness, and (iii) to the extent any such Lien is required to be made subject to the terms of a Subordination Agreement as of the Closing Date or thereafter, pursuant to the terms of this Agreement, such Lien shall be permitted only to the extent the applicable Subordination Agreement is in effect;

(c) purchase money Liens and capital leases (i) on Equipment acquired or held by a Loan Party or Subsidiary thereof incurred for financing the acquisition of the Equipment, or (ii) existing on Equipment when acquired, if the Lien is confined to the property and improvements and the proceeds of the

Equipment (or cross-collateralized by other property or improvements financed by the same lender), in each case, securing no more than Seven Hundred Fifty Thousand Dollars ($750,000.00) in the aggregate amount outstanding;

(d) Liens for taxes, fees, assessments or other government charges or levies, either (i) not yet delinquent or (ii) being contested in good faith and for which such Loan Party or Subsidiary maintains adequate reserves on its books;

(e) leases or subleases of real property granted in the Ordinary Course of Business of such Person, and leases, subleases, non-exclusive licenses or sublicenses of personal property (other than Intellectual Property) granted in the Ordinary Course of Business of such Person;

(f) Liens of carriers, warehousemen, suppliers, or other Persons that are possessory in nature arising in the Ordinary Course of Business so long as such Liens attach only to Inventory, securing liabilities in the aggregate amount not to exceed Seven Hundred Fifty Thousand Dollars ($750,000.00) and which are not delinquent or remain payable without penalty or which are being contested in good faith and by appropriate proceedings which proceedings have the effect of preventing the forfeiture or sale of the property subject thereto;

(g) Liens to secure payment of workers' compensation, employment insurance, old-age pensions, social security and other like obligations incurred in the Ordinary Course of Business (other than Liens imposed by ERISA);

(h) Liens arising from attachments or judgments, orders, or decrees in circumstances not constituting an Event of Default;

(i) Liens in favor of other financial institutions arising in connection with a Deposit Account or Securities Account of a Loan Party or Subsidiary thereof held at such institutions, provided that Collateral Trustee has a perfected security interest in such Deposit Account to the extent required pursuant to Section 6.6, or the securities maintained therein and Collateral Trustee has received an Account Control Agreement with respect thereto to the extent required pursuant to Section 6.6 of this Agreement;

(j) licenses of Intellectual Property which constitute a Permitted Transfer;

(k) Liens on cash collateral maintained in a separate Collateral Account exclusively for such purpose and identified to Administrative Agent as such, securing obligations in connection with letters of credit permitted under clause (g) of the definition of "Permitted Indebtedness" securing liabilities in the aggregate amount not to exceed Six Hundred Seventy-Five Thousand Dollars ($675,000.00) at any time;

(l) Liens in connection with the monetization of Mavorixafor's net product sales in an arm's length transaction with a third-party investor satisfactory to Administrative Agent in its commercially reasonable discretion; provided that such third-party investor has entered into an intercreditor agreement in favor of the Secured Parties in form and substance satisfactory to Administrative Agent in its sole discretion;

(m) Liens incurred in the extension, renewal or refinancing of the indebtedness secured by Liens described in clause (b), but any extension, renewal or replacement Lien must be limited to the property encumbered by the existing Lien and the principal amount of the indebtedness may not increase;

(n) easements, rights of way, restrictions and other similar encumbrances on real property and imposed by applicable laws and encumbrances consisting of zoning or building restrictions, easements, licenses, restrictions on the use of property or minor imperfections in title thereto which, in the aggregate, are not material, and which do not in any case materially detract from the value of the property subject thereto or interfere with the Ordinary Course of Business of any of the Loan Parties;

(o) deposits or pledges of cash to secure bids, tenders, contracts (other than contracts for the payment of money), leases, surety and appeal bonds and other obligations of a like nature arising in the Ordinary Course of Business, in an aggregate amount not exceeding Seven Hundred Fifty Thousand Dollars ($750,000.00) at any time;

(p) Liens granted in the Ordinary Course of Business on the unearned portion of the premium and on the proceeds of the financed insurance securing the payment of financed insurance premiums;

(q) Liens in favor of customs and revenue authorities in the Ordinary Course of Business arising as a matter of law to secure payment of customs duties in connection with the importation of goods, which duties are promptly paid on or before the date they become due; statutory and common law rights of set-off and other similar rights in respect of deposits of cash and securities in favor of banks, other depository institutions and brokerage firms; and

(r) Liens arising from the filing of any precautionary financing statement on operating leases covering the leased property, to the extent such operating leases are permitted under this Agreement.

(s) "**Permitted Locations**" means, collectively, the following locations where Collateral may be located from time to time: (a) locations identified in the Perfection Certificate, (b) locations with respect to which Borrowers have complied with the requirements of Section 6.12, and (c) the Excluded Locations.

"**Permitted Transfers**" means

(a) sales of Inventory by a Loan Party or any of its Subsidiaries in the Ordinary Course of Business;

(b) non-exclusive licenses and similar arrangements for the use of Intellectual Property of a Loan Party or any of its Subsidiaries in the Ordinary Course of Business and licenses that could not result in a legal transfer of title of the licensed property but that may be exclusive as to territory only as to discrete geographical areas outside of the United States;

(c) dispositions of worn-out, obsolete or surplus Equipment in the Ordinary Course of Business that is, in the reasonable judgment of such Loan Party or Subsidiary, no longer economically practicable to maintain or useful;

(d) Transfers consisting of the granting of Permitted Liens and the making of Permitted Investments;

(e) the use or transfer of money or Cash Equivalents for (i) the payment of expenses in the Ordinary Course of Business and in a manner that is not prohibited by the Loan Documents and (ii) payment of taxes;

(f) other Transfers of assets having a fair market value of not more than Seven Hundred Fifty Thousand Dollars ($750,000.00) per fiscal year of Borrower Representative;

(g) Transfers from any Subsidiary to a Loan Party or among Loan Parties;

(h) Transfers consisting of the abandonment, forfeiture or dedication to the public of any Intellectual Property in the Ordinary Course of Business that is not material to the Loan Parties' business to the extent permitted by Section 6.7; and

(i) any disposition in connection with the monetization of Mavorixafor's net product sales in an arm's length transaction with a third-party investor satisfactory to Administrative Agent in its commercially reasonable discretion; provided that such third-party investor has entered into an intercreditor agreement in favor of the Secured Parties in form and substance satisfactory to Administrative Agent in its sole discretion.

"**Person**" means any individual, sole proprietorship, partnership, limited liability company, joint venture, company, trust, unincorporated organization, association, corporation, institution, public benefit corporation, firm, joint stock company, estate, entity or government agency.

"**Prime Rate**" means, at any time, the rate of interest noted in The Wall Street Journal, Money Rates section, as the "Prime Rate". In the event that The Wall Street Journal quotes more than one rate, or a range of rates, as the Prime Rate, then the Prime Rate shall mean the average of the quoted rates. In the event that The Wall Street Journal ceases to publish a Prime Rate, then the Prime Rate shall be the average of the three (3) largest U.S. money center commercial banks, as determined by Lenders.

"**Pro Rata Share**" means, with respect to any Lender and as of any date of determination, the percentage obtained by dividing (i) the aggregate Commitments of such Lender by (ii) the aggregate Commitments of all Lenders provided, that to the extent any Commitment has expired or been terminated, with respect to such Commitment, the applicable outstanding balance of the Loans made pursuant to such Commitment held by such Lender and all the Lenders, respectively, shall be used in lieu of the amount of such Commitment, provided further, that with respect to all matters relating to a particular Loan, the Commitment or outstanding balance of the applicable Loan, shall be used in lieu of the aggregate Commitment or outstanding balance of all Loans in the foregoing calculation. "Ratable" and related terms shall mean, determined by reference to such Lender's Pro Rata Share.

"**Projections**" means annual Board-approved projections; provided that the Projections may be revised annually or from time to time to reflect updated Board-approved projections, in form and substance acceptable to the Administrative Agent in its commercially reasonable discretion for purposes of Section 6.10.

"**Products**" means any products manufactured, sold, developed, tested or marketed by a Loan Party or any of its Subsidiaries.

"**Qualified Financing**" means the closing by Borrower Representative after the Closing Date of the issuance and sale of Equity Interests of Borrower Representative for cash solely for financing purposes in an offering broadly marketed to multiple investors; provided, however, that "Qualified Financing" shall not include any issuance and sale of Equity Interests (i) pursuant to benefit plans or arrangements, including under Borrower Representative's equity incentive plans or otherwise as equity compensation; (ii) as dividends or distributions, or upon stock splits, recapitalizations or similar transactions; (iii) pursuant to a merger, consolidation, acquisition, strategic alliance or similar business combination; (iv) to banks, equipment or real property lessors or other financial institutions pursuant to a non-convertible debt financing, equipment lease, bank credit arrangement or commercial leasing transaction entered into for primarily non-equity financing purposes; (v) in connection with strategic transactions, including (A) joint ventures, manufacturing, marketing, OEM, sponsored research, collaboration or distribution arrangements, or (B) technology transfer or development arrangements; (vi) to suppliers or third party service providers in connection with the provision of goods or services; (vii) in an "at-the-market" offering program or similar ongoing offering program; (viii) to acquire any security convertible into or exercisable for the securities excluded pursuant to clauses (i) through (vii) above; or (ix) in connection with options, warrants, convertible securities or other arrangements in existence on the Closing Date or issued in transactions excluded pursuant to clauses (i) through (viii) above.

"**Registered Organization**" means any "registered organization" as defined in the Code with such additions to such term as may hereafter be made.

"**Registrable Securities**" has the meaning given in Schedule 4.

"**Required Lenders**" means, as of any date of determination, Lenders holding more than 50% of the sum of aggregate principal amount of all Loans outstanding and the aggregate amount of all unfunded commitments to make Loans, at such date of determination.

"**Requirement of Law**" means as to any Person, the organizational or governing documents of such Person, and any law (statutory or common), treaty, rule or regulation or determination of an arbitrator or a court or other Governmental Authority, in each case applicable to or binding upon such Person or any of its property or to which such Person or any of its property is subject.

"**Responsible Officer**" means with respect to any Person, any of the Chief Executive Officer, President or Chief Financial Officer of such Person. Unless the context otherwise requires, each reference to a Responsible Officer herein shall be a reference to a Responsible Officer of Borrower Representative.

"**Restricted License**" means any material in-bound license or other similar material agreement (other than ordinary course customer contracts, off the shelf software licenses, licenses that are commercially available to the

public, and open source licenses) to which a Loan Party or Subsidiary is a party (a) that prohibits or otherwise restricts such Loan Party or Subsidiary from granting a security interest in its interest in such license or agreement or in any other property, or (b) for which a default under, or termination of which, could reasonably be expected to interfere with Collateral Trustee's right to sell any Collateral.

"**Royalty and Milestone Payments**" means milestone payments, royalty payments, upfront payments and other similar payments pursuant to research and development, licensing, collaboration or development agreements.

"**SEC**" has the meaning set forth in Section 2.2(e)(iii).

"**Second Tranche Availability Period**" means the period of time commencing upon the Closing Date and ending on the day before the Amortization Date.

"**Second Tranche Term Loan Commitment**" means, as to any Lender, up to the aggregate principal amount of the Second Tranche Term Loans committed to be made by such Lender, as set forth on Schedule 1 hereto.

"**Second Tranche Term Loans**" has the meaning set forth in Section 2.2(a)(ii).

"**Secured Party**" means (i) Collateral Trustee, (ii) Administrative Agent, (iii) Lenders and (iv) any of their respective successors and assigns.

"**Secured Party Expenses**" means all documented audit fees and expenses, costs, and expenses (including reasonable and documented out-of-pocket attorneys' fees and expenses) of the Secured Parties for preparing, amending, negotiating, administering, defending and enforcing the Loan Documents (including, without limitation, those incurred in connection with appeals or Insolvency Proceedings) or otherwise incurred with respect to a Loan Party, including all costs, expenses and other amounts required to be paid by any Secured Party in accordance with the Collateral Trust Agreement.

"**Securities Account**" means any "securities account" as defined in the Code with such additions to such term as may hereafter be made.

"**Securities Act"** means the Securities Act of 1933, as amended (or any successor statute).

"**Security Instrument**" means any security agreement, assignment, pledge agreement, financing or other similar statement or notice, continuation statement, other agreement or instrument, or any amendment or supplement to any thereof, creating, governing or providing for, evidencing or perfecting any security interest or Lien.

"**Shares**" means all of the issued and outstanding Equity Interests owned or held of record by a Loan Party or other Loan Party in each of its Subsidiaries.

"**Subordinated Debt**" means Indebtedness on terms and to holders satisfactory to Administrative Agent and incurred by a Loan Party that is subordinated in writing to all of the Obligations, pursuant to a Subordination Agreement.

(o) "**Subordination Agreement**" means any subordination agreement in form and substance satisfactory to Administrative Agent entered into from time to time with respect to Subordinated Debt.

"**Subsidiary**" means, with respect to any Person, any corporation, partnership, limited liability company or joint venture in which (i) any general partnership interest or (ii) more than fifty percent (50%) of the stock, limited liability company interest, joint venture interest or other Equity Interest which by the terms thereof has the ordinary voting power to elect the Board of that Person, at the time as of which any determination is being made, is owned or controlled by such Person, directly or indirectly. Unless the context otherwise requires, each reference to a Subsidiary herein shall be a reference to a Subsidiary of Borrower Representative

"**Taxes**" means all present or future taxes, levies, imposts, duties, deductions, withholdings (including backup withholding), assessments, fees or other charges imposed by any Governmental Authority, including any interest, additions to tax or penalties applicable thereto.

"**Term Loan**" and "**Term Loans**" each, have the meaning set forth in Section 2.2(a)(ii) hereof.

"**Term Loan Maturity Date**" means October 1, 2030.

"**Trademarks**" means any trademark and servicemark rights of a Person, whether registered or not, applications to register and registrations of the same and like protections, and the entire goodwill of the business connected with and symbolized by such trademarks.

"**Trading Market**" means any of the following markets or exchanges on which the Common Stock is listed or quoted for trading on the date in question: the NYSE American, the Nasdaq Stock Market LLC, the Nasdaq Capital Market, the Nasdaq Global Market, the Nasdaq Global Select Market or the New York Stock Exchange (or any successors to any of the foregoing).

"**Transfer**" means defined in Section 7.1.

"**Unrestricted Cash**" means, as of any date of determination, the Borrowers' unrestricted cash and Cash Equivalents maintained in Collateral Accounts subject to Account Control Agreements in favor of Collateral Trustee.

"**Voting Stock**" means, with respect to any Person, all classes of Equity Interests issued by such Person the holders of which are ordinarily, in the absence of contingencies, entitled to vote for the election of directors or managers (or Persons performing similar functions) of such Person, even though the right so to vote has been suspended by the happening of such a contingency.

EXHIBIT B

COLLATERAL DESCRIPTION

The Collateral consists of all of each Loan Party's right, title and interest in and to the following personal property wherever located, whether now owned or existing or hereafter acquired, created or arising:

All goods, Accounts (including health-care receivables), Equipment, Inventory, contract rights or rights to payment of money, leases, license agreements, franchise agreements, General Intangibles, commercial tort claims, documents, instruments (including any promissory notes), chattel paper (whether tangible or electronic), cash, deposit accounts, fixtures, letters of credit rights (whether or not the letter of credit is evidenced by a writing), securities, and all other investment property, supporting obligations, and financial assets, whether now owned or hereafter acquired, wherever located; and all such Loan Party's Books relating to the foregoing, and any and all claims, rights and interests in any of the above and all substitutions for, additions, attachments, accessories, accessions and improvements to and replacements, products, proceeds (both cash and non-cash) and insurance proceeds of any or all of the foregoing.

Notwithstanding the foregoing, the Collateral does not include any Intellectual Property or any other Excluded Property; provided further, however, that at all times the Collateral shall include all Accounts and all proceeds of the foregoing. If a judicial authority (including a U.S. Bankruptcy Court) would hold that a security interest in the underlying Patent, Trademark or Copyright is necessary to have a security interest in such Accounts and such property that are proceeds thereof, then the Collateral shall automatically, and effective as of the Closing Date, include the such Patent, Trademark or Copyright to the extent necessary to permit perfection of Collateral Trustee's security interest in such Accounts and such other property of such Loan Party that are proceeds thereof.

EXHIBIT C

LOAN REQUEST

Date: __

Reference is made to that certain Loan and Security Agreement, dated October 7, 2026 (as amended, restated, supplemented or otherwise modified, from time to time, the "**Agreement**"), among **X4 PHARMACEUTICALS, INC.**, a Delaware corporation ("**Borrower Representative**"), **X4 THERAPEUTICS, INC.**, a Delaware corporation, and each other Person party thereto as a borrower from time to time (collectively, "**Borrowers**", and each, a "**Borrower**"), and each other Person party thereto or any other Loan Documents as a guarantor from time to time (collectively, "**Guarantors**" and each, a "**Guarantor**", and together with Borrowers, collectively, "**Loan Parties**", and each, a "**Loan Party**"), **K2 HEALTHVENTURES LLC** as a lender, and the other lenders from time to time party thereto (collectively, "**Lenders**", and each, a "**Lender**"), **K2 HEALTHVENTURES LLC**, as administrative agent for Lenders (in such capacity, together with its successors, "**Administrative Agent**"), and **ANKURA TRUST COMPANY, LLC**, as collateral trustee for the Secured Parties (in such capacity, together with its successors, "**Collateral Trustee**"). Capitalized terms have meanings as defined in the Agreement.

Borrower Representative hereby requests a Loan in the amount of $[ ] on [ ] (the "**Funding Date**") pursuant to the Agreement, and authorizes Lenders to:

(a) Wire Funds to:

Bank:
Address:

ABA Number:
Account Number:
Account Holder:

(b) Deduct amounts from the foregoing advance to be applied to Secured Party Expenses and outstanding fees then due as set forth on the attached Schedule 1.

Borrower Representative represents that each of the conditions precedent to the Loans set forth in the Agreement are satisfied and shall be satisfied on the Funding Date, including but not limited to: (i) the representations and warranties set forth in the Agreement and in the other Loan Documents are and shall be true and correct in all material respects on and as of the Funding Date with the same effect as though made on and as of such date, except to the extent such representations and warranties expressly relate to an earlier date (in which case they remain true and correct in all material respects as of such earlier date); provided, however, that such materiality qualifiers shall not be applicable to any representations and warranties that already are qualified or modified by materiality in the text thereof, (ii) no Default or Event of Default has occurred and is continuing, and (iii) no event that has had or could reasonably be expected to have a Material Adverse Effect has occurred and is continuing.

Borrower Representative agrees to notify Lenders promptly before the Funding Date if any of the matters which have been represented above shall not be true and correct in all material respects on the Funding Date and if Lenders have received no such notice before the Funding Date then the statements set forth above shall be deemed to have been made and shall be deemed to be true and correct in all material respects as of the Funding Date.

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[SIGNATURE PAGE TO LOAN REQUEST]

This Loan Request is hereby executed as of the date first written above.

BORROWER REPRESENTATIVE:

X4 PHARMACEUTICALS, INC.

By:
Name:
Title:

EXHIBIT D

COMPLIANCE CERTIFICATE

TO: K2 HEALTHVENTURES LLC, as Administrative Agent Date: __
FROM: X4 PHARMACEUTICALS, INC., as Borrower Representative

Reference is made to that certain Loan and Security Agreement, dated October 7, 2026 (as amended, restated, supplemented or otherwise modified, from time to time, the "**Agreement**"), among **X4 PHARMACEUTICALS, INC.**, a Delaware corporation ("**Borrower Representative**"), **X4 THERAPEUTICS, INC.**, a Delaware corporation, and each other Person party thereto as a borrower from time to time (collectively, "**Borrowers**", and each, a "**Borrower**"), and each other Person party thereto or any other Loan Documents as a guarantor from time to time (collectively, "**Guarantors**" and each, a "**Guarantor**", and together with Borrowers, collectively, "**Loan Parties**", and each, a "**Loan Party**"), **K2 HEALTHVENTURES LLC** as a lender, and the other lenders from time to time party thereto (collectively, "**Lenders**", and each, a "**Lender**"), **K2 HEALTHVENTURES LLC**, as administrative agent for Lenders (in such capacity, together with its successors, "**Administrative Agent**"), and **ANKURA TRUST COMPANY, LLC**, as collateral trustee for the Secured Parties (in such capacity, together with its successors, "**Collateral Trustee**"). Capitalized terms have meanings as defined in the Agreement.

The undersigned authorized officer of Borrower Representative, hereby certifies in accordance with the terms of the Agreement as follows:

(1) Each Borrower is in compliance for the period ending _____ with all covenants set forth in the Agreement; (2) no Event of Default has occurred and is continuing; and (3) the representations and warranties in the Agreement are true and correct in all material respects on this date; provided, however, that such materiality qualifier shall not be applicable to any representations and warranties that already are qualified or modified by materiality in the text thereof; and provided, further that those representations and warranties expressly referring to a specific date shall be true, accurate and complete in all material respects as of such date.

Appendix I sets forth true and accurate calculations with respect to the financial covenants in Section 6.10 of the Loan Agreement.

The undersigned certifies that all financial statements delivered herewith are prepared in accordance with GAAP (other than, with respect to unaudited financials for the absence of footnotes and being subject to normal year-end adjustments), consistently applied from one period to the next. Capitalized terms used but not otherwise defined herein shall have the meanings given them in the Agreement.

Please indicate compliance status by circling Yes/No under "Complies" column.

Reporting Covenants	**Required**	**Complies**
Monthly financial statements and Compliance Certificate	Monthly, within 30 days	Yes No
A/R and A/P Aging Reports	Monthly, within 30 days	Yes No
Quarterly financial statements	Quarterly, within 45 days	Yes No
Annual Projections	Annually, within 60 days of fiscal year end	Yes No
Annual audited financial statements and any management letters	Annually, within 180 days of fiscal year end	Yes No
Statements, reports and notices to stockholders or holders of Subordinated Debt	Within 5 Business Days of delivery	Yes No

SEC filings	Within 5 Business Days after filing with SEC	Yes No
Legal action notices and updates	Promptly	Yes No
Board, committee and subcommittee or advisory board materials	Within 5 Business Days after meeting of the Board, or any committee or subcommittee thereof or advisory board	Yes No
Board minutes	Within 5 Business Days after approval by the Board	Yes No
IP report	At the end of each fiscal quarter	Yes No
Bank account statements (with transaction detail)	Together with monthly financial statements	Yes No
Product related material correspondence, reports, documents and other filings	Within 5 Business Days	Yes No
Copies of preferred stock financing documents	Together with Compliance Certificate due after closing of such financing	Yes No

Financial Covenants	**Required**	**Actual**	**Complies**
Minimum Unrestricted Cash	See Appendix I hereto.	$_____	Yes No
Minimum Net Product Revenue	See Appendix I hereto.	$_____	Yes No

Other Covenants	**Required**	**Actual**	**Complies**
Equipment financing Indebtedness	Not to exceed $750,000.00 outstanding	$_____	Yes No
Repurchases of stock from former employees, officers and directors	Not to exceed $750,000.00 per fiscal year	$_____	Yes No
Investments in Subsidiaries which are not Loan Parties	Not to exceed $750,000.00 per fiscal year	$_____	Yes No

Other Matters

Please list any SEC filings made since the most recently delivered Compliance Certificate: Yes No

_____

_____

_____

Has any Borrower changed its legal name, jurisdiction of organization or chief executive office? If yes, please complete details below: Yes No

_____

Has there been any change in Key Person? If so, please describe appointment of any interim replacement (required within 30 days) or full-time replacement by a candidate with equivalent qualifications: Yes No

_____

Have any new Subsidiaries been formed? If yes, please provide complete schedule below. Yes No

Legal Name of Subsidiary	Jurisdiction of Organization	Holder of Subsidiary Equity Interests	Equity Interests Certificated? (Y/N)	Jurisdiction

Have any new Deposit Accounts or Securities Accounts been opened? If yes, please complete schedule below. Yes No

Accountholder	Deposit Account / Intermediary	Address	Account Number	Account Control Agreement in place? (Y/N)

Is there any new Product not previously disclosed on the Perfection Certificate or any prior Compliance Certificate? If yes, please complete details below: Yes No

_____

Has there been any material change to anticipated or scheduled Royalty and Milestone Payments? If yes, please attach updated Schedule 5. Yes No

Has any Loan Party added any new lease location, bailee location or other location where Collateral is maintained? If yes, please describe below: Yes No

_____

Has any Loan Party entered into a Restricted License? If yes, please describe below: Yes No

_____

The following are the exceptions with respect to the certification above: (If no exceptions exist, state “No exceptions to note.”)

—

—

BORROWER REPRESENTATIVE:

X4 PHARMACEUTICALS, INC.

By: __
Name: __
Title: __

APPENDIX I

FINANCIAL COVENANT CALCULATIONS

Section 6.10(a) – Minimum Unrestricted Cash: Commencing as of October 1, 2027, maintain, at all times when Borrower Representative's Market Capitalization is less than Eight Hundred Million Dollars ($800,000,000.00), subject to periodic monthly reporting, Unrestricted Cash in an amount of at least the Minimum Cash Threshold.

Covenant Start Date:

Is the current date on or after October 1, 2027?

__ No, covenant not tested Yes, covenant tested, continue below

Market Capitalization:

A.	Market Capitalization	$__

At any point in the last month, was Line A less than $800,000,000.00?

___ No, covenant waived ___Yes, continue below

Minimum Cash:

Is the current date six (6) months after the occurrence of the Extension Milestone Event?

__ No, continue to Option I below , Yes, continue to Option II below

Option I:

A.	Borrowers' unrestricted cash and Cash Equivalents maintained in Collateral Accounts subject to Account Control Agreements in favor of Collateral Trustee	$__
B.	Seventy-five percent (75.0%) of the total outstanding Obligations of the Borrowers to the Lenders	$__

Was Line A greater than or equal to Line B at all times in the last month when Borrower Representatives' Market Capitalization was less than $800,000,000.00?

___ No, not in compliance ___Yes, in compliance

Option II:

A.	Borrower's unrestricted cash and Cash Equivalents maintained in Collateral Accounts subject to Account Control Agreements in favor of Collateral Trustee	$__
B.	Forty percent (40.0%) of the total outstanding Obligations of the Borrowers to the Lenders	$__

Was Line A greater than or equal to Line B at all times in the last month when Borrower Representatives' Market Capitalization was less than $800,000,000.00?

___ No, not in compliance ___Yes, in compliance

Section 6.10(b) – Minimum Net Product Revenue: Achieve, commencing as of April 1, 2029, to be tested as of the last day of each calendar quarter, trailing three (3) month Net Product Revenue in an amount of at least fifty percent (50.0%) of the Net Product Revenue as set forth in the Projections.

Covenant Start Date:

Is the current date on or after April 1, 2029?

__ No, covenant not tested Yes, covenant tested, continue below

Trailing Three (3) Month Period Ending	Minimum Net Product Revenue
March 31, 2029	
June 30, 2029	
September 30, 2029	
December 31, 2029	
March 31, 2030	
June 30, 2030	
September 30, 2030	
December 31, 2030	

Actual:

A. Trailing three (3) month Net Product Revenue $__

Is Line A ≥ $_____*

**amounts to be set on or prior to February 28, 2029*

___ No, not in compliance ___Yes, in compliance

EXHIBIT E

REQUIREMENTS FOR INSURANCE DOCUMENTATION

Contact Information for Insurance Documentation:

Ankura Trust Company, LLC, as Collateral Trustee
140 Sherman Street, Fourth Floor
Fairfield, CT 06824
Attention: Beth Micena

Document Requirements:

DOCUMENT	REQUIREMENT
1. Certificate of Liability Insurance (ACORD FORM 25)	• Ankura Trust Company, LLC and its successors and/or assigns, as collateral trustee, to be designated as **"Additional Insured"**. • Ankura Trust Company, LLC name and address to be listed as Certificate Holder.
2. General Liability Endorsement (Additional Insured Endorsement)	• Ankura Trust Company, LLC and its successors and/or assigns, as collateral trustee, to be named in additional insured endorsement.
3. Evidence of Commercial Property Insurance (ACORD FORM 28)	• All-risk commercial property insurance incurring all of each Loan Party's property • Ankura Trust Company, LLC and its successors and/or assigns, as collateral trustee, to be designated as **"Lender's Loss Payable**,**"** with **Lender's Loss Payable** provision designated. • Ankura Trust Company, LLC and above address to be designated in Name and Address of Additional Interest. • Insured locations to include all locations of Loan Parties listed in the Perfection Certificate
4. Commercial Property Endorsement (Lender's Loss Payable Endorsement)	• Ankura Trust Company, LLC, and its successors and/or assigns, as collateral trustee, to be scheduled and designated as "Lender Loss Payable" by endorsement • Lender loss payable clause with stipulation that coverage will not be cancelled without a minimum of 10 days' prior written notice for non-payment of premium, or 30 days for any other cancellation.

EXHIBIT F

AUTOMATIC PAYMENT AUTHORIZATION

Effective as of [_____], X4 PHARMACEUTICALS, INC., a Delaware corporation ("**Borrower Representative**") hereby authorizes K2 HEALTHVENTURES LLC ("**K2**"), or any affiliate acting on its behalf pursuant to the Agreement and the bank or financial institution named below ("**Bank**") to automatically debit through the Automatic Clearing House (ACH) from, and initiate variable debit and/or credit entries to, the deposit, checking or savings accounts as designated below maintained in the name of a Borrower, and to cause electronic funds transfers to an account of K2 to be applied to the payment of any and all amounts due under the Loan and Security Agreement, dated October 7, 2026 (as amended, restated, supplemented or otherwise modified, from time to time, the "**Agreement**"), among Borrower Representative, and any other borrowers party thereto from time to time, K2, and any other lender from time to time party thereto (collectively, "**Lenders**"), and Ankura Trust Company, LLC, as collateral trustee for the Secured Parties, including without limitation, principal, interest, fees, expenses and charges (including Secured Party Expenses). Capitalized terms not otherwise defined herein, have the meanings given in the Agreement.

This Authorization shall remain in effect until the Agreement has been terminated.

Bank:
Address:

ABA Number:
Account Number:
Account Holder:

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[SIGNATURE PAGE TO AUTOMATIC PAYMENT AUTHORIZATION]

This Authorization is executed as of the date set forth above by the undersigned authorized representative of Borrower Representative:

X4 PHARMACEUTICALS, INC.

By: __
Name: __
Title: __

EXHIBIT G

FORM OF
SECURED PROMISSORY NOTE

[[THE SECURITY REPRESENTED BY THIS NOTE HAS NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, OR APPLICABLE STATE SECURITIES LAWS. THIS SECURITY MAY NOT BE SOLD, TRANSFERRED OR ASSIGNED, PLEDGED, HYPOTHECATED OR OTHERWISE DISPOSED OF IN THE ABSENCE OF AN EFFECTIVE REGISTRATION STATEMENT FOR THE SECURITIES UNDER SAID ACT, OR PURSUANT TO AN EXEMPTION FROM REGISTRATION UNDER SAID ACT INCLUDING, WITHOUT LIMITATION, PURSUANT TO RULE 144 UNDER SAID ACT.]]

$**[_____]** **[_____ __, 20__]**

FOR VALUE RECEIVED, the undersigned, **X4 PHARMACEUTICALS, INC.**, a Delaware corporation ("**Borrower Representative**"), **X4 THERAPEUTICS, INC.**, a Delaware corporation, and each other Person party thereto as a borrower from time to time (collectively, "**Borrowers**", and each, a "**Borrower**"), hereby unconditionally, jointly and severally, promise to pay to **[_____]** (together with its successors and assigns, the "**Holder**") at the times, in the amounts and at the address set forth in the Loan and Security Agreement, dated as of October 7, 2026 (as amended, restated, supplemented or otherwise modified from time to time, the "**Loan Agreement**"; capitalized terms used herein without definition have the meanings assigned to such terms in the Loan Agreement), among Borrowers, the Holder, any other lender from time to time party thereto (collectively, "**Lenders**"), K2 HEALTHVENTURES LLC, as Administrative Agent for Lenders, and ANKURA TRUST COMPANY, LLC, a New Hampshire limited liability company, as collateral trustee for the Secured Parties (in such capacity, "**Collateral Trustee**"), the lesser of (i) the principal amount of **[_____]** Dollars ($**[_____]**) and (ii) the aggregate outstanding principal amount of Loans made by the Holder to Borrowers according to the terms of Section 2.2 of the Loan Agreement. Borrowers further, jointly and severally, promise to pay interest in accordance with Section 2.3 of the Loan Agreement. In no event shall interest hereunder exceed the maximum rate permitted under applicable law. All payments of principal, interest and any other amounts due shall be made as set forth in Section 2.5 of the Loan Agreement.

The Obligations evidenced by this Secured Promissory Note (as amended, restated, supplemented or otherwise modified from time to time, this "**Note**") are subject to acceleration in accordance with Section 9.1 of the Loan Agreement. Each Borrower hereby waives presentment, demand, notice of default or dishonor, notice of payment and nonpayment, protest and all other demands and notices in connection with the execution, delivery, acceptance, performance, default or enforcement of this Note.

This Note is secured by a security interest in the Collateral granted to Collateral Trustee, for the ratable benefit of the Secured Parties, pursuant to certain other Loan Documents.

The terms of Section 11 of the Loan Agreement are incorporated herein, *mutatis mutandis*.

For purposes of Sections 1272, 1273 and 1275 of the IRC, this Note is being issued with "original issue discount." Please contact [_____], [_____], or by telephone at [_____] to obtain information regarding the issue price, issue date, amount of original issue discount and yield to maturity.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

[SIGNATURE PAGE TO SECURED PROMISSORY NOTE]

IN WITNESS WHEREOF, Borrowers have caused this Note to be duly executed and delivered on the date set forth above by the duly authorized representative of each Borrower.

[_____]

By__
Name: __
Title: __

EXHIBIT H

CONVERSION ELECTION NOTICE

Reference is made to that certain Loan and Security Agreement, dated October 7, 2026 (as amended, restated, supplemented or otherwise modified, from time to time, the "**Agreement**"), among **X4 PHARMACEUTICALS, INC.**, a Delaware corporation ("**Borrower Representative**"), **X4 THERAPEUTICS, INC.**, a Delaware corporation, and each other Person party thereto as a borrower from time to time (collectively, "**Borrowers**", and each, a "**Borrower**"), and each other Person party thereto or any other Loan Documents as a guarantor from time to time (collectively, "**Guarantors**" and each, a "**Guarantor**", and together with Borrowers, collectively, "**Loan Parties**", and each, a "**Loan Party**"), **K2 HEALTHVENTURES LLC** as a lender, and the other lenders from time to time party thereto (collectively, "**Lenders**", and each, a "**Lender**"), **K2 HEALTHVENTURES LLC**, as administrative agent for Lenders (in such capacity, together with its successors, "**Administrative Agent**"), and **ANKURA TRUST COMPANY, LLC**, as collateral trustee for the Secured Parties (in such capacity, together with its successors, "**Collateral Trustee**"). Capitalized terms have meanings as defined in the Agreement.

The undersigned Lender hereby elects to convert $[_____] of the outstanding Term Loans into Conversion Shares.

Please issue the Conversion Shares in the following name and to the following address:

Issue to: [_____]
[_____]
[_____]

[LENDER]

By: __
Title: __
Dated: __

DTC Participant Number and Name (if electronic book entry transfer): __
Account Number (if electronic book entry transfer): __

ACKNOWLEDGMENT

Borrower Representative hereby acknowledges this Conversion Notice and hereby directs [TRANSFER AGENT] to issue the above indicated number of shares of [_____] of [_____].

X4 PHARMACEUTICALS, INC.

By: __
Name: __
Title: __

SCHEDULE 1
COMMITMENTS

LENDER	FIRST TRANCHE TERM LOAN COMMITMENT	SECOND TRANCHE TERM LOAN COMMITMENT[1]	TOTAL COMMITMENTS
K2 HEALTHVENTURES LLC	$80,000,000.00	$70,000,000.00	$150,000,000.00

[1] Subject to Lender approval in its sole and absolute discretion.

SCHEDULE 2

POST-CLOSING DELIVERIES

1. Within thirty (30) days of the Closing Date, evidence showing the issuance of lender loss payable provisions and endorsements, additional insured clauses and endorsements in favor of Collateral Trustee, in accordance with Section 6.5 hereof.
2. Within fifteen (15) days of the Closing Date (or such later date as Administrative Agent may approve in writing in its sole discretion), duly executed signatures to the Account Control Agreement(s) required under Section 6.6(b).

SCHEDULE 3

TAXES; INCREASED COSTS

1.1. Defined Terms. For purposes of this Schedule 3:

(a) "**Connection Income Taxes**" means Other Connection Taxes that are imposed on or measured by net income (however denominated) or that are franchise Taxes or branch profits Taxes.

(b) "**Excluded Taxes**" means any of the following Taxes imposed on or with respect to a Recipient or required to be withheld or deducted from a payment to a Recipient, (i) Taxes imposed on or measured by net income (however denominated), franchise Taxes, and branch profits Taxes, in each case, (A) imposed as a result of such Recipient being organized under the laws of, or having its principal office or, in the case of any Lender, its applicable lending office located in, the jurisdiction imposing such Tax (or any political subdivision thereof) or (B) that are Other Connection Taxes, (ii) in the case of a Lender, U.S. federal withholding Taxes imposed on amounts payable to or for the account of such Lender with respect to an applicable interest in a Term Loan or Commitment pursuant to a law in effect on the date on which (A) such Lender acquires such interest in such Term Loan or Commitment or (B) such Lender changes its lending office, except in each case to the extent that, pursuant to Section 2 or Section 4 of this Schedule 3, amounts with respect to such Taxes were payable either to such Lender's assignor immediately before such Lender became a party hereto or to such Lender immediately before it changed its lending office, or to the extent arising from an assignment after the occurrence and during the continuance of an Event of Default, (iii) Taxes attributable to such Recipient's failure to comply with Section 7 of this Schedule 3 and (iv) any withholding Taxes imposed under FATCA.

(c) "**FATCA**" means Sections 1471 through 1474 of the Internal Revenue Code, as of the date of this Agreement (or any amended or successor version that is substantively comparable and not materially more onerous to comply with), any current or future regulations or official interpretations thereof, any agreements entered into pursuant to Section 1471(b)(1) of the Internal Revenue Code, and any fiscal or regulatory legislation, rules or practices adopted pursuant to any intergovernmental agreement, treaty or convention among Governmental Authorities and implementing such Sections of the Internal Revenue Code.

(d) "**Foreign Lender**" means a Lender that is not a U.S. Person.

(e) "**Indemnified Taxes**" means (i) Taxes, other than Excluded Taxes, imposed on or with respect to any payment made by or on account of any obligation of the Loan Parties under any Loan Document and (ii) to the extent not otherwise described in clause (i), Other Taxes.

(f) "**Internal Revenue Code**" means the Internal Revenue Code of 1986, as amended.

(g) "**IRS**" means the United States Internal Revenue Service.

(h) "**Other Connection Taxes**" means, with respect to any Recipient, Taxes imposed as a result of a present or former connection between such Recipient and the jurisdiction imposing such Tax (other than connections arising from such Recipient having executed, delivered, become a party to, performed its obligations under, received payments under, received or perfected a security interest under, engaged in any other transaction pursuant to or enforced any Loan Document, or sold or assigned an interest in any Term Loan or Loan Document).

(i) "**Other Taxes**" means all present or future stamp, court or documentary, intangible, recording, filing or similar Taxes that arise from any payment made under, from the execution, delivery, performance, enforcement or registration of, from the receipt or perfection of a security interest under, or otherwise with respect to, any Loan Document, except any such Taxes that are Other Connection Taxes imposed with respect to an assignment.

(j) "**Recipient**" means Administrative Agent, the Collateral Trustee or any Lender, as applicable.

(k) "**U.S. Person**" means any Person that is a "United States person" as defined in Section 7701(a)(30) of the Internal Revenue Code.

(l) "**Withholding Agent**" means, individually, Borrower Representative and Administrative Agent.

1.2. Payments Free of Taxes. Any and all payments by or on account of any obligation of the Loan Parties under any Loan Document shall be made without deduction or withholding for any Taxes, except as required by applicable law. If any applicable law (as determined in the good faith discretion of an applicable Withholding Agent) requires the deduction or withholding of any Tax from any such payment by a Withholding Agent, then the applicable Withholding Agent shall be entitled to make such deduction or withholding and shall timely pay the full amount deducted or withheld to the relevant Governmental Authority in accordance with applicable law and, if such Tax is an Indemnified Tax, then the sum payable by the Loan Parties shall be increased as necessary so that after such deduction or withholding has been made (including such deductions and withholdings applicable to additional sums payable under this Section 2 or Section 4 of this Schedule 3) the applicable Recipient receives an amount equal to the sum it would have received had no such deduction or withholding been made.

1.3. Payment of Other Taxes by the Loan Parties. The Loan Parties shall timely pay to the relevant Governmental Authority in accordance with applicable law, or at the option of Administrative Agent, timely reimburse it for the payment of, any Other Taxes.

1.4. Indemnification by the Loan Parties. The Loan Parties shall indemnify each Recipient, within 10 days after demand therefor, for the full amount of any Indemnified Taxes (including Indemnified Taxes imposed or asserted on or attributable to amounts payable under Section 2 of this Schedule 3 or this Section 4) payable or paid by such Recipient or required to be withheld or deducted from a payment to such Recipient and any reasonable expenses arising therefrom or with respect thereto, whether or not such Indemnified Taxes were correctly or legally imposed or asserted by the relevant Governmental Authority. A certificate as to the amount of such payment or liability delivered to Borrower Representative by a Recipient (with a copy to Administrative Agent), or by Administrative Agent on its own behalf or on behalf of a Recipient, shall be conclusive absent manifest error.

1.5. Indemnification by the Lenders. Each Lender shall severally indemnify Administrative Agent and Collateral Trustee, within 10 days after demand therefor, for (a) any Indemnified Taxes attributable to such Lender (but only to the extent that the Loan Parties have not already indemnified Administrative Agent or Collateral Trustee for such Indemnified Taxes and without limiting the obligation of the Loan Parties to do so), (b) any Taxes attributable to such Lender's failure to comply with the provisions of Section 12.2 of the Agreement relating to the maintenance of a Participant Register and (c) any Excluded Taxes attributable to such Lender, in each case, that are payable or paid by Administrative Agent or Collateral Trustee in connection with any Loan Document, and any reasonable expenses arising therefrom or with respect thereto, whether or not such Taxes were correctly or legally imposed or asserted by the relevant Governmental Authority. A certificate as to the amount of such payment or liability delivered to any Lender by Administrative Agent or Collateral Trustee, as applicable, shall be conclusive absent manifest error. Each Lender hereby authorizes Administrative Agent and Collateral Trustee to set off and apply any and all amounts at any time owing to such Lender under any Loan Document or otherwise payable by Administrative Agent or Collateral Trustee, as applicable, to the Lender from any other source against any amount due to Administrative Agent or Collateral Trustee under this Section 5.

1.6. Evidence of Payments. As soon as practicable after any payment of Taxes by the Loan Parties to a Governmental Authority pursuant to the provisions of this Schedule 3, Borrower Representative shall deliver to Administrative Agent the original or a certified copy of a receipt issued by such Governmental Authority evidencing such payment, a copy of the return reporting such payment or other evidence of such payment reasonably satisfactory to Administrative Agent.

1.7. Status of Lenders.

(a) Any Lender that is entitled to an exemption from or reduction of withholding Tax with respect to payments made under any Loan Document shall deliver to Borrower Representative and Administrative Agent, at

the time or times reasonably requested by Borrower Representative or Administrative Agent, such properly completed and executed documentation reasonably requested by Borrower Representative or Administrative Agent as will permit such payments to be made without withholding or at a reduced rate of withholding. In addition, any Lender, if reasonably requested by Borrower Representative or Administrative Agent, shall deliver such other documentation prescribed by applicable law or reasonably requested by Borrower Representative or Administrative Agent as will enable the Loan Parties or Administrative Agent to determine whether or not such Lender is subject to backup withholding or information reporting requirements. Notwithstanding anything to the contrary in the preceding two sentences, the completion, execution and submission of such documentation (other than such documentation set forth in Sections 7(b)(i), 7(b)(ii) and 7(b)(iv) of this Schedule 3) shall not be required if in the Lender's reasonable judgment such completion, execution or submission would subject such Lender to any material unreimbursed cost or expense or would materially prejudice the legal or commercial position of such Lender.

(b) Without limiting the generality of the foregoing, in the event that any Loan Party is a U.S. Person,

(a) any Lender that is a U.S. Person shall deliver to Borrower Representative and Administrative Agent on or prior to the date on which such Lender becomes a Lender under this Agreement (and from time to time thereafter upon the reasonable request of Borrower Representative or Administrative Agent), executed copies of IRS Form W-9 certifying that such Lender is exempt from U.S. federal backup withholding tax;

(b) any Foreign Lender shall, to the extent it is legally entitled to do so, deliver to Borrower Representative and Administrative Agent (in such number of copies as shall be requested by the recipient) on or prior to the date on which such Foreign Lender becomes a Lender under this Agreement (and from time to time thereafter upon the reasonable request of Borrower Representative or Administrative Agent), whichever of the following is applicable:

A. in the case of a Foreign Lender claiming the benefits of an income tax treaty to which the United States is a party (x) with respect to payments of interest under any Loan Document, executed copies of IRS Form W-8BEN or IRS Form W-8BEN-E establishing an exemption from, or reduction of, U.S. federal withholding Tax pursuant to the "interest" article of such tax treaty and (y) with respect to any other applicable payments under any Loan Document, IRS Form W-8BEN or IRS Form W-8BEN-E establishing an exemption from, or reduction of, U.S. federal withholding Tax pursuant to the "business profits" or "other income" article of such tax treaty;

B. executed copies of IRS Form W-8ECI;

C. in the case of a Foreign Lender claiming the benefits of the exemption for portfolio interest under Section 881(c) of the Internal Revenue Code, (x) a certificate, in form and substance reasonably acceptable to Borrower Representative and Administrative Agent, to the effect that such Foreign Lender (or other applicable Person) is not a "bank" within the meaning of Section 881(c)(3)(A) of the Internal Revenue Code, a "10 percent shareholder" of any Loan Party within the meaning of Section 871(h)(3)(B) of the Internal Revenue Code, or a "controlled foreign corporation" related to any Loan Party as described in Section 881(c)(3)(C) of the Internal Revenue Code (a "**U.S. Tax Compliance Certificate**") and (y) executed copies of IRS Form W-8BEN or IRS Form W-8BEN-E; or

D. to the extent a Foreign Lender is not the beneficial owner, executed copies of IRS Form W-8IMY, accompanied by IRS Form W-8ECI, IRS Form W-8BEN, IRS Form W-8BEN-E, a U.S. Tax Compliance Certificate, IRS Form W-9, and/or other certification documents from each beneficial owner, as applicable; provided that if the Foreign Lender is a partnership and one or more direct or indirect partners of such Foreign Lender are claiming the portfolio interest exemption, such Foreign Lender may provide a U.S. Tax Compliance Certificate on behalf of each such direct and indirect partner;

(c) any Foreign Lender shall, to the extent it is legally entitled to do so, deliver to Borrower Representative and Administrative Agent (in such number of copies as shall be requested by the recipient) on or prior to the date on which such Foreign Lender becomes a Lender under this Agreement (and from time to time thereafter upon the reasonable request of Borrower Representative or Administrative Agent), executed copies of any other form prescribed by applicable law as a basis for claiming exemption from or a reduction in U.S. federal withholding Tax, duly completed, together with such supplementary documentation as may be prescribed by applicable law to permit the applicable Loan Party or Administrative Agent to determine the withholding or deduction required to be made; and

(d) if a payment made to a Lender under any Loan Document would be subject to U.S. federal withholding Tax imposed by FATCA if such Lender were to fail to comply with the applicable reporting requirements of FATCA (including those contained in Section 1471(b) or 1472(b) of the Internal Revenue Code, as applicable), such Lender shall deliver to Borrower Representative and Administrative Agent at the time or times prescribed by law and at such time or times reasonably requested by Borrower Representative or Administrative Agent such documentation prescribed by applicable law (including as prescribed by Section 1471(b)(3)(C)(i) of the Internal Revenue Code) and such additional documentation reasonably requested by Borrower Representative or Administrative Agent as may be necessary for the applicable Loan Party and Administrative Agent to comply with their obligations under FATCA and to determine that such Lender has complied with such Lender's obligations under FATCA or to determine the amount, if any, to deduct and withhold from such payment. Solely for purposes of this clause (iv), "FATCA" shall include any amendments made to FATCA after the date of this Agreement.

(a) Each Lender agrees that if any form or certification it previously delivered expires or becomes obsolete or inaccurate in any respect, it shall update such form or certification or promptly notify Borrower Representative and Administrative Agent in writing of its legal inability to do so.

1.8. Treatment of Certain Refunds. If any party determines, in its sole discretion exercised in good faith, that it has received a refund of any Taxes as to which it has been indemnified pursuant to the provisions of this Schedule 3 (including by the payment of additional amounts pursuant to the provisions of this Schedule 3), it shall pay to the indemnifying party an amount equal to such refund (but only to the extent of indemnity payments made under the provisions of this Schedule 3 with respect to the Taxes giving rise to such refund), net of all out-of-pocket expenses (including Taxes) of such indemnified party and without interest (other than any interest paid by the relevant Governmental Authority with respect to such refund). Such indemnifying party, upon the request of such indemnified party, shall repay to such indemnified party the amount paid over pursuant to this Section 8 (plus any penalties, interest or other charges imposed by the relevant Governmental Authority) in the event that such indemnified party is required to repay such refund to such Governmental Authority. Notwithstanding anything to the contrary in this Section 8, in no event will the indemnified party be required to pay any amount to an indemnifying party pursuant to this Section 8 the payment of which would place the indemnified party in a less favorable net after-Tax position than the indemnified party would have been in if the Tax subject to indemnification and giving rise to such refund had not been deducted, withheld or otherwise imposed and the indemnification payments or additional amounts with respect to such Tax had never been paid. This Section 8 shall not be construed to require any indemnified party to make available its Tax returns (or any other information relating to its Taxes that it deems confidential) to the indemnifying party or any other Person.

1.9. Increased Costs. If any change in applicable law shall subject any Recipient to any Taxes (other than (A) Indemnified Taxes, (B) Taxes described in clauses (ii) through (iv) of the definition of Excluded Taxes and (C) Connection Income Taxes) on its loans, loan principal, commitments, or other obligations, or its deposits, reserves, other liabilities or capital attributable thereto, and the result shall be to increase the cost to such Recipient of making, converting to, continuing or maintaining any Term Loan or of maintaining its obligation to make any such Term Loan, or to reduce the amount of any sum received or receivable by such Recipient (whether of principal, interest or any other amount), then, upon the request of such Recipient, the Loan Parties will pay to such Recipient such additional amount or amounts as will compensate such Recipient for such additional costs incurred or reduction suffered.

1.10. Survival. Each party's obligations under the provisions of this Schedule 3 shall survive the resignation or replacement of Administrative Agent or Collateral Trustee or any assignment of rights by, or the replacement of, a Lender, the termination of the Commitments and the repayment, satisfaction or discharge of all obligations under any Loan Document.

1.11. SCHEDULE 4

REGISTRATION RIGHTS

For purposes of this Schedule 4, capitalized terms used and not otherwise defined shall have the following meanings:

"**Common Stock**" means the common stock, $0.001 par value per share, of Borrower Representative.

"**Effectiveness Period**" shall have the meaning set forth in Section 2 below.

"**Filing Date**" shall mean the date that is thirty (30) days after receipt by Borrower Representative of a written notice by Administrative Agent requesting that a Registration Statement be filed in respect of all of the Conversion Shares, provided no such request shall be given if the Conversion Shares do not constitute Registrable Securities.

"**Holder**" or "**Holders**" means the holder or holders, as the case may be, from time to time of Registrable Securities, or prior to any conversion in accordance with Section 2.2(e) of the Agreement, the Designated Holder.

"**Indemnified Party**" shall have the meaning set forth in Section 5(c).

"**Indemnifying Party**" shall have the meaning set forth in Section 5(c).

"**Losses**" shall have the meaning set forth in Section 5(a).

"**Proceeding**" means an action, claim, suit, investigation or proceeding (including, without limitation, an investigation or partial proceeding, such as a deposition), whether commenced or threatened.

"**Prospectus**" means the prospectus included in the Registration Statement (including, without limitation, a prospectus that includes any information previously omitted from a prospectus filed as part of an effective registration statement in reliance upon Rule 430B promulgated under the Securities Act), as amended or supplemented by any prospectus supplement, with respect to the terms of the offering of any portion of the Registrable Securities covered by the Registration Statement, and all other amendments and supplements to the Prospectus, including post-effective amendments, and all material incorporated by reference in such Prospectus.

"**Registrable Securities**" means the Conversion Shares issued or issuable pursuant to Section 2.2(e) of the Agreement, together with any securities issued with respect to, or in exchange for or in replacement thereof upon any stock split, stock dividend, recapitalization, subdivision, merger or similar event; provided, however, that the applicable Holder has completed and delivered to Borrower Representative a Selling Shareholder Questionnaire; and provided further that such securities shall no longer be deemed Registrable Securities if such securities (i) have been sold pursuant to a Registration Statement, (ii) have been sold in compliance with Rule 144, or (iii) may be sold without registration under the Securities Act or the need for an exemption from any such registration requirements pursuant to Rule 144, without any time, volume or manner limitations (or any similar provision then in effect).

"**Registration Statement**" means the registration statements and any additional registration statements contemplated by Section 2, including (in each case) the Prospectus, amendments and supplements to such registration statement or Prospectus, including pre- and post-effective amendments, all exhibits thereto, and all material incorporated by reference in such registration statement.

"**Rule 144**" means Rule 144 promulgated by the SEC pursuant to the Securities Act, as such Rule may be amended from time to time, or any similar rule or regulation hereafter adopted by the SEC having substantially the same effect as such Rule.

"**Rule 415**" means Rule 415 promulgated by the SEC pursuant to the Securities Act, as such Rule may be amended from time to time, or any similar rule or regulation hereafter adopted by the SEC having substantially the same effect as such Rule.

"**Selling Shareholder Questionnaire**" means a questionnaire in the form attached as Annex B hereto, or such other form of questionnaire as may reasonably be requested by Borrower Representative from time to time.

1 **REGISTRATION OBLIGATIONS; FILING DATE REGISTRATION.**

2 On or prior to the Filing Date, Borrower Representative shall prepare and file with the SEC a Registration Statement covering the resale of the Registrable Securities as would permit or facilitate the sale and distribution of all the Registrable Securities in the manner reasonably requested by the Administrative Agent on behalf of Holders; provided, however, that if the Filing Date falls on a day that is not a Business Day, such deadline shall be extended to the next Business Day. The Registration Statement shall be on Form S-3 (except if Borrower Representative is not then eligible to register for resale the Registrable Securities on Form S-3, in which case such registration shall be on another appropriate form in accordance with the Securities Act and the rules promulgated thereunder and Borrower Representative shall undertake to register the Registrable Securities on Form S-3 as soon as practicable following the availability of such form, provided that Borrower Representative shall use commercially reasonable best efforts to maintain the effectiveness of the Registration Statement then in effect until such time as a Registration Statement on Form S-3 covering the Registrable Securities has been declared effective by the SEC). The Registration Statement shall contain the "Plan of Distribution" section in substantially the form attached hereto as Annex A. Borrower Representative shall use commercially reasonable efforts to cause the Registration Statement to be declared effective under the Securities Act as promptly as practicable after the filing thereof, and, subject to Section 2.10 hereof, to keep such Registration Statement continuously effective under the Securities Act until such date as is the earlier of (x) the date when all Registrable Securities covered by such Registration Statement have been sold under such Registration Statement; or (y) the date on which the Registrable Securities may be immediately be sold pursuant to Rule 144, without limitations, as determined by the counsel to Borrower Representative pursuant to a written opinion letter, addressed to Borrower Representative's transfer agent to such effect (the "**Effectiveness Period**"). By 9:30 am Eastern Time on the Business Day following the date the Registration Statement is declared effective, Borrower Representative shall file with the SEC in accordance with Rule 424 under the Securities Act the final prospectus to be used in connection with sales pursuant to such Registration Statement. Lenders acknowledge and agree that securities other than the Registrable Securities may be included in the Registration Statement.

3 **REGISTRATION PROCEDURES.**

In connection with Borrower Representative's registration obligations hereunder, Borrower Representative shall:

3.1 Prepare and file with the SEC on or prior to the Filing Date, a Registration Statement on Form S-3 (or if Borrower Representative is not then eligible to register for resale the Registrable Securities on Form S-3 such registration shall be on another appropriate form in accordance with the Securities Act and the rules and regulations promulgated thereunder) in accordance with the method or methods of distribution thereof as described on Annex A hereto (except if otherwise directed by Administrative Agent), and use commercially reasonable efforts to cause the Registration Statement to become effective and remain effective as provided herein.

3.2 (i) Prepare and file with the SEC such amendments, including post-effective amendments, to the Registration Statement as may be necessary to keep the Registration Statement continuously effective (subject to Section 2.12) as to the applicable Registrable Securities for the Effectiveness Period and prepare and file with the SEC such additional Registration Statements, if necessary, in order to register for resale under the Securities Act all of the Registrable Securities; (ii) cause the related Prospectus to be amended or supplemented by any required Prospectus supplement, and as so supplemented or amended to be filed pursuant to Rule 424 (or any similar provisions then in force) promulgated under the Securities Act; (iii) respond promptly to any comments received from the SEC with respect to the Registration Statement or any amendment thereto and promptly provide the Holders true and complete copies of all correspondence from and to the SEC relating to the Registration Statement; and (iv) comply in all material respects with the provisions of the Securities Act and the Exchange Act with respect to the disposition of all Registrable Securities covered by the Registration Statement during the

applicable period in accordance with the intended methods of disposition by the Holders thereof set forth in the Registration Statement as so amended or in such Prospectus as so supplemented.

3.3 Promptly notify the Holders of Registrable Securities (i)(A) when a Prospectus or any Prospectus supplement or post-effective amendment to the Registration Statement is filed; (B) when the SEC notifies Borrower Representative whether there will be a "review" of such Registration Statement and whenever the SEC comments in writing on such Registration Statement, and if requested by such Holders, furnish to them a copy of such comments and Borrower Representative's responses thereto; and (C) with respect to the Registration Statement or any post-effective amendment, when the same has become effective; (ii) of any request by the SEC or any other Federal or state governmental authority for amendments or supplements to the Registration Statement or Prospectus or for additional information; (iii) of the issuance by the SEC of any stop order suspending the effectiveness of the Registration Statement covering any or all of the Registrable Securities or the initiation of any Proceedings for that purpose; (iv) of the receipt by Borrower Representative of any notification with respect to the suspension of the qualification or exemption from qualification of any of the Registrable Securities for sale in any jurisdiction, or the initiation or threatening of any Proceeding for such purpose; and (v) of the occurrence of any event that makes any statement made in the Registration Statement or Prospectus or any document incorporated or deemed to be incorporated therein by reference untrue in any material respect or that requires any revisions to the Registration Statement, Prospectus or other documents so that, in the case of the Registration Statement or the Prospectus, as the case may be, it will not contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading.

3.4 Use commercially reasonable efforts to avoid the issuance of, or, if issued, obtain the withdrawal of, (i) any order suspending the effectiveness of the Registration Statement or (ii) any suspension of the qualification (or exemption from qualification) of any of the Registrable Securities for sale in any U.S. jurisdiction.

3.5 If requested by the Administrative Agent on behalf of Designated Holders, (i) promptly incorporate in a Prospectus supplement or post-effective amendment to the Registration Statement such information as Borrower Representative reasonably agrees should be included therein and (ii) make all required filings of such Prospectus supplement or such post-effective amendment as soon as practicable after Borrower Representative has received notification of the matters to be incorporated in such Prospectus supplement or post-effective amendment.

3.6 Furnish to each Holder, without charge and upon request, at least one conformed copy of each Registration Statement and each amendment thereto, including financial statements and schedules, and, to the extent requested by such Person, all documents incorporated or deemed to be incorporated therein by reference, and all exhibits (including those previously furnished or incorporated by reference) promptly after the filing of such documents with the SEC; provided, however, that the Borrower Representative will be deemed to have furnished such documents to such Holders to the extent any such document is filed on the SEC's Electronic Data Gathering Analysis and Retrieval System.

3.7 Promptly deliver to each Holder, without charge, as many copies of the Prospectus or Prospectuses (including each form of prospectus) and each amendment or supplement thereto as such Persons may reasonably request; and Borrower Representative hereby consents to the use of such Prospectus and each amendment or supplement thereto by each of the selling Holders in connection with the offering and sale of the Registrable Securities covered by such Prospectus and any amendment or supplement thereto.

3.8 Prior to any public offering of Registrable Securities, use commercially reasonable efforts to register or qualify or cooperate with the selling Holders in connection with the registration or qualification (or exemption from such registration or qualification) of such Registrable Securities for offer and sale under the securities or Blue Sky laws of such jurisdictions within the United States as any Holder reasonably requests in writing, to keep each such registration or qualification (or exemption therefrom) effective during the Effectiveness Period and to do any and all other acts or things necessary or advisable to enable the disposition in such jurisdictions of the Registrable Securities covered by a Registration Statement; provided, however, Borrower Representative shall in no event be required to (x) qualify to do business in any state where it is not then qualified or (y) take any action that would subject it to tax or to the general service of process in any such state where it is not then subject, or (z) comply with state securities or "blue sky" laws of any state for which registration by coordination is unavailable to Borrower Representative.

3.9 Cooperate with the Holders to facilitate the timely preparation and delivery of certificates representing Registrable Securities to be sold pursuant to a Registration Statement.

3.10 Upon the occurrence of any event contemplated by Section 2.3(v), promptly prepare a supplement or amendment, including a post-effective amendment, to the Registration Statement or a supplement to

the related Prospectus or any document incorporated or deemed to be incorporated therein by reference, and file any other required document so that, as thereafter delivered, neither the Registration Statement nor such Prospectus will contain an untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading.

3.11 Use commercially reasonable efforts to cause all Registrable Securities relating to the Registration Statement to be listed on the Nasdaq Stock Market or any subsequent securities exchange, quotation system or market, if any, on which similar securities issued by Borrower Representative are then listed or traded; provided, however, that nothing in the Section 2.11 shall require Borrow Representative to continue to list its Common Stock on the Nasdaq Stock Market and be a reporting company pursuant to Section 13 of the Exchange Act.

3.12 Borrower Representative may require each selling Holder to furnish to Borrower Representative information regarding such Holder and the distribution of such Registrable Securities as is required by law to be disclosed in the Registration Statement, and Borrower Representative may exclude from such registration the Registrable Securities of any such Holder who fails to furnish such information within fifteen (15) days after receiving such request. Each Holder covenants and agrees that (i) it will not sell any Registrable Securities under the Registration Statement until it has received copies of the Prospectus as then amended or supplemented as contemplated in Section 2.7 and notice from Borrower Representative that such Registration Statement and any post-effective amendments thereto have become effective as contemplated by Section 2.3 and (ii) it and its officers, directors or Affiliates, if any, will comply with the prospectus delivery requirements of the Securities Act as applicable to them in connection with sales of Registrable Securities pursuant to the Registration Statement. Each Holder agrees by its acquisition of such Registrable Securities that, upon receipt of a notice from Borrower Representative of the occurrence of any event of the kind described in Sections 2.3(ii), (iii), (iv), (v) or 2.13, such Holder will forthwith discontinue disposition of such Registrable Securities under the Registration Statement until such Holder's receipt of the copies of the supplemented Prospectus and/or amended Registration Statement contemplated by Section 2.10, or until it is advised in writing by Borrower Representative that the use of the applicable Prospectus may be resumed, and, in either case, has received copies of any additional or supplemental filings that are incorporated or deemed to be incorporated by reference in such Prospectus or Registration Statement.

3.13 If (i) there is material non-public information regarding Borrower Representative which the Board reasonably determines not to be in Borrower Representative's best interest to disclose and which Borrower Representative is not otherwise required to disclose, or (ii) there is a significant business opportunity (including, but not limited to, the acquisition or disposition of assets (other than in the ordinary course of business) or any merger, consolidation, tender offer or other similar transaction) available to Borrower Representative which the Board reasonably determines not to be in Borrower Representative's best interest to disclose, then Borrower Representative may postpone or suspend filing or effectiveness of a registration statement for a period not to exceed thirty (30) consecutive days, provided that Borrower Representative may not postpone or suspend its obligation under this Section 2.13 for more than sixty (60) days in the aggregate during any 12 month period; provided, however, that no such postponement or suspension shall be permitted for consecutive thirty (30) day periods, arising out of the same set of facts, circumstances or transactions.

3.14 Any legend indicating, directly or indirectly, that the Registrable Securities constitute "restricted securities" (as such term is defined in Rule 144) stamped on a certificate evidencing the Registrable Securities, and the related stock transfer instructions and record notations with respect to such Registrable Securities, shall be removed and Borrower Representative shall approve the issuance of a certificate without such legend to the holder of such Securities if the Holder thereof provides Borrower Representative with reasonable assurances that such securities can be sold pursuant to Rule 144. Following the receipt by Borrower Representative of such assurances, Borrower Representative will, no later than five trading days following the delivery by a holder to Borrower Representative or Borrower Representative's transfer agent of a legended certificate representing such securities, deliver or cause to be delivered to such Holder a certificate representing such securities that is free from all restrictive and other legends.

3.15 If a Registration Statement is not effective with respect to all of the Registrable Securities and Borrower Representative decides to register any of its securities for its own account or for the account of others (if the agreement pursuant to which such securities are being registered for the account of others so allows), then Borrower Representative will use its commercially reasonable efforts to include in such registration all or any part of the Registrable Securities requested by Administrative Agent on behalf of Holders to be included therein (excluding any Registrable Securities previously included in a Registration Statement). This requirement does not apply to registrations on Form S-4 or S-8 or their equivalents (relating to equity securities to be issued in connection with an acquisition of any entity or business or equity securities issuable in connection with stock option or other employee benefit plans) or to registration statements that would otherwise not permit the registration of re-sales of previously

issued securities, or to the extent the Conversion Shares do not constitute Registrable Securities. In that event, if the managing underwriter(s) of the public offering impose a limitation on the number of shares of Common Stock that may be included in the Registration Statement because, in such underwriter(s)' judgment, such limitation would be necessary to effect an orderly public distribution, then Borrower Representative shall include in such registration (i) first, the securities Borrower Representative proposes to sell, and (ii) second, the Registrable Securities.

4 REGISTRATION EXPENSES.

All reasonable fees and expenses incident to the performance of or compliance with this Agreement by Borrower Representative (excluding underwriters' discounts and commissions and all fees and expenses of legal counsel, accountants and other advisors for any Holder except as specifically provided below), except as and to the extent specified in this Section 3, shall be borne by Borrower Representative whether or not the Registration Statement is filed or becomes effective and whether or not any Registrable Securities are sold pursuant to the Registration Statement. The fees and expenses referred to in the foregoing sentence shall include, without limitation, (i) all registration and filing fees (including, without limitation, fees and expenses (A) with respect to filings required to be made with the Nasdaq Stock Market and each other securities exchange or market on which Registrable Securities are required hereunder to be listed, (B) with respect to filings required to be made with the Financial Industry Regulatory Authority and (C) in compliance with state securities or Blue Sky laws), (ii) messenger, telephone and delivery expenses, (iii) fees and disbursements of counsel for Borrower Representative, (iv) Securities Act liability insurance, if Borrower Representative so desires such insurance, and (v) fees and expenses of all other Persons retained by Borrower Representative in connection with the consummation of the transactions contemplated by this Agreement, including, without limitation, Borrower Representative's independent public accountants. In addition, Borrower Representative shall be responsible for all of its internal expenses incurred in connection with the consummation of the transactions contemplated by this Agreement (including, without limitation, all salaries and expenses of its officers and employees performing legal or accounting duties), the expense of any annual audit, the fees and expenses incurred in connection with the listing of the Registrable Securities on any securities exchange as required hereunder.

5 INDEMNIFICATION.

5.1 Indemnification by Borrower Representative. Borrower Representative shall, notwithstanding any termination of this Agreement, indemnify and hold harmless each Holder, its directors, officers, agents and employees, each Person who controls such Holder (within the meaning of Section 15 of the Securities Act and Section 20 of the Exchange Act), and the directors, officers, agents or employees of such controlling Persons, and the respective successors, assigns, estate and personal representatives of each of the foregoing, to the fullest extent permitted by applicable law, from and against any and all claims, losses, damages, liabilities, penalties, judgments, costs (including, without limitation, costs of investigation) and expenses (including, without limitation, reasonable attorneys' fees and expenses) (collectively, "**Losses**"), arising out of or relating to any untrue or alleged untrue statement of a material fact contained in the Registration Statement, any Prospectus, as supplemented or amended, if applicable, or arising out of or relating to any omission or alleged omission of a material fact required to be stated therein or necessary to make the statements therein (in the case of any Prospectus or form of prospectus or supplement thereto, in the light of the circumstances under which they were made) not misleading, except (i) to the extent, but only to the extent, that such untrue statements or omissions are based upon information regarding such Holder furnished in writing to Borrower Representative by such Holder expressly for use in the Registration Statement, such Prospectus or such form of Prospectus or in any amendment or supplement thereto (it being understood that each Holder has approved Annex A hereto for this purpose); (ii) as a result of the failure of such Holder to deliver a Prospectus, as amended or supplemented, to a purchaser in connection with an offer or sale; or (iii) in the case of an occurrence of an event of the type specified in Section 2.3(ii)-(v), the use by a Holder of an outdated or defective Prospectus after Borrower Representative has notified such Holder in writing that the Prospectus is outdated or defective and prior to the receipt by such Holder of notice that use of the applicable prospectus may be resumed (and, if applicable, receipt of additional or supplemental filings that are incorporated or deemed to be incorporated by referenced in such Prospectus or Registration Statement), but only if and to the extent that following such receipt the misstatement or omission giving rise to such Loss would have been corrected; provided, however, that the indemnity agreement contained in this Section 4.1 shall not apply to amounts paid in settlement of any Losses if such settlement is effected without the prior written consent of Borrower Representative, which consent shall not be unreasonably withheld. Borrower Representative shall notify such Holder promptly of the institution, threat or assertion of any Proceeding of which Borrower Representative is aware in connection with the transactions contemplated by this Agreement. Such indemnity shall remain in full force and effect regardless of any investigation made by or on behalf of an Indemnified Party (as defined in Section 4.3) and shall survive the transfer of the Registrable Securities by the Holder.

5.2 Indemnification by Holders. Each Holder and its permitted assignees shall, severally and not jointly, indemnify and hold harmless Borrower Representative, its directors, officers, agents and employees, each Person who controls Borrower Representative (within the meaning of Section 15 of the Securities Act and Section 20 of the Exchange Act), and the directors, officers, agents or employees of such controlling Persons, and the respective successors, assigns, estate and personal representatives of each of the foregoing, to the fullest extent permitted by applicable law, from and against all Losses, as incurred, arising out of or relating to any untrue or alleged untrue statement of a material fact contained in the Registration Statement, any Prospectus, as supplemented or amended, if applicable, or arising out of or relating to any omission or alleged omission of a material fact required to be stated therein or necessary to make the statements therein (in the case of any Prospectus or supplement thereto, in the light of the circumstances under which they were made) not misleading, to the extent, but only to the extent, that such untrue statement or omission is contained in or omitted from any information regarding such Holder furnished in writing to Borrower Representative by such Holder expressly for use therein, or to the extent that such information relates to such Holder or such Holder's proposed method of distribution of Registrable Securities and was furnished in writing by such Holder expressly for use therein (it being understood that each Holder has approved Annex A hereto for this purpose). Notwithstanding anything to the contrary contained herein, in no event shall the liability of any Person under this Section 4.2 exceed the net proceeds to such Person as a result of the sale of Registrable Securities pursuant to a Registration Statement in connection with which the untrue or alleged untrue statement or material omission was provided.

5.3 Conduct of Indemnification Proceedings.

(a) If any Proceeding shall be brought or asserted against any Person entitled to indemnity hereunder (an "**Indemnified Party**"), such Indemnified Party promptly shall notify the Person from whom indemnity is sought (the "**Indemnifying Party**") in writing, and the Indemnifying Party shall assume the defense thereof, including the employment of counsel reasonably satisfactory to the Indemnified Party and the payment of all fees and expenses incurred in connection with defense thereof; provided, that the failure of any Indemnified Party to give such notice shall not relieve the Indemnifying Party of its obligations or liabilities pursuant to this Agreement, except (and only) to the extent that it shall be finally determined by a court of competent jurisdiction (which determination is not subject to appeal or further review) that such failure shall have proximately and materially adversely prejudiced the Indemnifying Party.

(b) An Indemnified Party shall have the right to employ separate counsel in any such Proceeding and to participate in the defense thereof, but the fees and expenses of such counsel shall be at the expense of such Indemnified Party or Parties unless: (1) the Indemnifying Party has agreed in writing to pay such fees and expenses; or (2) the Indemnifying Party shall have failed promptly to assume the defense of such Proceeding and to employ counsel reasonably satisfactory to such Indemnified Party in any such Proceeding; or (3) the named parties to any such Proceeding (including any impleaded parties) include both such Indemnified Party and the Indemnifying Party, and such Indemnified Party shall have been advised by counsel (which shall be reasonably acceptable to the Indemnifying Party) that a conflict of interest is likely to exist if the same counsel were to represent such Indemnified Party and the Indemnifying Party (in which case, the Indemnifying Party shall be responsible for reasonable fees and expenses of no more than one counsel for the Indemnified Parties). The Indemnifying Party shall not be liable for any settlement of any such Proceeding effected without its written consent, which consent shall not be unreasonably withheld or delayed. No Indemnifying Party shall, without the prior written consent of the Indemnified Party, effect any settlement of any pending Proceeding in respect of which any Indemnified Party is a party, unless such settlement includes an unconditional release of such Indemnified Party from all liability on claims that are the subject matter of such Proceeding.

(c) All fees and expenses of the Indemnified Party (including reasonable fees and expenses to the extent incurred in connection with investigating or preparing to defend such Proceeding in a manner not inconsistent with this Section) shall be paid to the Indemnified Party, as incurred, within twenty (20) Business Days of written notice thereof to the Indemnifying Party (regardless of whether it is ultimately determined that an Indemnified Party

is not entitled to indemnification hereunder; provided, that the Indemnifying Party may require such Indemnified Party to undertake to reimburse all such fees and expenses to the extent it is finally judicially determined that such Indemnified Party is not entitled to indemnification hereunder).

5.4 Contribution.

(a) If a claim for indemnification under Section 4.1 or 4.2 is unavailable to an Indemnified Party because of a failure or refusal of a governmental authority to enforce such indemnification in accordance with its terms (by reason of public policy or otherwise), then each Indemnifying Party, in lieu of indemnifying such Indemnified Party, shall contribute to the amount paid or payable by such Indemnified Party as a result of such Losses, in such proportion as is appropriate to reflect the relative fault of the Indemnifying Party and Indemnified Party in connection with the actions, statements or omissions that resulted in such Losses as well as any other relevant equitable considerations. The relative fault of such Indemnifying Party and Indemnified Party shall be determined by reference to, among other things, whether any action in question, including any untrue or alleged untrue statement of a material fact or omission or alleged omission of a material fact, has been taken or made by, or relates to information supplied by, such Indemnifying Party or Indemnified Party, and the parties' relative intent, knowledge, access to information and opportunity to correct or prevent such action, statement or omission. The amount paid or payable by a party as a result of any Losses shall be deemed to include, subject to the limitations set forth in Section 4.3, any reasonable attorneys' or other reasonable fees or expenses incurred by such party in connection with any Proceeding to the extent such party would have been indemnified for such fees or expenses if the indemnification provided for in this Section was available to such party in accordance with its terms.

(b) The parties hereto agree that it would not be just and equitable if contribution pursuant to this Section 4.4 were determined by pro rata allocation or by any other method of allocation that does not take into account the equitable considerations referred to in the immediately preceding paragraph. No Person guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Securities Act) shall be entitled to contribution from any Person who was not guilty of such fraudulent misrepresentation.

(c) The indemnity and contribution agreements contained in this Section are in addition to any liability that the Indemnifying Parties may have to the Indemnified Parties. Notwithstanding anything to the contrary contained herein, the Holders shall be liable under this Section 4.4 for only that amount as does not exceed the aggregate amount invested by such Holder by way of conversion of the Conversion Amount.

6 **RULE 144.**

As long as any Holder owns any Registrable Securities, Borrower Representative covenants to use its commercially reasonable efforts to timely file (or obtain extensions in respect thereof and file within the applicable grace period) all reports required to be filed by Borrower Representative after the date hereof pursuant to Section 13(a) or 15(d) of the Exchange Act. As long as any Holder owns any Registrable Securities, if Borrower Representative is not required to file reports pursuant to Section 13(a) or 15(d) of the Exchange Act, it will prepare and furnish to the Holders and make publicly available in accordance with Rule 144 annual and quarterly financial statements, together with a discussion and analysis of such financial statements in form and substance substantially similar to those that would otherwise be required to be included in reports required by Section 13(a) or 15(d) of the Exchange Act, as well as any other information required thereby, in the time period that such filings would have been required to have been made under the Exchange Act. Borrower Representative further covenants that it will take such further action as any Holder may reasonably request, all to the extent required from time to time to enable such Person to sell the Shares without registration under the Securities Act within the limitation of the exemptions provided by Rule 144 promulgated under the Securities Act, including providing any legal opinions relating to such

sale pursuant to Rule 144. Upon the request of any Holder, Borrower Representative shall deliver to such Holder a written certification of a duly authorized officer as to whether it has complied with such requirements.

7 MISCELLANEOUS.

7.1 Remedies. In the event of a breach by Borrower Representative or by a Holder, of any of their obligations under this Agreement, each Holder or Borrower Representative, as the case may be, in addition to being entitled to exercise all rights granted by law and under this Agreement, including recovery of damages, will be entitled to specific performance of its rights under this Agreement. Borrower Representative and each Holder agree that monetary damages would not provide adequate compensation for any losses incurred by reason of a breach by it of any of the provisions of this Agreement and hereby further agrees that, in the event of any action for specific performance in respect of such breach, it shall waive the defense that a remedy at law would be adequate.

7.2 Assignment of Registration Rights. The rights of each Holder hereunder, including the right to have Borrower Representative register for resale Registrable Securities in accordance with the terms of this Agreement, shall be assignable by each Holder of all or a portion of the Registrable Securities if: (i) the Holder agrees in writing with the transferee or assignee to assign such rights, and a copy of such agreement is furnished to Borrower Representative within a reasonable time after such assignment, (ii) Borrower Representative is, within a reasonable time after such transfer or assignment, furnished with written notice of (a) the name and address of such transferee or assignee, and (b) the securities with respect to which such registration rights are being transferred or assigned, (iii) following such transfer or assignment the further disposition of such securities by the transferee or assignees is restricted under the Securities Act and applicable state securities laws, and (iv) at or before the time Borrower Representative receives the written notice contemplated by clause (ii) of this Section, the transferee or assignee agrees in writing with Borrower Representative to be bound by all of the provisions of this Agreement. The rights to assignment shall apply to the Holders (and to subsequent) successors and assigns.

7.3 Notices and Communications to Holders. Unless otherwise indicated in a written notice by Administrative Agent to Borrower Representative, Borrower Representative may deliver all notices, materials and other correspondence that is permitted or required to be delivered to Holders to Administrative Agent in accordance with Section 10 of the Agreement, and Administrative Agent shall promptly deliver the same to Holders.

PLAN OF DISTRIBUTION

The Selling Shareholders and any of their pledgees, donees, transferees, assignees or other successors-in-interest may, from time to time, sell, transfer or otherwise dispose of any or all of their shares of Common Stock or interests in shares of Common Stock on any stock exchange, market or trading facility on which the shares are traded or in private transactions. These dispositions may be at fixed prices, at prevailing market prices at the time of sale, at prices related to the prevailing market price, at varying prices determined at the time of sale, or at negotiated prices. The Selling Shareholders may use one or more of the following methods when disposing of the shares or interests therein:

- ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;
- block trades in which the broker-dealer will attempt to sell the shares as agent but may position and resell a portion of the block as principal to facilitate the transaction;
- purchases by a broker-dealer as principal and resale by the broker-dealer for its account;
- an exchange distribution in accordance with the rules of the applicable exchange;
- privately negotiated transactions;
- through the writing or settlement of options, swaps, derivatives or other hedging transactions, whether through an options exchange or otherwise;
- broker-dealers may agree with the Selling Shareholders to sell a specified number of such shares at a stipulated price per share;
- in the over the counter market;
- a combination of any such methods of disposition; and
- any other method permitted pursuant to applicable law.

The Selling Shareholders may also sell shares under Rule 144 under the Securities Act, if available, rather than under this prospectus.

Broker-dealers engaged by the Selling Shareholders may arrange for other broker-dealers to participate in sales. Broker-dealers may receive SECs or discounts from the Selling Shareholders (or, if any broker-dealer acts as agent for the purchaser of shares, from the purchaser) in amounts to be negotiated, but, except as set forth in a supplement to this prospectus, in the case of an agency transaction will not be in excess of a customary brokerage SEC in compliance with FINRA Rule 2440; and in the case of a principal transaction a markup or markdown in compliance with FINRA IM-2440 or the successor to such FINRA rules.

The Selling Shareholders may from time to time pledge or grant a security interest in some or all of the Shares owned by them and, if they default in the performance of their secured obligations, the pledgees or secured parties may offer and sell shares of Common Stock from time to time under the prospectus, or under an amendment to the prospectus under Rule 424(b) or other applicable provision of the Securities Act of 1933, as amended (the "Securities Act"), amending the list of Selling Shareholders to include the pledgee, transferee or other successors in interest as Selling Shareholders under the prospectus. The Selling Shareholders do not expect these SECs and discounts to exceed what is customary in the types of transactions involved.

There can be no assurance that any Selling Shareholder will sell any or all of the shares of Common Stock pursuant to the registration statement, of which this prospectus forms a part.

The Selling Shareholders may enter into option or other transactions with broker-dealers or other financial institutions or the creation of one or more derivative securities which require the delivery to such broker-dealer or other financial institution of shares offered by the prospectus, which shares such broker-dealer or other financial institution may resell pursuant to the prospectus (as supplemented or amended to reflect such transaction).

The Selling Shareholders and any broker-dealer or agents that are involved in selling the shares of Common Stock may be deemed to be "underwriters" within the meaning of the Securities Act in connection with such sales. In such event, any SECs received by such broker-dealers or agents and any profit on the resale of Common Stock purchased by them may be deemed to be underwriting SECs or discounts under the Securities Act. In no event shall

any broker-dealer receive fees, SEC and markups which, in the aggregate, would exceed eight percent (8%). Each Selling Shareholder has informed Borrower Representative that it does not have any written or oral agreement or understanding, directly or indirectly, with any person to distribute the Common Stock.

We have advised each Selling Shareholder that it may not use shares registered on the registration statement of which this prospectus is a part to cover short sales of Common Stock made prior to the date on which the registration statement shall have been declared effective by the Securities and Exchange SEC. If a Selling Shareholder uses this prospectus for any sale of shares of our Common Stock, it will be subject to the prospectus delivery requirements of the Securities Act. The Selling Shareholders and any other person participating in such distribution will be subject to applicable provisions of the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder, including, without limitation, Regulation M of the Exchange Act, which may limit the timing of purchases and sales of any of the shares of Common Stock by the Selling Shareholders and any other participating person. Regulation M may also restrict the ability of any person engaged in the distribution of the shares of Common Stock to engage in market-making activities with respect to the shares of Common Stock. All of the foregoing may affect the marketability of the shares of Common Stock and the ability of any person or entity to engage in market-making activities with respect to the shares of Common Stock.

We may indemnify the Selling Shareholders against certain liabilities, including some liabilities under the Securities Act, in accordance with an agreement between us and the Selling Shareholders. We may be indemnified by the Selling Shareholders against civil liabilities, including liabilities under the Securities Act, that may arise from any written information furnished to us by the Selling Shareholders specifically for use in this prospectus, in accordance with the related registration rights agreement, or we may be entitled to contribution.

Annex B

[[_____]**][**[_____]**]**

Selling Shareholder Notice and Questionnaire

The undersigned beneficial owner of common stock, $[_____] par value per share (the "Common Stock"), of **[**[_____]**][**[_____]**]** (the "Company", and such shares of Common Stock, the "Registrable Securities") understands that the Company has filed or intends to file with the Securities and Exchange SEC (the "SEC") a registration statement (the "Registration Statement") for the registration and resale under Rule 415 of the Securities Act of 1933, as amended (the "Securities Act"), of the Registrable Securities, in accordance with the terms of the Loan and Security Agreement, dated as of October 7, 2026 (the "Agreement"), by and among the Company, the other Loan Parties party thereto, the lenders from time to time party thereto, and K2 HEALTHVENTURES LLC, as administrative agent for the lenders**,** and Ankura Trust Company, LLC, as Collateral Trustee. The purpose of this Questionnaire is to facilitate the filing of the Registration Statement under the Securities Act that will permit you to resell the Registrable Securities in the future. The information supplied by you will be used in preparing the Registration Statement. All capitalized terms not otherwise defined herein shall have the meanings ascribed thereto in the Agreement.

Certain legal consequences arise from being named as a Selling Shareholder in the Registration Statement and the related Prospectus. Accordingly, holders and beneficial owners of Registrable Securities are advised to consult their own securities law counsel regarding the consequences of being named or not being named as a Selling Shareholder in the Registration Statement and the related Prospectus.

NOTICE

The undersigned beneficial owner (the "Selling Shareholder") of Registrable Securities hereby elects to include the Registrable Securities owned by it and listed below in Item 3 (unless otherwise specified under such Item 3) in the Registration Statement.

QUESTIONNAIRE

1. Name.

(a) Full Legal Name of Selling Shareholder

_____

(b) Full Legal Name of Registered Holder (if not the same as (a) above) through which Registrable Securities listed in Item 3 below are held:

_____

(c) Full Legal Name of Natural Control Person (which means a natural person who directly or indirectly alone or with others has power to vote or dispose of the securities covered by this questionnaire):

_____

2. Address for Notices to Selling Shareholder:

_____

_____

_____

Telephone:__

Fax:__

Contact Person:__

E-mail address of Contact Person:_____

3. Beneficial Ownership of Registrable Securities:

(a) Type and Number of Registrable Securities beneficially owned:

_____

_____

_____

4. Broker-Dealer Status:

(a) Are you a broker-dealer?

Yes No

Note: If yes, the SEC's staff has indicated that you should be identified as an underwriter in the Registration Statement.

(b) Are you an affiliate of a broker-dealer?

Yes No

Note: If yes, provide a narrative explanation below:

_____

_____

(c) If you are an affiliate of a broker-dealer, do you certify that you bought the Registrable Securities in the ordinary course of business, and at the time of the purchase of the Registrable Securities to be resold, you had no agreements or understandings, directly or indirectly, with any person to distribute the Registrable Securities?

Yes No

Note: If no, the SEC's staff has indicated that you should be identified as an underwriter in the Registration Statement.

5. Beneficial Ownership of Other Securities of the Company Owned by the Selling Shareholder.

Except as set forth below in this Item 5, the undersigned is not the beneficial or registered owner of any securities of the Company other than the Registrable Securities listed above in Item 3.

(a) As of _____, 201___, the Selling Shareholder owned outright (including shares registered in Selling Shareholder's name individually or jointly with others, shares held in the name of a bank, broker, nominee, depository or in "street name" for its account), _____ shares of the Company's capital stock (excluding the Registrable Securities). If "zero," please so state.

(b) In addition to the number of shares Selling Shareholder owned outright as indicated in Item 5(a) above, as of _____, 201___, the Selling Shareholder had or shared voting power or investment power, directly or indirectly, through a contract, arrangement, understanding, relationship or otherwise, with respect to _____ shares of the Company's capital stock (excluding the Registrable Securities). If "zero," please so state.

If the answer to Item 5(b) is not "zero," please complete the following tables:

Sole Voting Power: Number of Shares	**Nature of Relationship Resulting in Sole Voting Power**

Shared Voting Power:

Number of Shares	With Whom Shared	Nature of Relationship

Sole Investment power:

Number of Shares	Nature of Relationship Resulting in Sole Investment power

Shared Investment power:

Number of Shares	With Whom Shared	Nature of Relationship

(c) As of _____, 201___, the Selling Shareholder had the right to acquire the following shares of the Company's common stock pursuant to the exercise of outstanding stock options, warrants or other rights (excluding the Registrable Securities). Please describe the number, type and terms of the securities, the method of ownership, and whether the undersigned holds sole or shared voting and investment power. If "none", please so state.

_____

_____

6. Relationships with the Company:

Except as set forth below, neither the undersigned nor any of its affiliates, officers, directors or principal equity holders (owners of 5% of more of the equity securities of the undersigned) has held any position or office or has had any other material relationship with the Company (or its predecessors or affiliates) during the past three years.

State any exceptions here:

_____

_____

7. Plan of Distribution:

The undersigned has reviewed the form of Plan of Distribution attached as Annex A, and hereby confirms that, except as set forth below, the information contained therein regarding the undersigned and its plan of distribution is correct and complete.

State any exceptions here:

_____

_____

****

The undersigned agrees to promptly notify the Company of any inaccuracies or changes in the information provided herein that may occur subsequent to the date hereof and prior to the effective date of any applicable Registration Statement filed pursuant to the Agreement.

By signing below, the undersigned consents to the disclosure of the information contained herein in its answers to Items 1 through 7 and the inclusion of such information in each Registration Statement filed pursuant to the Agreement and each related Prospectus. The undersigned understands that such information will be relied upon by the Company in connection with the preparation or amendment of any such Registration Statement and the related Prospectus.

By signing below, the undersigned acknowledges that it understands its obligation to comply, and agrees that it will comply, with the provisions of the Exchange Act and the rules and regulations thereunder, particularly Regulation M. The undersigned also acknowledges that it understands that the answers to this Questionnaire are furnished for use in connection with Registration Statements filed pursuant to the Agreement and any amendments or supplements thereto filed with the SEC pursuant to the Securities Act.

The undersigned hereby acknowledges and is advised of the following Interpretation A.65 of the July 1997 SEC Manual of Publicly Available Telephone Interpretations regarding short selling:

"An Issuer filed a Form S-3 registration statement for a secondary offering of common stock which is not yet effective. One of the selling shareholders wanted to do a short sale of common stock "against the box" and cover the short sale with registered shares after the effective date. The issuer was advised that the short sale could not be made before the registration statement become effective, because the shares underlying the short sale are deemed to be sold at the time such sale is made. There would, therefore, be a violation of Section 5 if the shares were effectively sold prior to the effective date."

By returning this Questionnaire, the undersigned will be deemed to be aware of the foregoing interpretation.

I confirm that, to the best of my knowledge and belief, the foregoing statements (including without limitation the answers to this Questionnaire) are correct.

IN WITNESS WHEREOF the undersigned, by authority duly given, has caused this Questionnaire to be executed and delivered either in person or by its duly authorized agent.

Dated: __ Beneficial Owner: __

By: ____

Name: __

Title: __

SCHEDULE 5

ROYALTY AND MILESTONE PAYMENTS

License Agreement, dated as of July 10, 2014, by and between X4 Therapeutics, Inc. (formerly X4 Pharmaceuticals, LLC), the ("Company") and Genzyme Corp., a Sanofi company, as amended by Amendment No. 1 to License Agreement, dated as of October 23, 2014, and Amendment No. 2 to License Agreement, dated as of June 11, 2021, the ("Genzyme License"). Exclusive license to certain patent applications and other intellectual property owned or controlled by Genzyme related to the CXCR4 receptor to develop and commercialize products containing licensed compounds (including but not limited to mavorixafor) for all therapeutic, prophylactic and diagnostic uses with the exception of autologous and allogenic human stem cell therapy. Genzyme has retained the exclusive right to use the intellectual property licensed to X4 Therapeutics, Inc. in specific indications related to Genzyme's product Mozobil® and allogenic/autologous hematopoietic stem cell transplantation treatments.

Under section 6.4.2 of the Genzyme License, the Company is required to make the following sales-based milestone payments:

6.4.2 Sales Milestone Payment. X4 shall pay Genzyme the following one-time, non-refundable, non-creditable milestone payments within thirty (30) days after the first achievement of the corresponding Milestone Event by X4, its Sublicensees and their respective Affiliates:

Milestone Event	Milestone Payment
Cumulative Net Sales of all Licensed Products in the Territory reach US$50 million	$500,000
Cumulative Net Sales of all Licensed Products in the Territory reach US$150 million	$1,500,000
Cumulative Net Sales of all Licensed Products in the Territory reach US$300 million	$3,000,000

Under section 6.5.1 of the Genzyme License, the Company is required to make the following royalty payments quarterly based on Net Sales of all Licensed Products.

Annual Net Sales of Licensed Products in the Territory	Royalty Rate
On the portion of Annual Net Sales less than or equal to $150,000,000	6%
On the portion of Annual Net Sales in excess of $150,000,000 and less than or equal to $300,000,000	10%
On the portion of Annual Net Sales in excess of $300,000,000	12%

Under section 6.6 of the Genzyme License, the Company must pay 15%, subject to section 1.91, of any Sublicense Revenue, as defined in 1.92, paid to the Company.

Exhibit 31.1

CERTIFICATION

I, Adam R. Craig, M.D., Ph.D., M.B.A. 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 4, 2026

/s/ Adam R. Craig

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

Exhibit 31.2

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 4, 2026

/s/ David Kirske

David Kirske
Chief Financial Officer
(Principal Financial Officer)

Exhibit 32.1

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 knowledge:

1. The Company's Quarterly Report on Form 10-Q for the period ended September 30, 2026, 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 4th day of November, 2026.

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

Adam R. Craig, M.D., Ph.D., M.B.A. David Kirske

Executive Chairman Chief Financial Officer

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