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, 2023

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: 001-35403

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

Delaware	**27-3269467**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification Number)
117 Kendrick Street, Suite 500 Needham, MA	**02494**
(Address of principal executive offices)	(Zip Code)

(781) 292-4200
(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Securities Exchange Act of 1934:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, $0.0001 par value per share	VSTM	The Nasdaq Capital Market

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, 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 7, 2023 there were 25,267,436 shares of Common Stock outstanding.

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FORWARD-LOOKING STATEMENTS

This Quarterly Report on Form 10-Q contains forward-looking statements that involve substantial risks and uncertainties. All statements, other than statements related to present facts or current conditions or historical facts, contained in this Quarterly Report on Form 10-Q, including statements regarding our strategy, future operations, future financial position, future revenues, projected costs, prospects, plans and objectives of management, are forward-looking statements. Such statements relate to, among other things, the development and activity of our programs and product candidates, avutometinib (rapidly accelerated fibrosarcoma ("RAF")/ mitogen-activated protein kinase kinase ("MEK") program) and defactinib (focal adhesion kinase ("FAK") program), the structure of our planned and pending clinical trials, and the timeline and indications for clinical development, regulatory submissions and commercialization of activities. The words "anticipate," "believe," "estimate," "expect," "intend," "may," "plan," "predict," "project," "target," "potential," "will," "would," "could," "should," "continue" and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words.

Forward-looking statements are not guarantees of future performance and our actual results could differ materially from the results discussed in the forward-looking statements we make. Applicable risks and uncertainties include the risks and uncertainties, among other things, regarding: the success in the development and potential commercialization of our product candidates, including avutometinib in combination with other compounds, including defactinib, LUMAKRAS® and others; the uncertainties inherent in research and development, such as negative or unexpected results of clinical trials, the occurrence or timing of applications for our product candidates that may be filed with regulatory authorities in any jurisdictions; whether and when regulatory authorities in any jurisdictions may approve any such applications that may be filed for our product candidates, and, if approved, whether our product candidates will be commercially successful in such jurisdictions; our ability to obtain, maintain and enforce patent and other intellectual property protection for our product candidates; the scope, timing, and outcome of any legal proceedings; decisions by regulatory authorities regarding labeling and other matters that could affect the availability or commercial potential of our product candidates; whether preclinical testing of our product candidates and preliminary or interim data from clinical trials will be predictive of the results or success of ongoing or later clinical trials; that the timing, scope and rate of reimbursement for our product candidates is uncertain; that third- party payors (including government agencies) may not reimburse; that there may be competitive developments affecting our product candidates; that data may not be available when expected; that enrollment of clinical trials may take longer than expected; that our product candidates will cause adverse safety events and/or unexpected concerns may arise from additional data or analysis, or result in unmanageable safety profiles as compared to their levels of efficacy; that our product candidates may experience manufacturing or supply interruptions or failures; that any of our third party contract research organizations, contract manufacturing organizations, clinical sites, or contractors, among others, who we rely on fail to fully perform; that we face substantial competition, which may result in others developing or commercializing products before or more successfully than we do which could result in reduced market share or market potential for our product candidates; that we will be unable to successfully initiate or complete the clinical development and eventual commercialization of our product candidates; that the development and commercialization of our product candidates will take longer or cost more than planned, including as a result of conducting additional studies; that we may not have sufficient cash to fund our contemplated operations; that we may not attract and retain high quality personnel; that we or Chugai Pharmaceutical, Co. Ltd. will fail to fully perform under the avutometinib license agreement; that our target market for our product candidates might be smaller than we are presently estimating; that Secura Bio, Inc. will fail to fully perform under the asset purchase agreement with Secura Bio, Inc., including in relation to milestone payments; that we will not see a return on investment on the payments we have and may continue to make pursuant to the collaboration and option agreement with Genfleet Therapeutics (Shanghai), Inc. ("Genfleet") or that Genfleet will fail to fully perform under the agreement; that we may be unable to obtain adequate financing in the future through product licensing, co-promotional arrangements, public or private equity, debt financing or otherwise; that we will not pursue or submit regulatory filings for our product candidates; and that our product candidates will not receive regulatory approval, become commercially successful products, or result in new treatment options being offered to patients. Other risks and uncertainties include those identified in our Annual Report on Form 10-K for the year ended December 31, 2022, as filed with the Securities and Exchange Commission ("SEC") on March 14, 2023, and in any subsequent filings with the SEC.

As a result of these and other factors, we may not achieve the plans, intentions or expectations disclosed in our forward-looking statements, and you should not place undue reliance on our forward-looking statements. Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, joint ventures or investments we may make. The forward-looking statements contained in this Quarterly Report on Form 10-Q reflect our views as of the date hereof. We do not assume and specifically disclaim any obligation to update any forward-looking statements, whether as a result of new information, future events or otherwise, except as required by law.

PART I—FINANCIAL INFORMATION

Item 1. Condensed Consolidated Financial Statements (unaudited).

Verastem, Inc.
CONDENSED CONSOLIDATED BALANCE SHEETS
(in thousands, except per share amounts)

	September 30, 2023	December 31, 2022
Assets		
Current assets:		
Cash and cash equivalents	$ 94,986	$ 74,933
Short-term investments	70,677	12,961
Accounts receivable, net	—	31
Prepaid expenses and other current assets	8,822	4,945
Total current assets	174,485	92,870
Property and equipment, net	35	92
Right-of-use asset, net	1,336	1,789
Restricted cash	241	241
Other assets	56	58
Total assets	$ 176,153	$ 95,050
Liabilities, convertible preferred stock and stockholders' equity		
Current liabilities:		
Accounts payable	$ 5,118	$ 4,901
Accrued expenses	16,314	14,983
Note Payable	146	—
Deferred liabilities	1,035	710
Lease liability, short-term	902	794
Convertible senior notes	297	275
Total current liabilities	23,812	21,663
Non-current liabilities:		
Long-term debt	39,911	24,526
Lease liability, long-term	780	1,470
Other long-term liabilities	51	—
Preferred stock tranche liability	7,260	—
Total liabilities	71,814	47,659
Convertible preferred stock:		
Series B Convertible Preferred Stock, $0.0001 par value; 2,144 and 0 shares designated at September 30, 2023 and December 31, 2022, respectively; 1,200 and 0 shares issued and outstanding at September 30, 2023 and December 31, 2022, respectively	21,159	—
Stockholders' equity:		
Preferred Stock, $0.0001 par value; 5,000 shares authorized:		
Series A Convertible Preferred Stock, $0.0001 par value; 1,000 shares designated, 1,000 shares issued and outstanding at September 30, 2023 and December 31, 2022	—	—
Common stock, $0.0001 par value; 300,000 shares authorized, 25,265 and 16,712 shares issued and outstanding at September 30, 2023 and December 31, 2022, respectively	3	2
Additional paid-in capital	880,650	784,912
Accumulated other comprehensive income	49	—
Accumulated deficit	(797,522)	(737,523)
Total stockholders' equity	83,180	47,391
Total liabilities, convertible preferred stock and stockholders' equity	$ 176,153	$ 95,050

See accompanying notes to the condensed consolidated financial statements.

Verastem, Inc.
CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS AND COMPREHENSIVE LOSS
(unaudited)
(in thousands, except per share amounts)

	Three months ended September 30,		Nine months ended September 30,	
	2023	2022	2023	2022
Revenue:				
Sale of COPIKTRA license and related assets	$ —	$ —	$ —	$ 2,596
Total revenue	—	—	—	2,596
Operating expenses:				
Research and development	13,946	11,288	38,854	39,818
Selling, general and administrative	7,363	6,421	22,091	18,869
Total operating expenses	21,309	17,709	60,945	58,687
Loss from operations	(21,309)	(17,709)	(60,945)	(56,091)
Other income (expense)	(13)	20	(60)	54
Interest income	2,247	316	4,345	446
Interest expense	(1,129)	(717)	(3,019)	(1,413)
Change in fair value of preferred stock tranche liability	200	—	(320)	—
Net loss	$ (20,004)	$ (18,090)	$ (59,999)	$ (57,004)
Net loss per share—basic and diluted	$ (0.75)	$ (1.10)	$ (2.93)	$ (3.60)
Weighted average common shares outstanding used in computing net loss per share—basic and diluted	26,790	16,430	20,452	15,834
Net loss	$ (20,004)	$ (18,090)	$ (59,999)	$ (57,004)
Unrealized gain (loss) on available-for-sale securities	48	91	49	(73)
Comprehensive loss	$ (19,956)	$ (17,999)	$ (59,950)	$ (57,077)

See accompanying notes to the condensed consolidated financial statements.

Verastem, Inc.
CONDENSED CONSOLIDATED STATEMENTS OF CONVERTIBLE PREFERRED STOCK AND STOCKHOLDERS' EQUITY
(unaudited)
(in thousands, except share data)

	Series B Convertible Preferred Stock		Series A Convertible Preferred Stock		Common stock		Additional paid-in capital	Accumulated other comprehensive income	Accumulated deficit	Total stockholders' equity
	Shares	Amount	Shares	Amount	Shares	Amount				
Balance at December 31, 2022	**—**	**$ —**	**1,000,000**	**$ —**	**16,711,761**	**$ 2**	**$ 784,912**	**$ —**	**$ (737,523)**	**$ 47,391**
Net loss	—	—	—	—	—	—	—	—	(15,714)	(15,714)
Unrealized gain on available-for-sale marketable securities	—	—	—	—	—	—	—	6	—	6
Issuance of common stock resulting from vesting of restricted stock units	—	—	—	—	17,658	—	—	—	—	—
Stock-based compensation expense	—	—	—	—	—	—	1,313	—	—	1,313
Issuance of common stock under Employee Stock Purchase Plan	—	—	—	—	6,874	—	29	—	—	29
Issuance of Series B Convertible Preferred Stock, net of issuance costs of $1,901 and preferred stock tranche liability of $6,940	1,200,000	21,159	—	—	—	—	—	—	—	—
Balance at March 31, 2023	**1,200,000**	**$ 21,159**	**1,000,000**	**$ —**	**16,736,293**	**$ 2**	**$ 786,254**	**$ 6**	**$ (753,237)**	**$ 33,025**
Net loss	—	—	—	—	—	—	—	—	(24,281)	(24,281)
Unrealized (loss) on available-for-sale marketable securities	—	—	—	—	—	—	—	(5)	—	(5)
Issuance of common stock resulting from vesting of restricted stock units	—	—	—	—	16,176	—	—	—	—	—
Stock-based compensation expense	—	—	—	—	—	—	1,432	—	—	1,432
Issuance of common stock, and pre-funded warrants, net of issuance cost of $6,351	—	—	—	—	8,489,409	1	91,419	—	—	91,420
Balance at June 30, 2023	**1,200,000**	**$ 21,159**	**1,000,000**	**$ —**	**25,241,878**	**$ 3**	**$ 879,105**	**$ 1**	**$ (777,518)**	**$ 101,591**
Net loss	—	—	—	—	—	—	—	—	(20,004)	(20,004)
Unrealized gain on available-for-sale marketable securities	—	—	—	—	—	—	—	48	—	48
Issuance of common stock resulting from vesting of restricted stock units	—	—	—	—	15,489	—	—	—	—	—
Stock-based compensation expense	—	—	—	—	—	—	1,517	—	—	1,517
Issuance of common stock under Employee Stock Purchase Plan	—	—	—	—	7,396	—	28	—	—	28
Balance at September 30, 2023	**1,200,000**	**$ 21,159**	**1,000,000**	**$ —**	**25,264,763**	**$ 3**	**$ 880,650**	**$ 49**	**$ (797,522)**	**$ 83,180**

	Common stock		Additional paid-in capital	Accumulated other comprehensive (loss) income	Accumulated deficit	Total stockholders' equity
	Shares	Amount				
Balance at December 31, 2021	**15,440,830**	**$ 2**	**$ 751,234**	**$ 34**	**$ (663,711)**	**$ 87,559**
Net loss	—	—	—	—	(16,962)	(16,962)
Unrealized (loss) on available-for-sale marketable securities	—	—	—	(147)	—	(147)
Issuance of common stock resulting from at-the-market transactions, net	23,824	—	575	—	—	575
Issuance of common stock resulting from vesting of restricted stock units	58,043	—	—	—	—	—
Stock-based compensation expense	—	—	1,646	—	—	1,646
Issuance of common stock under Employee Stock Purchase Plan	4,803	—	100	—	—	100
Balance at March 31, 2022	**15,527,500**	**$ 2**	**$ 753,555**	**$ (113)**	**$ (680,673)**	**$ 72,771**
Net loss	—	—	—	—	(21,952)	(21,952)
Unrealized (loss) on available-for-sale marketable securities	—	—	—	(17)	—	(17)
Issuance of common stock resulting from at-the-market transactions, net	83,870	—	1,240	—	—	1,240
Issuance of common stock resulting from exercise of stock options	6,378	—	92	—	—	92
Issuance of common stock resulting from vesting of restricted stock units	16,734	—	—	—	—	—
Stock-based compensation expense	—	—	1,758	—	—	1,758
Balance at June 30, 2022	**15,634,482**	**$ 2**	**$ 756,645**	**$ (130)**	**$ (702,625)**	**$ 53,892**
Net loss	—	—	—	—	(18,090)	(18,090)
Unrealized gain on available-for-sale marketable securities	—	—	—	91	—	91
Issuance of common stock resulting from at-the-market transactions, net	1,856,754	—	25,534	—	—	25,534
Issuance of common stock resulting from vesting of restricted stock units	8,587	—	—	—	—	—
Issuance of common stock resulting from exercise of stock options	1,803	—	26	—	—	26
Stock-based compensation expense	—	—	1,356	—	—	1,356
Issuance of common stock under Employee Stock Purchase Plan	5,391	—	64	—	—	64
Balance at September 30, 2022	**17,507,017**	**$ 2**	**$ 783,625**	**$ (39)**	**$ (720,715)**	**$ 62,873**

See accompanying notes to the condensed consolidated financial statements.

Verastem, Inc.
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
(unaudited)
(in thousands)

	Nine months ended September 30,	
	2023	2022
Operating activities		
Net loss	$ (59,999)	$ (57,004)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation	57	89
Amortization of right-of-use asset and lease liability	(129)	(113)
Stock-based compensation expense	4,262	4,760
Amortization of deferred financing costs, debt discounts and premiums and discounts on available-for-sale marketable securities	(295)	231
Change in fair value of preferred stock tranche liability	320	—
Changes in operating assets and liabilities:		
Accounts receivable, net	31	442
Prepaid expenses, other current assets and other assets	(2,950)	1,349
Accounts payable	217	3,057
Accrued expenses and other liabilities	1,331	(833)
Deferred liabilities	325	965
Other long-term liabilities	51	—
Net cash used in operating activities	(56,779)	(47,057)
Investing activities		
Purchases of investments	(83,883)	(15,340)
Maturities of investments	27,000	68,500
Net cash provided by (used in) investing activities	(56,883)	53,160
Financing activities		
Proceeds from issuance of Series B Convertible Preferred Stock, net	28,099	—
Proceeds from long-term debt, net	14,918	24,148
Proceeds from insurance premium financing	1,430	—
Payments on insurance premium financing	(1,284)	—
Proceeds from the exercise of stock options and employee stock purchase program	57	282
Proceeds from the issuance of common stock and pre-funded warrants, net	91,420	27,354
Net cash provided by financing activities	134,640	51,784
Increase in cash, cash equivalents and restricted cash	20,978	57,887
Cash, cash equivalents and restricted cash at beginning of period	75,789	21,493
Cash, cash equivalents and restricted cash at end of period	$ 96,767	$ 79,380
Supplemental disclosure of non-cash investing and financing activities		
Issuance of preferred stock tranche liability	$ 6,940	$ —

See accompanying notes to the condensed consolidated financial statements.

Verastem, Inc.
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS
(unaudited)

1. Nature of business

Verastem, Inc. (the "Company") is a late-stage development biopharmaceutical company, with an ongoing registration directed trial, committed to advancing new medicines for patients battling cancer. The Company's pipeline is focused on novel anticancer agents that inhibit critical signaling pathways in cancer that promote cancer cell survival and tumor growth, particularly RAF/ MEK inhibition and FAK inhibition.

The Company's most advanced product candidates, avutometinib and defactinib, are being investigated in both preclinical and clinical studies for the treatment of various solid tumors, including, but not limited to low-grade serous ovarian cancer ("LGSOC"), non-small cell lung cancer ("NSCLC"), colorectal cancer ("CRC"), pancreatic cancer, and melanoma. The Company believes that avutometinib may be beneficial as a therapeutic as a single agent or when used together in combination with defactinib, other agents, other pathway inhibitors or other current and emerging standard of care treatments in cancers that do not adequately respond to currently available therapies.

On September 24, 2018, the Company's first commercial product, COPIKTRA® (duvelisib), was approved by the U.S. Food and Drug Administration (the "FDA") for the treatment of adult patients with certain hematologic cancers including relapsed or refractory chronic lymphocytic leukemia/ small lymphocytic lymphoma after at least two prior therapies and relapsed or refractory follicular lymphoma after at least two prior systemic therapies. On August 10, 2020, the Company and Secura Bio, Inc. ("Secura") entered into an asset purchase agreement ("Secura APA"). Pursuant to the Secura APA, the Company sold to Secura its exclusive worldwide license, including certain related assets for the research, development, commercialization, and manufacture in oncology indications of products containing COPIKTRA (duvelisib). The transaction closed on September 30, 2020. Refer to *Note 14. License, collaboration, and commercial agreements* for a detailed discussion of the Secura APA.

The condensed consolidated financial statements include the accounts of Verastem Securities Company and Verastem Europe GmbH, wholly-owned subsidiaries of the Company. All financial information presented has been consolidated and includes the accounts of the Company and its wholly-owned subsidiaries. All intercompany balances and transactions have been eliminated in consolidation.

The Company is subject to the risks associated with other life science companies, including, but not limited to, possible failure of preclinical testing or clinical trials, competitors developing new technological innovations, inability to obtain marketing approval of the Company's product candidates, avutometinib and defactinib, market acceptance and commercial success of the Company's product candidates, avutometinib and defactinib, following receipt of regulatory approval, and, protection of proprietary technology and the continued ability to obtain adequate financing to fund the Company's future operations. If the Company does not obtain marketing approval and successfully commercialize its product candidates, avutometinib and defactinib, following regulatory approval, it will be unable to generate product revenue or achieve profitability and may need to raise additional capital.

The Company has historical losses from operations and anticipates that it may continue to incur operating losses as it continues the research and development of its product candidates. As of September 30, 2023, the Company had cash, cash equivalents, and investments of $165.7 million, and an accumulated deficit of $797.5 million. The Company expects its existing cash resources will be sufficient to fund its planned operations through at least 12 months from the date of issuance of these condensed consolidated financial statements.

The Company expects to finance the future development costs of its clinical product portfolio with its existing cash, cash equivalents, and investments, through potential future milestones and royalties received pursuant to the Secura APA, through the loan and security agreement with Oxford Finance LLC ("Oxford"), or through other strategic financing opportunities that could include, but are not limited to collaboration agreements, future offerings of its equity, or the incurrence of debt. However, there is no guarantee that any of these strategic or financing opportunities will be executed or executed on favorable terms, and some could be dilutive to existing stockholders. If the Company fails to

obtain additional future capital, it may be unable to complete its planned preclinical studies and clinical trials and obtain approval of certain investigational product candidates from the FDA or foreign regulatory authorities.

Reverse Stock Split

On May 30, 2023, the Company filed a Certificate of Amendment to the Company's Restated Certificate of Incorporation, as amended to date, with the Secretary of State of the State of Delaware to effect a reverse stock split of the Company's issued and outstanding common stock, par value $0.0001 at a ratio of 1-for-12 (the "Reverse Stock Split"), as authorized at the Company's 2023 annual meeting of stockholders held on May 15, 2023. The Company effected the Reverse Stock Split on May 31, 2023. No fractional shares were issued in connection with the Reverse Stock Split. Stockholders who otherwise were entitled to a fractional share of common stock were entitled to receive a price equal to the closing price of the common stock on the Nasdaq Capital Market on the date immediately preceding the Reverse Stock Split, as adjusted by the ratio of one share of common stock for every 12 shares of common stock, multiplied by the applicable fraction of a share. The number of shares of common stock that the Company is authorized to issue remains at 300,000,000 shares and the par value of its common stock remains unchanged at $0.0001 per share.

The Company has retroactively restated the share and per share amounts in the unaudited condensed consolidated financial statements as of December 31, 2022 and the nine months ended September 30, 2023 and 2022, and three months ended September 30, 2022, to give retroactive effect to the Reverse Stock Split. Proportionate adjustments were made to the per share exercise price and number of shares of common stock issuable under all outstanding stock options, convertible notes and preferred stock. In addition, proportionate adjustments have been made to the number of shares of common stock issuable upon vesting of the restricted stock units and the number of shares of common stock reserved for the Company's equity incentive compensation plans. The condensed consolidated statements of convertible preferred stock and stockholders' equity and balance sheets reflect the impact of the Reverse Stock Split by reclassifying from "common stock" to "additional paid-in capital" in an amount equal to the par value of the decreased shares resulting from the Reverse Stock Split.

2. Summary of significant accounting policies

Basis of Presentation

The accompanying unaudited condensed consolidated financial statements of the Company have been prepared in accordance with generally accepted accounting principles in the United States ("GAAP") for interim financial reporting and as required by Regulation S-X, Rule 10-01 under the assumption that the Company will continue as a going concern for the next twelve months. Accordingly, they do not include all of the information and footnotes required by GAAP for complete financial statements, or any adjustments that might result from the uncertainty related to the Company's ability to continue as a going concern. In the opinion of management, all adjustments (including those which are normal and recurring) considered necessary for a fair presentation of the interim financial information have been included. When preparing financial statements in conformity with GAAP, the Company must make estimates and assumptions that affect the reported amounts and related disclosures at the date of the financial statements. Actual results could differ from those estimates. Additionally, operating results for the three and nine months ended September 30, 2023 are not necessarily indicative of the results that may be expected for any other interim period or for the year ending December 31, 2023. For further information, refer to the financial statements and footnotes included in the Company's Annual Report on Form 10-K for the year ended December 31, 2022, as filed with the Securities and Exchange Commission ("SEC") on March 14, 2023.

Significant Accounting Policies

The significant accounting policies are described in *Note 2. Significant accounting policies* in the Company's Annual Report on Form 10-K for the year ended December 31, 2022, except as outlined within "Recently Adopted Accounting Standards Updates" section immediately below.

Recently Adopted Accounting Standards Updates

In June 2016, the Financial Accounting Standards Board ("FASB") issued Accounting Standard Update ("ASU") No. 2016-13, Measurement of Credit Losses on Financial Instruments ("ASU 2016-13"). ASU 2016-13 will replace the incurred loss impairment methodology under current GAAP with a methodology that reflects expected credit losses and requires consideration of a broader range of reasonable and supportable information to inform credit loss estimates. Effective January 1, 2023, the Company adopted the provisions of ASU 2016-13. The adoption did not have a material impact on the Company's condensed consolidated financial statements or related financial statement disclosures.

In August 2020, the FASB issued No. ASU 2020-06, Debt – Debt with Conversion and Other Options (Subtopic 470-20) and Derivatives and Hedging – Contracts in Entity's Own Equity (Subtopic 815 – 40) ("ASU 2020-06"). ASU 2020-06 simplifies the complexity associated with applying U.S. GAAP for certain financial instruments with characteristics of liabilities and equity. More specifically, the amendments focus on the guidance for convertible instruments and derivative scope exception for contracts in an entity's own equity. The ASU also simplifies the diluted earnings per share calculation in certain areas. The Company elected to adopt this standard on January 1, 2023 under the modified retrospective transition method. The adoption did not have a material impact on the Company's condensed consolidated financial statements or related financial statement disclosures.

In September 2022, the FASB issued ASU 2022-04, Liabilities—Supplier Finance Programs (Subtopic 405-50): Disclosure of Supplier Finance Program Obligations ("ASU 2022-04"). ASU 2022-04 requires the buyer in a supplier finance program to disclose information about the key terms of the program, outstanding confirmed amounts as of the end of the period, a rollforward of such amounts during each annual period, and a description of where in the financial statements outstanding amounts are presented. This guidance is effective for fiscal years beginning after December 15, 2022. We adopted this guidance as of January 1, 2023, on a prospective basis. The adoption of the standard only resulted in new disclosures for amounts presented within Notes Payable and did not affect the Company's recognition, measurement, or financial statement presentation of supplier finance program obligations on the condensed consolidated financial statements. For additional information on the new disclosures, see Note 9. *Notes Payable*.

Concentrations of credit risk and off-balance sheet risk

Cash, cash equivalents, investments and trade accounts receivable are financial instruments that potentially subject the Company to concentrations of credit risk. The Company mitigates this risk by maintaining its cash and cash equivalents and investments with high quality, accredited financial institutions. The management of the Company's investments is not discretionary on the part of these financial institutions. As of September 30, 2023, the Company's cash, cash equivalents and investments were deposited at four financial institutions and it has no significant off-balance sheet concentrations of credit risk, such as foreign currency exchange contracts, option contracts or other hedging arrangements. For the three and nine months ended September 30, 2023, the Company did not record any revenue.

Proceeds from Grants

In May 2022, the Company was awarded the "Therapeutic Accelerator Award" grant from Pancreatic Cancer Network ("PanCAN") for up to $3.8 million (the "PanCAN Grant"). In August 2022, PanCAN agreed to provide the Company with an additional $0.5 million for the collection and analysis of patient samples. The grant is expected to support a Phase 1b/2 clinical trial of GEMZAR (gemcitabine) and ABRAXANE (Nab-paclitaxel) in combination with avutometinib and defactinib entitled RAMP 205. The RAMP 205 trial will evaluate whether combining avutometinib (to target mutant Kirsten rat sarcoma viral oncogene homolog ("KRAS"), which is found in more than 90% of pancreatic adenocarcinomas) and defactinib (to reduce stromal density and adaptive resistance to avutometinib) to the standard GEMZAR/ABRAXANE regimen improves outcomes for patients with such pancreatic cancers. Through September 30,

2023, the Company has received $2.7 million of cash proceeds which was initially recorded as deferred liabilities on the balance sheet. The Company recognizes grants as contra research and development expense in the consolidated statement of operations and comprehensive loss on a systematic basis over the periods in which the entity recognizes as expenses the related costs for which the grants are intended to compensate. The Company recorded $0.5 million and $1.3 million of the proceeds as a reduction of research and development expense during the three and nine months ended September 30, 2023, respectively. The Company recorded less than $0.1 million of the proceeds as a reduction of research and development expense during the three and nine months ended September 30, 2022. As of September 30, 2023 and December 31, 2022, the Company recorded $1.0 million and $0.7 million, respectively, as deferred liabilities related to the PanCAN Grant in the consolidated balance sheets.

3. Cash, cash equivalents and restricted cash

The following table provides a reconciliation of cash, cash equivalents and restricted cash reported within the condensed consolidated balance sheets that sum to the total of the same such amounts shown in the condensed consolidated statements of cash flows (in thousands):

	September 30, 2023	December 31, 2022
Cash and cash equivalents	$ 94,986	$ 74,933
Restricted cash	1,781	856
Total cash, cash equivalents and restricted cash	**$ 96,767**	**$ 75,789**

Amounts included in restricted cash as of September 30, 2023, and December 31, 2022 represent (i) cash received pursuant to the PanCAN Grant restricted for future expenditures for specific research and development activities of $1.5 million and $0.6 million, respectively, and (ii) cash held to collateralize outstanding letters of credit provided as a security deposit for the Company's office space located in Needham, Massachusetts in the amount of $0.2 million. Cash received pursuant to the PanCAN Grant is included in prepaid expenses and other current assets on the condensed consolidated balance sheets as of September 30, 2023, and December 31, 2022. The letters of credit are included in non-current restricted cash on the condensed consolidated balance sheets as of September 30, 2023, and December 31, 2022.

4. Fair value of financial instruments

The Company determines the fair value of its financial instruments based upon the fair value hierarchy, which prioritizes valuation inputs based on the observable nature of those inputs. The fair value hierarchy applies only to the valuation inputs used in determining the reported fair value of the investments and is not a measure of the investment credit quality. The hierarchy defines three levels of valuation inputs:

Level 1 inputs	Quoted prices in active markets for identical assets or liabilities that the Company can access at the measurement date.
Level 2 inputs	Inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly.
Level 3 inputs	Unobservable inputs that reflect the Company's own assumptions about the assumptions market participants would use in pricing the asset or liability.

Items Measured at Fair Value on a Recurring Basis

The following table presents information about the Company's financial instruments that are measured at fair value on a recurring basis (in thousands):

	September 30, 2023			
Description	**Total**	**Level 1**	**Level 2**	**Level 3**
Financial assets				
Cash equivalents	$ 93,777	$ 76,842	$ 16,935	$ —
Short-term investments	70,677	11,876	58,801	—
Total financial assets	**$ 164,454**	**$ 88,718**	**$ 75,736**	**$ —**
Preferred stock tranche liability	**$** 7,260	$ —	$ —	$ 7,260

	December 31, 2022			
Description	**Total**	**Level 1**	**Level 2**	**Level 3**
Financial assets				
Cash equivalents	$ 73,613	$ 72,617	$ 996	$ —
Short-term investments	12,961	—	12,961	—
Total financial assets	**$ 86,574**	**$ 72,617**	**$ 13,957**	**$ —**

The Company's cash equivalents and short-term investments consist of U.S. Government money market funds, corporate bonds, agency bonds and commercial paper of publicly traded companies. The investments and cash equivalents have been initially valued at the transaction price and subsequently valued, at the end of each reporting period, utilizing third party pricing services or other market observable data. The pricing services utilize industry standard valuation models, including both income and market-based approaches and observable market inputs to determine value. These observable market inputs include reportable trades, benchmark yields, credit spreads, broker/dealer quotes, bids, offers, current spot rates and other industry and economic events. The Company validates the prices provided by third party pricing services by reviewing their pricing methods and matrices, obtaining market values from other pricing sources, analyzing pricing data in certain instances and confirming that the relevant markets are active. After completing its validation procedures, the Company did not adjust or override any fair value measurements provided by the pricing services as of September 30, 2023 or December 31, 2022.

A preferred stock tranche liability was recorded as a result of the entry into the Securities Purchase Agreement (defined herein) (see *Note 11. Capital Stock)*. The fair value measurement of the preferred stock tranche liability is classified as Level 3 under the fair value hierarchy. The fair value of the preferred stock tranche liability was determined using a Monte-Carlo simulation. The inputs to the Monte-Carlo include the risk-free rate, stock price volatility, expected dividends and remaining term. Significant increases or decreases in any of those inputs in isolation could result in a significantly lower or higher fair value measurement.

Below are the inputs used to value the preferred stock tranche liability at January 24, 2023 and September 30, 2023:

	September 30, 2023	January 24, 2023
Risk-free interest rate	5.46-5.61 %	4.41-4.84 %
Volatility	100 %	90 %
Dividend yield	—	—
Remaining term (years)	0.8	1.5

The following table represents a reconciliation of the preferred stock right liability recorded in connection with the entry into the Securities Purchase Agreement (in thousands):

January 1, 2023	**$ —**
Fair value recognized upon entering into Securities Purchase Agreement	6,940
Fair value adjustment	320
September 30, 2023	**$ 7,260**

Fair Value of Financial Instruments

The fair value of the Company's 2018 issued 5.00% Convertible Senior Notes due 2048 (the "2018 Notes") was approximately $0.3 million as of September 30, 2023, and December 31, 2022, which equals the carrying value of the 2018 Notes on each respective date. The fair value of the 2018 Notes is influenced by the Company's stock price, stock price volatility, and current market yields and was determined using Level 3 inputs.

The fair value of the Company's long-term debt was determined using a discounted cash flow analysis with current applicable rates for similar instruments as of the condensed consolidated balance sheet dates. The Company estimates that the fair value of its long-term debt was approximately $39.4 million as of September 30, 2023, which differs from the carrying value of $39.9 million. The Company estimates that the fair value of its long-term debt was approximately $24.9 million as of December 31, 2022, which differs from the carrying value of $24.5 million. The fair value of the Company's long-term debt was determined using Level 3 inputs.

5. Investments

Cash, cash equivalents, restricted cash and investments consist of the following (in thousands):

	September 30, 2023			
	Amortized Cost	**Gross Unrealized Gains**	**Gross Unrealized Losses**	**Fair Value**
Cash, cash equivalents & restricted cash:				
Cash and money market accounts	$ 79,832	$ —	$ —	$ 79,832
Corporate bonds, agency bonds and commercial paper (due within 90 days)	16,933	2	—	16,935
Total cash, cash equivalents & restricted cash:	$ 96,765	$ 2	$ —	$ 96,767
Investments:				
Corporate bonds, agency bonds and commercial paper (due within 1 year)	70,630	48	(1)	70,677
Total investments	$ 70,630	$ 48	$ (1)	$ 70,677
Total cash, cash equivalents, restricted cash and investments	**$ 167,395**	**$ 50**	**$ (1)**	**$ 167,444**

	December 31, 2022			
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
Cash, cash equivalents & restricted cash:				
Cash and money market accounts	$ 74,794	$ —	$ —	$ 74,794
Corporate bonds, agency bonds and commercial paper (due within 90 days)	995	—	$ —	995
Total cash, cash equivalents & restricted cash:	$ 75,789	$ —	$ —	$ 75,789
Investments:				
Corporate bonds, agency bonds and commercial paper (due within 1 year)	$ 12,961	$ 2	$ (2)	$ 12,961
Total investments	$ 12,961	$ 2	$ (2)	$ 12,961
Total cash, cash equivalents, restricted cash and investments	**$ 88,750**	**$ 2**	**$ (2)**	**$ 88,750**

There were no realized gains or losses on investments for the three or nine months ended September 30, 2023, or 2022. Accrued interest receivable is excluded from the amortized cost and estimated fair value of the Company's investments. Accrued interest receivable of $0.1 million is presented within the prepaid expenses and other current assets on the condensed consolidated balance sheets at each of September 30, 2023 and December 31, 2022. There was one debt security in an unrealized loss position as of September 30, 2023. There were two debt securities in an unrealized loss position as of December 31, 2022. None of these investments had been in an unrealized loss position for more than 12 months as of September 30, 2023 and December 31, 2022. The fair value of these securities as of December 31, 2022 was $6.0 million and the aggregate unrealized loss was immaterial. The Company considered the decline in the market value for these securities to be primarily attributable to current economic conditions and not credit related. At both September 30, 2023 and December 31, 2022, the Company had the intent and ability to hold such securities until recovery. As a result, the Company did not record any charges for credit-related impairments for its investments as of September 30, 2023 and December 31, 2022.

6. Accrued expenses

Accrued expenses consist of the following (in thousands):

	September 30, 2023	December 31, 2022
Research and development expenses	$ 9,054	$ 8,535
Compensation and related benefits	3,629	3,844
Professional fees	495	469
Consulting fees	1,304	902
Interest	312	192
Commercialization costs	429	148
Other	1,091	893
Total accrued expenses	**$ 16,314**	**$ 14,983**

7. Debt

On March 25, 2022 (the “Closing Date”), the Company entered into a loan and security agreement (the “Loan Agreement”) with Oxford, as collateral agent and a lender, and Oxford Finance Credit Fund III LP, as a lender (“OFCF III” and together with Oxford, the “Lenders”), pursuant to which the Lenders have agreed to lend the Company up to an aggregate principal amount of $150.0 million in a series of term loans (the “Term Loans”).

Pursuant to the Loan Agreement, the Company received an initial Term Loan of $25.0 million on the Closing Date and may borrow an additional $125.0 million of Term Loans at its option upon the satisfaction of certain conditions as follows:

i. $15.0 million (the “Term B Loan”), when the Company has either (a) received the Regulatory Milestone Payment (as defined in the Secura APA) from Secura of $35.0 million which is due upon receipt of regulatory approval of COPIKTRA in the United States for the treatment of peripheral T-cell lymphoma (“PTCL”) or (b) received at least $50.0 million in unrestricted cash proceeds from the sale or issuance of equity securities after the Closing Date (the “Term B Milestones”). The Company may draw the Term B Loan within 60 days after the occurrence of one of the Term B Milestones, but no later than March 31, 2023.

ii. $25.0 million (the “Term C Loan”), when the Company has received accelerated or full approval from the FDA of avutometinib for the treatment of LGSOC (the “Term C Milestone”). The Company may draw the Term C Loan within 60 days after the occurrence of the Term C Milestone, but no later than March 31, 2024.

iii. $35.0 million (the “Term D Loan”), when the Company has achieved at least $50.0 million in gross product revenue calculated on a trailing six-month basis (the “Term D Milestone”). The Company may draw the Term D Loan within 30 days after the occurrence of the Term D Milestone, but no later than March 31, 2025.

iv. $50.0 million (the “Term E Loan”), at the sole discretion of the Lenders.

On March 22, 2023, the Company drew down the $15.0 million Term B Loan, having received at least $50.0 million in unrestricted cash proceeds from the sale or issuance of equity securities.

The Term Loans bear interest at a floating rate equal to (a) the greater of (i) the one-month CME Secured Overnight Financing Rate and (ii) 0.13% plus (b) 7.37%, which is subject to an overall floor and cap. Interest is payable monthly in arrears on the first calendar day of each calendar month. As a result of the Term B Loan drawdown, beginning (i) April 1, 2025, or (ii) April 1, 2026, if either (A) avutometinib has received FDA approval for the treatment of LGSOC or (B) COPIKTRA has received FDA approval for the treatment of PTCL, the Company shall repay the Term Loans in consecutive equal monthly payments of principal, together with applicable interest, in arrears. All unpaid principal and accrued and unpaid interest with respect to each Term Loan is due and payable in full on March 1, 2027.

The Company is required to make a final payment of 5.0% of the original principal amount of the Term Loans that are drawn, payable at maturity or upon any earlier acceleration or prepayment of the Term Loans (the “Final Payment Fee”). The Company may prepay all, but not less than all, of the Term Loans, subject to a prepayment fee equal to (i) 3.0% of the principal amount of the applicable Term Loan if prepaid on or before the first anniversary date of the funding date of such Term Loan, (ii) 2.0% of the principal amount of the applicable Term Loan if prepaid after the first anniversary and on or before the second anniversary of the funding date of such Term Loan, and (iii) 1.0% of the principal amount of the applicable Term Loan if prepaid after the second anniversary of the applicable funding date of such Term Loan. All Term Loans are subject to a facility fee of 0.5% of the principal amount.

The Loan Agreement contains no financial covenants. The Loan Agreement includes customary events of default, including, among others, payment defaults, breach of representations and warrants, covenant defaults, judgment defaults, insolvency and bankruptcy defaults, and a material adverse change. The occurrence of an event of default could result in the acceleration of the obligations under the Loan Agreement, termination of the Term Loan commitments and the right to foreclose on the collateral securing the obligations. During the existence of an event of default, the Term Loans will accrue interest at a rate per annum equal to 5.0% above the otherwise applicable interest rate.

In connection with the Loan Agreement, the Company granted Oxford a security interest in all of the Company’s personal property now owned or hereafter acquired, excluding intellectual property (but including the right to payments and proceeds of intellectual property), and a negative pledge on intellectual property.

The Company assessed all terms and features of the Loan Agreement in order to identify any potential embedded features that would require bifurcation. As part of this analysis, the Company assessed the economic characteristics and risks of the Loan Agreement, including put and call features. The Company determined that all features of the Loan Agreement were clearly and closely associated with a debt host and did not require bifurcation as a derivative liability, or the fair value of the feature was immaterial to the Company's financial statements. The Company

reassesses the features on a quarterly basis to determine if they require separate accounting. There have been no changes to the Company's assessment through September 30, 2023.

The debt issuance costs and the Final Payment Fee have been recorded as a debt discount which are being accreted to interest expense through the maturity date of the Term Loan using the effective interest method. The components of the carrying value of the debt as of September 30, 2023, and December 31, 2022, are detailed below (in thousands):

	September 30, 2023	December 31, 2022
Principal loan balance	$ 40,000	$ 25,000
Final Payment Fee	539	225
Debt issuance costs, net of accretion	(628)	(699)
Long-term debt, net of discount	**$ 39,911**	**$ 24,526**

The following table sets forth total interest expense for the three and nine month periods ended September 30, 2023 and 2022:

	Three months ended September 30,		Nine months ended September 30,	
	2023	2022	2023	2022
Contractual Interest	$ 950	$ 587	$ 2,529	$ 1,143
Amortization of debt discount and issuance costs	60	57	175	121
Amortization of Final Payment Fee	119	73	315	149
Total	**$ 1,129**	**$ 717**	**$ 3,019**	**$ 1,413**

As of September 30, 2023, future principal payments due are as follows (in thousands):

2023	—
2024	—
2025	15,000
2026	20,000
2027	5,000
Total principal payments	**$ 40,000**

8. Leases

On April 15, 2014, the Company entered into a lease agreement for approximately 15,197 square feet of office and laboratory space in Needham, Massachusetts. Effective February 15, 2018, the Company amended its lease agreement to relocate within the facility to another location consisting of 27,810 square feet of office space (the "Amended Lease Agreement"). The Amended Lease Agreement extended the expiration date of the lease from September 2019 through June 2025. Pursuant to the Amended Lease Agreement, the initial annual base rent amount is approximately $0.7 million, which increases during the lease term to $1.1 million for the last twelve-month period.

The Company accounted for its Needham, Massachusetts office space as an operating lease. The Company's lease contains an option to renew and extend the lease terms and an option to terminate the lease prior to the expiration date. The Company has not included the lease extension or the termination options within the right-of-use asset and lease liability on the condensed consolidated balance sheets as neither option is reasonably certain to be exercised. The Company's lease includes variable non-lease components (e.g., common area maintenance, maintenance, consumables, etc.) that are not included in the right-of-use asset and lease liability and are reflected as an expense in the period incurred. The Company does not have any other operating or finance leases.

As of September 30, 2023, a right-of-use asset of $1.3 million and lease liability of $1.7 million are reflected on the condensed consolidated balance sheets. The elements of lease expense were as follows (dollar amounts in thousands):

	Three months ended September 30,		Nine months ended September 30,	
	2023	2022	2023	2022
Lease Expense				
Operating lease expense	$ 221	$ 221	$ 664	$ 664
Total Lease Expense	**$ 221**	**$ 221**	**$ 664**	**$ 664**
Other Information - Operating Leases				
Operating cash flows paid for amounts included in measurement of lease liabilities	$ 268	$ 262	$ 793	$ 777

	September 30, 2023
Other Balance Sheet Information - Operating Leases	
Weighted average remaining lease term (in years)	1.8
Weighted average discount rate	14.6%
Maturity Analysis	
2023	268
2024	1,081
2025	546
Total	**$ 1,895**
Less: Present value discount	(213)
Lease Liability	**$ 1,682**

9. Notes Payable

In February 2023, the Company entered into a finance agreement with AFCO Premium Credit LLC (“AFCO”). Pursuant to the terms of the agreement, AFCO loaned the Company the principal amount of $1.4 million, which accrues interest at 7.4% per annum, to fund a portion of the Company’s insurance policies. The Company is required to make monthly payments of $0.1 million through October 2023 including principal and interest. The agreement assigns AFCO a security interest in (i) all unearned premiums and dividends which may become payable under the insurance policies financed pursuant to this agreement, (ii) loss payments which reduce the unearned premiums, and (iii) the Company’s interest in any state insurance guarantee fund related to any of the insurance policies financed pursuant to this agreement. The outstanding balance at September 30, 2023 was $0.1 million recorded as note payable on the condensed consolidated balance sheets.

10. Convertible Senior Notes

2018 Notes

On October 17, 2018, the Company closed a registered direct public offering of $150.0 million aggregate principal amount of 2018 Notes for net proceeds of approximately $145.3 million. The 2018 Notes are governed by the terms of a base indenture for senior debt securities (the “2018 Base Indenture”), as supplemented by the first supplemental indenture thereto (the “2018 Notes Supplemental Indenture” and together with the 2018 Base Indenture, the “2018 Indenture”), each dated October 17, 2018, by and between the Company and Wilmington Trust, National Association (“Wilmington”), as trustee. The 2018 Notes are senior unsecured obligations of the Company and bear interest at a rate of 5.00% per annum, payable semi-annually in arrears on May 1 and November 1 of each year,

beginning on May 1, 2019. The 2018 Notes will mature on November 1, 2048, unless earlier repurchased, redeemed or converted in accordance with their terms.

The 2018 Notes are convertible into shares of the Company's common stock, par value $0.0001 per share, together, if applicable, with cash in lieu of any fractional share, at a conversion rate of 11.6314 shares of common stock per $1,000 principal amount of the 2018 Notes, such conversion rate reflects an adjustment to account for the Reverse Stock Split. Upon conversion, converting noteholders will be entitled to receive accrued interest on their converted 2018 Notes.

The Company has the right, exercisable at its option, to cause all 2018 Notes then outstanding to be converted automatically if the "Daily VWAP" (as defined in the 2018 Indenture) per share of the Company's common stock equals or exceeds 130% of the conversion price on each of at least 20 VWAP Trading Days (as defined in the 2018 Indenture), whether or not consecutive, during any 30 consecutive VWAP Trading Day period commencing on or after the date the Company first issued the 2018 Notes.

The conversion rate is subject to adjustment from time to time upon the occurrence of certain events, including, but not limited to, the issuance of stock dividends and payment of cash dividends, but will not be adjusted for any accrued and unpaid interest.

Prior to November 1, 2022, the Company did not have the right to redeem the 2018 Notes. After November 1, 2022, the Company may elect to redeem the 2018 Notes, in whole or in part, at a cash redemption price equal to the principal amount of the 2018 Notes to be redeemed, plus accrued and unpaid interest, if any.

Unless the Company has previously called all outstanding 2018 Notes for redemption, the 2018 Notes will be subject to repurchase by the Company at the holders' option on each of November 1, 2023, November 1, 2028, November 1, 2033, November 1, 2038 and November 1, 2043 (or, if any such date is not a business day, on the next business day) at a cash repurchase price equal to the principal amount of the 2018 Notes to be repurchased, plus accrued and unpaid interest, if any.

If a "Fundamental Change" (as defined in the 2018 Indenture) occurs at any time, subject to certain conditions, holders may require the Company to purchase all or any portion of their 2018 Notes at a purchase price equal to 100% of the principal amount of the 2018 Notes to be purchased, plus accrued and unpaid interest.

The 2018 Indenture includes customary covenants and set forth certain events of default after which the 2018 Notes may be declared immediately due and payable and set forth certain types of bankruptcy or insolvency events of default involving the Company or certain of its subsidiaries after which the 2018 Notes become automatically due and payable.

The Company determined that the expected life of the 2018 Notes was equal to the period through November 1, 2023, as this represents the point at which the 2018 Notes are subject to repurchase by the Company at the option of the holders. Accordingly, for the 2018 Notes, the total debt discount, inclusive of the fair value of the embedded conversion feature derivative at issuance is being amortized using the effective interest method through November 1, 2023 at the effective interest rate of 15.65%.

The Company assessed all terms and features of the 2018 Notes in order to identify any potential embedded features that would require bifurcation. As part of this analysis, the Company assessed the economic characteristics and risks of the 2018 Notes, including the conversion, put and call features. The conversion feature was initially bifurcated as an embedded derivative but subsequently qualified for a scope exception to derivative accounting upon the Company's stockholders approving an increase in the number of authorized shares of common stock in December 2018. The Company determined that all other features of the 2018 Notes were clearly and closely associated with the debt host and did not require bifurcation as a derivative liability, or the fair value of the feature was immaterial to the Company's condensed consolidated financial statements. The Company reassesses the features on a quarterly basis to determine if they require separate accounting. There have been no changes to the Company's original assessment through September 30, 2023.

The components of the carrying value of the 2018 Notes as of September 30, 2023 and December 31, 2022 are detailed below (in thousands):

	September 30, 2023	December 31, 2022
2018 Notes principal balance	$ 300	$ 300
Debt issuance costs, net of accretion	(3)	(25)
2018 Notes, net	**$ 297**	**$ 275**

2019 Notes

In the fourth quarter of 2019, the Company entered into privately negotiated agreements to exchange approximately $121.7 million aggregate principal amount of the 2018 Notes for (i) approximately $66.9 million aggregate principal amount of 5.00% Convertible Senior Second Lien Notes due 2048 (the "2019 Notes"), (ii) an aggregate of approximately $12.1 million in 2018 Notes principal repayment and (iii) accrued interest on the 2018 Notes through the exchange date. As of March 31, 2020, all 2019 Notes had converted into shares of common stock and are no longer outstanding.

2020 Notes

On November 6, 2020, the Company entered into a privately negotiated agreement with an investor who was a holder of the Company's 2018 Notes to exchange approximately $28.0 million aggregate principal amount of 2018 Notes for approximately $28.0 million aggregate principal amount of newly issued 5.00% Convertible Senior Notes due 2048 (the "2020 Notes"). The issuance of the 2020 Notes closed on November 13, 2020. In the third quarter of 2021, all 2020 Notes have converted into shares of common stock and are no longer outstanding.

11. Capital stock

Under the amended and restated certificate of incorporation, the Company's board of directors has the authority, without further action by the stockholders, to issue up to 5,000,000 shares of preferred stock in one or more series, to establish from time to time the number of shares to be included in each such series, to fix the rights, preferences and privileges of the shares of each wholly unissued series and any qualifications, limitations or restrictions thereon and to increase or decrease the number of shares of any such series, but not below the number of shares of such series then outstanding.

June 2023 Public Offering

On June 15, 2023, the Company entered into an underwriting agreement (the "Underwriting Agreement") with RBC Capital Markets, LLC and Cantor Fitzgerald & Co. ("Cantor"), as representatives of several underwriters (the "Underwriters") to offer 7,181,409 shares of the Company's common stock, at a price to the public of $9.75 per share, less the underwriting discounts and commissions, and, in lieu of shares of common stock to certain investors, pre-funded warrants to purchase up to an aggregate of 1,538,591 shares of common stock at a price to the public of $9.749 (the "Pre-Funded Warrants") per Pre-Funded Warrant, which represents the per share public offering price for the shares of common stock less the $0.001 per share exercise price for each such Pre-Funded Warrant (the "June 2023 Offering"). In addition, the Company granted the Underwriters an option to purchase, at the public offering price less any underwriting discounts and commissions, an additional 1,308,000 shares of common stock, exercisable for 30 days from the date of the Underwriting Agreement, which the Underwriters exercised in full on June 16, 2023. The June 2023 Offering closed on June 21, 2023.

The Company may not effect the exercise of any Pre-Funded Warrant, and a holder will not be entitled to exercise any portion of any Pre-Funded Warrant if, upon giving effect to such exercise, the aggregate number of shares of common stock beneficially owned by the holder (together with its affiliates) would exceed 9.99% of the number of

shares of common stock outstanding immediately after giving effect to the exercise, which percentage may be increased or decreased at the holder's election upon 61 days' notice to the Company subject to the terms of such Pre-Funded Warrants, provided that such percentage may in no event exceed 19.99%.

Each Pre-Funded Warrant has an exercise price equal to $0.001 per share of common stock. The exercise price and the number of shares of common stock issuable upon exercise of each Pre-Funded Warrant is subject to appropriate adjustment in the event of certain stock dividends and distributions, stock splits, stock combinations, reclassifications or similar events affecting the Company's common stock as well as upon any distribution of assets, including cash, stock or other property, to the Company's stockholders. The Pre-Funded Warrants are exercisable as of June 21, 2023, do not expire and are exercisable in cash or by means of a cashless exercise. In addition, upon the consummation of an acquisition (as described in the Pre-Funded Warrant agreements), each Pre-Funded Warrant will automatically be converted into the right of the holder of such Pre-Funded Warrant to receive the kind and amount of securities, cash or other property that such holders would have received had they exercised such Pre-Funded Warrant immediately prior to such acquisition, without regard to any limitations on exercise contained in the Pre-Funded Warrants

The Pre-Funded Warrants cannot require cash settlement, are freestanding financial instruments that are legally detachable and separately exercisable from the shares of common stock with which they were issued, are immediately exercisable, and do not embody an obligation for the Company to repurchase its common stock shares and permit the holders to receive a fixed number of shares of common stock upon exercise. Additionally, the Pre-Funded Warrants do not provide any guarantee of value or return. Accordingly, the Pre-Funded Warrants are classified as a component of permanent equity. After deducting for commissions and other offering expenses, the Company received net proceeds of approximately $91.4 million from the sale of 8,489,409 shares of common stock and 1,538,591 Pre-Funded Warrants.

Series B Convertible Preferred Stock

On January 24, 2023, the Company entered into a Securities Purchase Agreement (the "Securities Purchase Agreement") with certain purchasers pursuant to which the Company agreed to sell and issue to the purchasers in a private placement (the "Private Placement") up to 2,144,160 shares of its Series B convertible preferred stock, par value $0.0001 per share (the "Series B Convertible Preferred Stock"), in two tranches. On January 24, 2023, the Company filed the Certificate of Designation of the Preferences, Rights and Limitations of the Series B Convertible Preferred Stock (the "Series B Convertible Preferred Stock Certificate of Designation") setting forth the preferences, rights and limitations of the Series B Convertible Preferred Stock with the Secretary of State of the State of Delaware. The Series B Convertible Preferred Stock Certificate of Designation became effective upon filing.

Each share of the Series B Convertible Preferred Shares is convertible into 3.5305 shares of the Company's common stock, such conversion rate reflects an adjustment to account for the Reverse Stock Split, at the option of the holders at any time, subject to certain limitations, including that the holder will be prohibited from converting Series B Convertible Preferred Stock into common stock if, as a result of such conversion, the holder, together with its affiliates, would beneficially own a number of shares of common stock above a conversion blocker, which is initially set at 9.99% (the "Conversion Blocker") of the total common stock then issued and outstanding immediately following the conversion of such shares of Series B Convertible Preferred Stock. Holders of the Series B Convertible Preferred Stock are permitted to increase the Conversion Blocker to an amount not to exceed 19.99% upon 60 days' notice.

The Company agreed to sell and issue in the first tranche of the Private Placement 1,200,000 shares of Series B Convertible Preferred Stock at a purchase price of $25.00 per share of Series B Convertible Preferred Stock (equivalent to $7.0812 per share of common stock on a post-Reverse Stock Split basis). The first tranche of the Private Placement closed on January 27, 2023. The Company received gross proceeds from the first tranche of the Private Placement of approximately $30.0 million, before deducting fees to the placement agent and other offering expenses payable by the Company ("Series B Convertible Preferred Stock Proceeds").

In addition, the Company agreed to sell and issue in the second tranche of the Private Placement 944,160 shares of Series B Convertible Preferred Stock at a purchase price of $31.77 per share of Series B Convertible Preferred Stock (equivalent to $9.00 per share of common stock on a post-Reverse Stock Split basis) if at any time within 18 months following the closing of the first tranche the 10-day volume weighted average price of the Company's common stock (as

quoted on Nasdaq and as calculated by Bloomberg) should reach at least $13.50 per share, such threshold reflects an adjustment to account for the Reverse Stock Split (which may be further adjusted for any reorganization, recapitalization, non-cash dividend, stock split, reverse stock split or other similar transaction as needed) with aggregate trading volume during the same 10-day period of at least $25 million (the "Second Tranche Right"). The second tranche of the Private Placement is expected to close within seven trading days of meeting the second tranche conditions and will be subject to additional, customary closing conditions. If the Second Tranche Right conditions are satisfied, the Company anticipates receiving gross proceeds from the second tranche of the Private Placement of approximately $30.0 million, before deducting fees to the placement agent and other offering expenses payable by the Company.

The Series B Convertible Preferred Stock ranks (i) senior to the common stock; (ii) senior to all other classes and series of equity securities of the Company that by their terms do not rank senior to the Series B Convertible Preferred Stock; (iii) senior to all shares of the Company's Series A Convertible Preferred Stock the equity securities described in (i)-(iii), the "Junior Stock"); (iv) on parity with any class or series of capital stock of the Company hereafter created specifically ranking by its terms on parity with the Series B Convertible Preferred Stock (the "Parity Stock"); (v) junior to any class or series of capital stock of the Company hereafter created specifically ranking by its terms senior to any Series B Convertible Preferred Stock ("Senior Stock"); and (vi) junior to all of the Company's existing and future debt obligations, including convertible or exchangeable debt securities, in each case, as to distributions of assets upon liquidation, dissolution or winding up of the Company, whether voluntarily or involuntarily and as to the right to receive dividends.

In the event of the liquidation, dissolution or winding up of the affairs of the Company, whether voluntary or involuntary, after payment or provision for payment of the debts and other liabilities of the Company, and subject to the prior and superior rights of any Senior Stock, each holder of shares of Series B Convertible Preferred Stock will be entitled to receive, in preference to any distributions of any of the assets or surplus funds of the Company to the holders of the common stock and any of the Company's securities that are Junior Stock and pari passu with any distribution to the holders of any Parity Stock, an amount equal to $1.00 per share of Series B Convertible Preferred Stock, plus an additional amount equal to any dividends declared but unpaid on such shares, before any payments shall be made or any assets distributed to holders of the common stock or any of our securities that Junior Stock.

So long as any shares of the Series B Convertible Preferred Stock remain outstanding, the Company cannot without the affirmative vote or consent of the holders of majority of the shares of the Series B Convertible Preferred Stock then-outstanding, in which the holders of the Series B Convertible Preferred Stock vote separately as a class: (a) amend, alter, modify or repeal (whether by merger, consolidation or otherwise) the Series B Convertible Preferred Stock Certificate of Designation, the Company's certificate of incorporation, or the Company's bylaws in any manner that adversely affects the rights, preferences, privileges or the restrictions provided for the benefit of, the Series B Convertible Preferred Stock; (b) issue further shares of Series B Convertible Preferred Stock or increase or decrease (other than by conversion) the number of authorized shares of Series B Convertible Preferred Stock; (c) authorize or issue any Senior Stock; or (d) enter into any agreement to do any of the foregoing that is not expressly made conditional on obtaining the affirmative vote or written consent of the majority of then-outstanding Series B Convertible Preferred Stock. Holders of Series B Convertible Preferred Stock are entitled to receive when, as and if dividends are declared and paid on the common stock, an equivalent dividend, calculated on an as-converted basis. Shares of Series B Convertible Preferred Stock are otherwise not entitled to dividends.

The Company classified the first tranche of the Series B Convertible Preferred Stock as temporary equity in the condensed consolidated balance sheets as the Company could be required to redeem the Series B Convertible Preferred Stock if the Company cannot convert the Series B Convertible Preferred Stock into shares of common stock for any reason including due to any applicable laws or by the rules or regulations of any stock exchange, interdealer quotation system, or other self-regulatory organization with jurisdiction over the Company which is not solely in the control of the Company. If the Company were required to redeem the Series B Convertible Preferred Stock, it would be based upon the volume-weighted-average price of common stock on an as converted basis on the date the holders provided a conversion notice to the Company. As of September 30, 2023, the Company did not adjust the carrying value of the Series B Convertible Preferred Stock since it was not probable the holders would be unable to convert the Series B Convertible Preferred Stock into shares of common stock due to any reason including due to any applicable laws or by the rules or

regulations of any stock exchange, interdealer quotation system, or other self-regulatory organization with jurisdiction over the Company.

The Company evaluated the Second Tranche Right under ASC 480 and determined that it met the requirements for separate accounting from the initial issuance of Series B Convertible Preferred Stock as a freestanding financial instrument. The Company then determined the Second Tranche Right should be liability classified pursuant to ASC 480. As a result, the Company classified the Second Tranche Right as a non-current liability within the condensed consolidated balance sheets and the Second Tranche Right was initially recorded at fair value and is subsequently re-measured at fair value at the end of each reporting period. The fair value of the Second Tranche Right on the date of issuance was determined to be $6.9 million based on a Monte-Carlo valuation and the Company allocated $6.9 million of the Series B Convertible Preferred Stock Proceeds to this liability and recorded this amount as preferred stock tranche liability. On September 30, 2023, the fair value of the Second Tranche Right was determined to be $7.3 million, and the Company recorded this amount as preferred stock tranche liability on the condensed consolidated balance sheets. The Company recorded the mark-to-market adjustment of $0.2 million and $0.3 million, for the three and nine months ended September 30, 2023, respectively, under change in fair value of preferred stock tranche liability within the condensed consolidated statements of operations and loss.

The Company determined that all other features of the securities offered pursuant to the Securities Purchase Agreement were clearly and closely associated with the equity host and did not require bifurcation or the fair value of the feature was immaterial to the Company's condensed consolidated financial statements. The Company reassesses the features on a quarterly basis to determine if they require separate accounting. There have been no changes to the Company’s original assessment through September 30, 2023.

Series A Convertible Preferred Stock

On November 4, 2022, the Company entered into an exchange agreement (the “Exchange Agreement”) with Biotechnology Value Fund, L.P., Biotechnology Value Fund II, L.P., Biotechnology Value Trading Fund OS LP and MSI BVF SPV, LLC (collectively referred to as “BVF”), pursuant to which BVF exchanged 833,333 shares of the Company’s common stock (as adjusted to account for the Reverse Stock Split) for 1,000,000 shares of newly designated Series A convertible preferred stock, par value $0.0001 per share (the “Series A Convertible Preferred Stock”) (the “Exchange”).

Each share of the Series A Convertible Preferred Stock is convertible into 0.833 shares of the Company’s common stock (as adjusted to account for the Reverse Stock Split) at the option of the holder at any time, subject to certain limitations, including that the holder will be prohibited from converting Preferred Stock into common stock if, as a result of such conversion, the holder, together with its affiliates, would beneficially own a number of shares of common stock above a conversion blocker, which is initially set at 9.99% (the “Conversion Blocker”) of the total common stock then issued and outstanding immediately following the conversion of such shares of Preferred Stock. Holders of the Series A Preferred Stock are permitted to increase the Conversion Blocker to an amount not to exceed 19.99% upon 60 days’ notice.

Shares of Series A Convertible Preferred Stock generally have no voting rights, except as required by law and except that the consent of a majority of the holders of the outstanding Series A Convertible Preferred Stock will be required to amend the terms of the Series A Convertible Preferred Stock. In the event of the Company’s liquidation, dissolution or winding up, holders of Series A Convertible Preferred Stock will participate pari passu with any distribution of proceeds to holders of common stock. Holders of Series A Preferred Stock are entitled to receive when, as and if dividends are declared and paid on the common stock, an equivalent dividend, calculated on an as-converted basis. Shares of Series A Convertible Preferred Stock are otherwise not entitled to dividends.

The Series A Convertible Preferred Stock (i) senior to any class or series of capital stock of the Company hereafter created specifically ranking by its terms junior to the Series A Convertible Preferred Stock; (ii) on parity with the common stock and any class or series of capital stock of the Company created specifically ranking by its terms on parity with the Series A Convertible Preferred Stock; and (iii) junior to the Series B Convertible Preferred Stock and to any class or series of capital stock of the Company created specifically ranking by its terms senior to any Series A Convertible Preferred

Stock, in each case, as to distributions of assets upon liquidation, dissolution or winding up of the Company, whether voluntarily or involuntarily.

At-the-market equity offering program

In August 2021, the Company entered into a sales agreement with Cantor pursuant to which the Company can offer and sell up to $100.0 million of its common stock at the current market prices from time to time through Cantor as sales agent (the "August 2021 ATM"). During the three and nine months ended September 30, 2022, the Company sold 1,856,754 shares and 1,964,448 shares (each as adjusted to account for the Reverse Stock Split), respectively, under the August 2021 ATM for net proceeds of approximately $25.5 million and $27.4 million, respectively, (after deducting commissions and other offering expenses). There were no sales under the August 2021 ATM for the three and nine months ended September 30, 2023.

12. Stock-based compensation

Stock options

A summary of the Company's stock option activity and related information for the nine months ended September 30, 2023 is as follows:

	Shares	Weighted-average exercise price per share	Weighted-average remaining contractual term (years)	Aggregate intrinsic value (in thousands)
Outstanding at December 31, 2022	1,168,105	$ 33.63	7.1	$ 18
Granted	1,013,666	8.03		
Forfeited/cancelled	(48,801)	42.87		
Expired	(12,415)	116.92		
Outstanding at September 30, 2023	2,120,555	$ 20.69	7.9	$ 470
Vested at September 30, 2023	826,878	$ 34.30	5.9	$ 86

The fair value of each stock option granted during the nine months ended September 30, 2023 and 2022 was estimated on the grant date using the Black-Scholes option-pricing model using the following weighted-average assumptions:

	Nine months ended September 30,	
	2023	2022
Risk-free interest rate	3.63 %	2.82 %
Volatility	91 %	87 %
Dividend yield	—	—
Expected term (years)	6.1	5.6

Restricted stock units

A summary of the Company's restricted stock unit activity and related information for the nine months ended September 30, 2023 is as follows:

	Shares	Weighted-average grant date fair value per share
Outstanding at December 31, 2022	172,909	$ 25.82
Granted	108,058	$ 10.15
Vested	(49,815)	$ 25.87
Forfeited/cancelled	(5,477)	$ 17.96
Outstanding at September 30, 2023	225,675	$ 18.49

Employee stock purchase plan

At the Special Meeting of Stockholders, held on December 18, 2018, the stockholders approved the 2018 Employee Stock Purchase Plan ("2018 ESPP"). On June 21, 2019, the board of directors of the Company amended and restated the 2018 ESPP, to account for certain non-material changes to the plan's administration and, effective May 30, 2023, in connection with the Reverse Stock Split, the board of directors amended and restated the 2018 ESPP to account for the adjustments to the share reserves (the "Amended and Restated 2018 ESPP"). The Amended and Restated 2018 ESPP provides eligible employees with the opportunity, through regular payroll deductions, to purchase shares of the Company's common stock at 85% of the lesser of the fair market value of the common stock on (a) the date the option is granted, which is the first day of the purchase period, and (b) the exercise date, which is the last business day of the purchase period. The Amended and Restated 2018 ESPP generally allows for two six-month purchase periods per year beginning in January and July, or such other periods as determined by the compensation committee of the Company's board of directors. The fair value of shares expected to be purchased under the Amended and Restated 2018 ESPP was calculated using the following weighted-average assumptions:

	Nine months ended September 30,	
	2023	2022
Risk-free interest rate	5.16 %	1.56 %
Volatility	126 %	77 %
Dividend yield	—	—
Expected term (years)	0.5	0.5

For the nine months ended September 30, 2023, and 2022, the Company recognized less than $0.1 million in each period of stock-based compensation expense under the Amended and Restated 2018 ESPP. During the nine months ended September 30, 2023, the Company issued 14,270 shares of common stock (as adjusted to account for the Reverse Stock Split) for proceeds of $0.1 million under the Amended and Restated 2018 ESPP.

13. Net loss per share

Basic loss per common share is calculated by dividing net loss applicable to common stockholders by the weighted-average number of common shares outstanding during the period. For purposes of calculating net loss per share, weighted-average number of common shares outstanding includes the weighted average effect of the Pre-Funded Warrants issued in June 2023, the exercise of which requires little or no consideration for the delivery of shares of common stock. Diluted net loss per common share is calculated by increasing the denominator by the weighted-average number of additional shares that could have been outstanding from securities convertible into common stock, such as stock options, restricted stock units, and employee stock purchase plan shares (using the "treasury stock" method), and the 2018 Notes, Series A Convertible Preferred Stock, and Series B Convertible Preferred Stock (using the "if-converted" method), unless their effect on net loss per share is anti-dilutive.

The following potentially dilutive securities (each as adjusted to reflect the Reverse Stock Split) were excluded from the calculation of diluted net loss per share for the periods indicated because including them would have had an anti-dilutive effect:

	Three months ended September 30,		Nine months ended September 30,	
	2023	2022	2023	2022
Outstanding stock options	2,120,555	1,137,738	2,120,555	1,137,738
Outstanding restricted stock units	225,675	206,951	225,675	206,951
2018 Notes	3,489	3,489	3,489	3,489
Employee stock purchase plan	6,310	6,459	6,310	6,459
Series A Convertible Preferred Stock	833,333	—	833,333	—
Series B Convertible Preferred Stock	4,236,570	—	4,236,570	—
Total potentially dilutive securities	**7,425,932**	**1,354,637**	**7,425,932**	**1,354,637**

14. License, collaboration and commercial agreements

GenFleet Therapeutics (Shanghai), Inc.

On August 24, 2023, the Company entered into a collaboration and option agreement ("GenFleet Agreement") with GenFleet Therapeutics (Shanghai), Inc. ("GenFleet"), pursuant to which GenFleet granted the Company the option to obtain exclusive development and commercialization rights worldwide outside of mainland China, Hong Kong, Macau, and Taiwan (the "Territory") for up to three oncology programs targeting ras sarcoma ("RAS") pathway driven cancers (the "GenFleet Options"). The Company may exercise its GenFleet Options on a program-by-program basis.

The Company made an upfront payment of $2.0 million to GenFleet in September 2023 and will provide $1.5 million of research support ("GenFleet R&D Support Fee") over the first three years of the GenFleet Agreement. In addition, pursuant to the GenFleet Agreement, upon achievement of certain development and commercial milestones, and upon the Company exercising its GenFleet Options, GenFleet will be entitled to receive payments of up to $622.0 million. The Company has also agreed to pay GenFleet royalties on net sales of licensed products in the Territory ranging from the mid to high single digits.

The Company may terminate the GenFleet Agreement in its entirety or on a program-by-program basis by providing 90 days written notice to GenFleet. Either party may terminate the GenFleet Agreement in its entirety or on a program-by-program and country-by-country basis, with 60 days' written notice for the other party's material breach if such party fails to cure the breach. Either party may also terminate the GenFleet Agreement in its entirety upon certain insolvency events involving the other party.

During the three months ended September 30, 2023, the Company expensed $2.0 million related to the upfront payment and $0.1 million related to the GenFleet R&D Support Fee within research and development expense in the consolidated statements of operations and comprehensive loss. The future milestone payments are contingent in nature and will be recognized if and when the respective contingencies are resolved. If the Company elects to exercise its GenFleet Options, the related payment will be recognized if and when each respective GenFleet Option is elected.

Secura

On August 10, 2020, the Company and Secura signed the Secura APA and on September 30, 2020, the transaction closed.

Pursuant to the Secura APA, the Company sold to Secura its exclusive worldwide license, including related assets, for the research, development, commercialization, and manufacture in oncology indications of products containing duvelisib. The sale included certain intellectual property related to duvelisib in oncology indications, certain existing duvelisib inventory, claims and rights under certain contracts pertaining to duvelisib. Pursuant to the Secura APA, Secura assumed all operational and financial responsibility for activities that were part of the Company's duvelisib oncology program, including all commercialization efforts related to duvelisib in the United States and Europe, as well as the Company's ongoing duvelisib clinical trials. Further, Secura assumed all obligations with existing collaboration partners developing and commercializing duvelisib, which include Yakult Honsha Co., Ltd. ("Yakult"), CSPC Pharmaceutical Group Limited ("CSPC"), and Sanofi. Additionally, Secura assumed all royalty payment obligations due under the amended and restated license agreement with Infinity Pharmaceuticals, Inc.

Pursuant to the terms of the Secura APA, Secura paid the Company an up-front payment of $70.0 million in September 2020 and has agreed to pay the Company (i) regulatory milestone payments up to $45.0 million, consisting of a payment of $35.0 million upon receipt of regulatory approval of COPIKTRA in the United States for the treatment of PTCL and a payment of $10.0 million upon receipt of the first regulatory approval for the commercial sale of COPIKTRA in the European Union for the treatment of PTCL, (ii) sales milestone payments of up to $50.0 million, consisting of $10.0 million when total worldwide net sales of COPIKTRA exceed $100.0 million, $15.0 million when total worldwide net sales of COPIKTRA exceed $200.0 million and $25.0 million when total worldwide net sales of COPIKTRA exceed $300.0 million, (iii) low double-digit royalties on the annual aggregate net sales above $100.0 million in the United States, European Union, and the United Kingdom of Great Britain and Northern Ireland and

(iv) 50% of all royalty, milestone and sublicense revenue payments payable to Secura under the Company's existing license agreements with Sanofi, Yakult, and CSPC, and 50% of all royalty and milestone payments payable to Secura under any license or sublicense agreement entered into by Secura in certain jurisdictions.

The Company evaluated the Secura APA in accordance with ASC 606 as the Company concluded that the counterparty, Secura, is a customer. The Company identified the following bundled performance obligation under the Secura APA:

- a bundled performance obligation consisting of delivery of the duvelisib global license and intellectual property, certain existing duvelisib inventory, certain duvelisib contracts and clinical trials, certain regulatory approvals, and certain regulatory documentation and books and records (the "Bundled Secura Performance Obligation").

The Company concluded that the duvelisib global license and intellectual property were not distinct within the context of the contract (i.e. separately identifiable) because the other assets including certain existing duvelisib inventory, certain duvelisib contracts and clinical trials, certain regulatory approval, and certain regulatory documentation and books and records do not have stand-alone value from other duvelisib global license and intellectual property and Secura could not benefit from them without the duvelisib global license and intellectual property. Consistent with the guidance under ASC 606-10-25-16A, the Company disregarded immaterial promised goods and services when determining performance obligations.

The Company has determined that the upfront payment of $70.0 million, future potential milestone payments and royalties including from Secura's sublicensees should be allocated to the delivery of the Bundled Secura Performance Obligation.

The Company determined $0.1 million of future potential royalties the Company expects to receive pursuant to the Secura APA were not constrained as of September 30, 2023. When estimating the amount of royalties to be received that were not constrained, the Company used the expected value method as there are a range of possible outcomes. When estimating royalties to be received, the Company used a combination of internal projections and forecasts and data from external sources. The Company determined that all other future potential royalties were constrained under the guidance as of September 30, 2023. As part of the Company's evaluation of the constraint on future royalties, the Company considered a number of factors in determining whether there is significant uncertainty associated with future events that would result in royalty payments. Those factors include: the likelihood and magnitude of revenue reversals related to future royalties, the amount of variable consideration is highly susceptible to factors outside of the Company's influence, the amount of time to resolve the uncertainty, and lack of significant history of selling COPIKTRA outside of the United States.

As the consideration for future royalties is conditional, the Company recorded a corresponding contract asset for the expected royalties. Portions of the contract asset are reclassified to accounts receivable when the right to consideration becomes unconditional. As of September 30, 2023 and December 31, 2022, the contract asset has been recorded within prepaid and other current assets on the condensed consolidated balance sheets.

The following table presents changes in the Company's contract asset for the nine months ended September 30, 2023 (in thousands):

Contract Asset:	December 31, 2022	Additions	Reclassification to receivable	September 30, 2023
Contract asset - Secura	$ 96	$ —	$ (54)	$ 42
Total	$ 96	$ —	$ (54)	$ 42

During three and nine months ended September 30, 2023, the Company determined all future potential milestones were excluded from the transaction price, as all other milestone amounts were fully constrained under the guidance as of September 30, 2023. As part of the Company's evaluation of the constraint, the Company considered a number of factors in determining whether there is significant uncertainty associated with the future events that would result in the milestone payments. Those factors included: the likelihood and magnitude of revenue reversals related to future milestones, the amount of variable consideration that is highly susceptible to factors outside of the Company's influence and the uncertainty about the consideration is not expected to be resolved for an extended period of time. All future potential milestone payments were fully constrained as the risk of significant revenue reversal related to these amounts has not yet been resolved.

During the three and nine months ended September 30, 2022, the Company recognized $0.0 million and $2.6 million, respectively, of sale of COPIKTRA license and related assets revenue within the statements of operations and comprehensive loss. The sale of COPIKTRA license and related assets revenue for the nine months ended September 30, 2022 primarily related to one regulatory milestone for $2.5 million achieved by Secura's sublicensee, CSPC, and $0.1 million related to royalties on COPIKTRA sales in the three months ended September 30, 2022, and future royalties expected to be received pursuant to the Secura APA that were not constrained.

15. Income taxes

The Company did not record a federal or state income tax provision or benefit for the three and nine months ended September 30, 2023 and 2022, respectively, due to the expected loss before income taxes to be incurred for the years ended December 31, 2023 and 2022, as well as the Company's continued maintenance of a full valuation allowance against its net deferred tax assets.

16. Commitments and contingencies

The Company has no other commitments other than minimum lease payments as disclosed in *Note 8. Leases.*

17. Subsequent events

The Company reviews all activity subsequent to the end of the quarter but prior to issuance of the condensed consolidated financial statements for events that could require disclosure or that could impact the carrying value of assets or liabilities as of the balance sheet date. The Company is not aware of any material subsequent events.

Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations.

You should read the following discussion and analysis of our financial condition and results of operations together with our condensed consolidated financial statements and related notes appearing elsewhere in this Quarterly Report on Form 10-Q. The following discussion contains forward-looking statements that involve risks and uncertainties. Our actual results and the timing of certain events could differ materially from those anticipated in these forward-looking statements as a result of certain factors, including those discussed below and elsewhere in this Quarterly Report on Form 10-Q and in our Annual Report on Form 10-K for our fiscal year ended December 31, 2022 as filed with the. Please also refer to the sections under headings "Forward-Looking Statements" and "Risk Factors" in this Quarterly Report on Form 10-Q and in our Annual Report on Form 10-K for our fiscal year ended December 31, 2022.

OVERVIEW

We are a late-stage development biopharmaceutical company, with an ongoing registration directed trial, committed to advancing new medicines for patients battling cancer. Our pipeline is focused on novel anticancer agents that inhibit critical signaling pathways in cancer that promote cancer cell survival and tumor growth, particularly RAF/ MEK inhibition and FAK inhibition.

Our most advanced product candidates, avutometinib and defactinib, are being investigated in both preclinical and clinical studies for the treatment of various solid tumors, including, but not limited to low-grade serous ovarian cancer ("LGSOC"), non-small cell lung cancer ("NSCLC"), colorectal cancer ("CRC"), pancreatic cancer, and melanoma. We believe that avutometinib may be beneficial as a therapeutic as a single agent or when used together in combination with defactinib, other pathway inhibitors, or other current and emerging standard of care treatments in cancers that do not adequately respond to currently available therapies.

Avutometinib is an orally available first-in-class unique small molecule RAF/MEK clamp. In contrast to other MEK inhibitors that are commercially available and in development, avutometinib is a dual RAF/MEK clamp that blocks MEK kinase activity and induces the formation of dominant negative RAF-MEK complexes preventing phosphorylation of MEK by A-Raf proto-oncogene, serine/threonine kinase ("ARAF"), B-Raf proto-oncogene serine/threonine kinase ("BRAF") and C-raf proto-oncogene serine/threonine kinase ("CRAF"). MEK-only inhibitors (e.g. trametinib) may have limited efficacy because they induce MEK phosphorylation ("pMEK") by relieving extracellular-signal-regulated-kinase ("ERK")-dependent feedback inhibition of RAF. By inhibiting RAF-mediated phosphorylation of MEK, avutometinib has the advantage of not inducing pMEK. This unique mechanism of avutometinib enables it to inhibit ERK signaling more effectively and may confer enhanced therapeutic activity against mitogen-activated pathway kinase ("MAPK") pathway-driven cancers.

Avutometinib has been shown to inhibit signaling and proliferation of tumor cell lines with a variety of MAPK pathway alterations including Kirsten rat sarcoma viral oncogene homolog ("KRAS"), neuroblastoma rat sarcoma viral oncogene homolog ("NRAS"), and BRAF mutations, among others. Avutometinib has demonstrated strong antitumor activity in combination with (i) agents targeting parallel pathways (e.g. inhibitors of FAK, CDK4/6 and mTOR), (ii) agents targeting other nodes in the MAPK pathway (e.g. anti-EGFR, SOS1, KRAS G12C, and KRAS G12D inhibitors), (iii) chemotherapy, and (iv) anti-PD-1.

Defactinib is an oral small molecule inhibitor of FAK and proline-rich tyrosine kinase ("PYK2") that is currently being evaluated as a potential combination therapy for various solid tumors. FAK is a non-receptor tyrosine kinase encoded by the protein tyrosine kinase-2 ("PTK-2") gene that is involved in cellular adhesion and, in cancer, metastatic capability. Defactinib targets malignant cells both directly and through modulation of the tumor microenvironment. Defactinib has received orphan drug designation in ovarian cancer in the United States, the European Union, and Australia. Preclinical research by our scientists and collaborators at world-renowned research institutions has described the effect of FAK inhibition as enhancing immune response by decreasing immuno-suppressive cells, increasing cytotoxic T cells and reducing stromal density, which allows tumor-killing immune cells to enter the tumor. Furthermore, it has been shown that FAK activation in response to MAPK inhibitor therapy may bypass MAPK pathway

blockade by driving tumor growth through activation of downstream pathways such as RhoA and YAP, supporting the clinical evaluation of avutometinib in combination with defactinib for treatment of cancers harboring MAPK alterations.

The combination of avutometinib and defactinib has been found to be clinically active in some patients with KRAS mutant and KRAS wild-type LGSOC and has received breakthrough designation from the U.S. Food & Drug Administration (the "FDA") for the treatment of all patients with recurrent LGSOC, regardless of KRAS status, after one or more prior lines of therapy including platinum-based chemotherapy.

In the fourth quarter of 2020, we commenced two registration-directed trials investigating avutometinib as a monotherapy and in combination with defactinib. The registration-directed trials are entitled RAMP (RAF and MEK Program) 201 and RAMP 202. RAMP 201 is an adaptive two-part multicenter, parallel cohort, randomized, open label trial to evaluate the efficacy and safety of avutometinib alone and in combination with defactinib in patients with recurrent LGSOC. RAMP 202 is a Phase 2, adaptive two-part multicenter, parallel cohort, randomized, open-label trial to evaluate the efficacy and safety of avutometinib alone and in combination with defactinib in patients with KRAS G12V NSCLC, following treatment with a platinum-based regimen and immune checkpoint inhibitor. Additionally, and based on preclinical rationale, additional cohorts were added to the RAMP 202 study including KRAS non-G12V NSCLC and BRAF mutant (V600E and non-V600E) NSCLC.

In the fourth quarter of 2022, a type B meeting with the FDA was held to discuss the results to date of the ongoing RAMP 201 trial, confirm the go-forward treatment regimen selection and discuss the regulatory path forward. The combination of avutometinib with defactinib has been selected versus monotherapy as the go-forward treatment in all recurrent LGSOC regardless of KRAS status, acknowledging the demonstrated contribution of defactinib.

Updated Results of Avutometinib and Defactinib Combination in RAMP 201 Part A

An abstract highlighting updated interim results from Part A of RAMP 201 was presented in a Poster Discussion Session at the American Society of Clinical Oncology (ASCO) annual meeting that took place June 2-6, 2023 in Chicago, Illinois.

In this data cut from Part A of the RAMP 201 study, 31 patients with recurrent LGSOC were treated with the combination of avutometinib and defactinib, of which 29 were evaluable for efficacy with a minimum follow-up of 12 months and 13 patients remained on study treatment.

Overall, patients were heavily pretreated with a median of 4 prior systemic regimens (up to 11), including prior platinum-based chemotherapy, endocrine therapy and bevacizumab in most patients and prior MEK inhibitor therapy in about 13% of patients. Confirmed objective response rates ("ORR") by blinded independent central review of 45% (13/29; 95% CI: 26%-64%) were observed. Tumor shrinkage was observed in the majority of patients, 86% (25/29). Further, 3 out of 4 patients who received prior MEK inhibitors responded to the combination.

Among the patients with KRAS mutant LGSOC, the ORR was 60% (9/15) in the combination arm. Among the patients with KRAS wild type LGSOC, the ORR was 29% (4/14). The median time to response was 5.5 months (range 1.6-14.7 months). The median duration of response and median progression free survival have not been reached.

Updated Phase 1/2 FRAME Study Results in Patients with LGSOC

In September 2023 we presented updated FRAME study efficacy data at the 5th Annual RAS-Target Development Summit in Boston Massachusetts showing an ORR of 42% (11 of 26) in evaluable patients with LGSOC. Among patients with KRAS mutant LGSOC (n=12), the ORR was 58% (7 of 12), compared to patients with KRAS wild-type LGSOC (n=12), the ORR was 33% (4 of 12). Across all LGSOC patients, the median duration of response was 26.9 months (95% CI: 8.5-47.3) while median progression free survival (PFS) was 20.0 months (95% CI: 11.1-31.2). As of the July 2023 data cutoff date, 19% of patients (5 of 26) were still on study treatment with a minimum follow-up of 17 months.

We intend to include mature data from the RAMP 201 study and the FRAME study, an investigator-sponsored Phase 1/2 study, to potentially support filing for accelerated approval in patients with recurrent LGSOC. Both studies are evaluating avutometinib and defactinib in patients with recurrent LGSOC. In July 2023, we announced that we have finalized the design of our confirmatory Phase 3 trial with the FDA to evaluate the efficacy and safety of avutometinib and defactinib versus statement of care chemotherapy and hormonal therapy in patients with recurrent LGSOC. The trial is entitled RAMP 301 and is expected to begin enrollment in the second half of 2023.

In September 2021, we entered into a clinical collaboration agreement with Amgen, Inc. ("Amgen") to evaluate the combination of avutometinib with Amgen's KRAS G12C inhibitor LUMAKRAS® (sotorasib) in a Phase 1/2 trial entitled RAMP 203. The Phase 1/2 trial will evaluate the safety, tolerability and efficacy of avutometinib in combination with LUMAKRAS in patients with KRAS G12C NSCLC who have not been previously treated with a KRAS G12C inhibitor, as well as in patients who have progressed on a KRAS-G12C inhibitor. The study will investigate the potential benefits of a more complete vertical blockade of the MAPK pathway with the combination of avutometinib (RAF/MEK inhibition) with LUMAKRAS (KRAS G12C inhibition) in KRAS G12C locally advanced or metastatic NSCLC. The RAMP 203 trial has progressed to the recommended Phase 2 dose of 4 mg avutometinib in combination with 960 mg of LUMAKRAS and initiation of Part B dose expansion in patients who are G12C inhibitor treatment naïve and in patients who experienced disease progression on prior G12C monotherapy. In October 2023, we announced initial safety and pharmacokinetics results, as well as preliminary efficacy results from RAMP 203 which were presented at the AACR-NCI-EORTC International Conference on Molecular Targets and Cancer Therapeutics on October 11-15, 2023 in Boston, Massachusetts. The confirmed ORR was 25% (3/12) across efficacy-evaluable patients and seen in both KRAS G12C inhibitor resistant (14.3%; 1/7) and naïve (40%; 2/5) patients.

In November 2021, we entered into a clinical collaboration agreement with Mirati Therapeutics, Inc. ("Mirati") to evaluate the combination of avutometinib with Mirati's KRAS G12C inhibitor KRAZATI® (adagrasib) in a Phase 1/2 trial entitled RAMP 204. The Phase 1/2 trial will evaluate the safety, tolerability and efficacy of avutometinib in combination with KRAZATI in patients with KRAS G12C NSCLC who have progressed on a KRAS G12C inhibitor. The trial will build on preclinical data showing a deeper blockade of MAPK pathway signaling resulting in enhanced anti-tumor efficacy with the combination of KRAZATI (KRAS G12C inhibition) and avutometinib (RAF/MEK inhibition) relative to either agent alone. The RAMP 204 trial is open and enrolling. Dose escalation is ongoing.

In May 2022, we received the first "Therapeutic Accelerator Award" from the Pancreatic Cancer Network ("PanCAN") for up to $3.8 million. The grant is expected to support a Phase 1b/2 clinical trial of avutometinib in combination with defactinib entitled RAMP 205. This Phase 1b/2 trial will evaluate the safety, tolerability and efficacy of GEMZAR® (gemcitabine) and ABRAXANE® (Nab-paclitaxel) in combination with avutometinib and defactinib in patients with previously untreated metastatic adenocarcinoma of the pancreas. The RAMP 205 trial will evaluate whether combining avutometinib (to target mutant KRAS which is mutated in more than 90% of pancreatic adenocarcinomas) and defactinib (to reduce stromal density and adaptive resistance to avutometinib) to the standard GEMZAR/ABRAXANE regimen improves outcomes for patients with this type of pancreatic cancer. In August 2022, PanCAN agreed to provide us with an additional $0.5 million for the collection and analysis of patient samples. We opened and began enrollment in the RAMP 205 study.

Our operations to date have been organizing and staffing our company, business planning, raising capital, identifying and acquiring potential product candidates, undertaking preclinical studies and clinical trials for our product candidates and initiating U.S. commercial operations following the approval of COPIKTRA through our ownership period ending in September 2020. We have financed our operations to date primarily through public offerings of our common stock and pre-funded warrants, sales of common stock under our at-the-market equity offering programs, our loan and security agreement executed with Hercules Capital, Inc. ("Hercules") in March 2017, as amended, the upfront payments and milestone payments under our license and collaboration agreements with Sanofi, CSPC Pharmaceutical Group Limited ("CSPC"), and Yakult Honsha Co., Ltd. ("Yakult"), the upfront payment and milestone payments received under the Secura APA, the issuance of the 2018 Notes (defined herein) in October 2018, the proceeds in connection with the private investment in public equity (the "PIPE"), our loan and security agreement executed with Oxford Finance LLC ("Oxford") in March 2022, and sales of Series B Convertible Preferred Stock (as defined below). Additionally, from our U.S. commercial launch of COPIKTRA on September 24, 2018 through our ownership period ending in September 2020, we financed a portion of our operations through product revenue.

As of September 30, 2023, we had an accumulated deficit of $797.5 million. Our net loss was $20.0 million, $60.0 million, $18.1 million and $57.0 million for the three and nine months ended September 30, 2023, and 2022, respectively. We expect to incur significant expenses and may continue to incur operating losses for the foreseeable future as a result of the continued research and development of avutometinib and defactinib. As of September 30, 2023, we had cash, cash equivalents and investments of $165.7 million. We expect our existing cash resources will be sufficient to fund our planned operations through at least 12 months from the date of issuance of these condensed consolidated financial statements.

We expect to finance the future development costs of our clinical product portfolio with our existing cash, cash equivalents and investments, through future milestones and royalties received pursuant to the Secura APA, through our loan and security agreement with Oxford, or through other strategic financing opportunities that could include, but are not limited to, collaboration agreements, future offerings of our equity, or the incurrence of debt. However, there is no guarantee that any of these strategic or financing opportunities will be executed or executed on favorable terms, and some could be dilutive to existing stockholders. If we fail to obtain additional future capital, we may be unable to complete our planned preclinical studies and clinical trials and obtain approval of certain investigational product candidates from the FDA or foreign regulatory authorities.

CRITICAL ACCOUNTING POLICIES AND SIGNIFICANT JUDGMENTS AND ESTIMATES

Our discussion and analysis of our financial condition and results of operations is based upon our condensed consolidated financial statements prepared in accordance with U.S. generally accepted accounting principles. The preparation of these condensed consolidated financial statements requires us to make estimates and judgments that affect the reported amounts of certain assets, liabilities, revenues and expenses and the disclosure of contingent assets and liabilities in our financial statements, and the amounts of revenues and expenses during the reported periods.

We believe that several accounting policies are important to understanding our historical and future performance. We refer to these policies as “critical” because these specific areas generally require us to make judgments and estimates about matters that are uncertain at the time we make the estimate, and different estimates—which also would have been reasonable—could have been used, which would have resulted in different financial results.

The critical accounting policies we identified in our most recent Annual Report on Form 10-K for the fiscal year ended December 31, 2022, related to revenue recognition, collaborative agreements, accrued and prepaid research and development expenses, stock-based compensation, and leases. During the nine months ended September 30, 2023, there were no material changes to our critical accounting policies.

RESULTS OF OPERATIONS

Comparison of the three months ended September 30, 2023 and 2022

	Three months ended September 30, (dollar amounts in thousands)			
	2023	2022	Change	% Change
Operating expenses:				
Research and development	13,946	11,288	2,658	24%
Selling, general and administrative	7,363	6,421	942	15%
Total operating expenses	21,309	17,709	3,600	20%
Loss from operations	(21,309)	(17,709)	(3,600)	20%
Other income (expense)	(13)	20	(33)	(165)%
Interest income	2,247	316	1,931	611%
Interest expense	(1,129)	(717)	(412)	57%
Change in fair value of preferred stock tranche liability	200	—	200	100%
Net loss	$ (20,004)	$ (18,090)	$ (1,914)	11%

Research and development expense. Research and development expense for the three months ended September 30, 2023 (the "2023 Quarter") was $13.9 million compared to $11.3 million for the three months ended September 30, 2022 (the "2022 Quarter"). The $2.6 million increase from the 2022 Quarter to the 2023 Quarter was primarily driven by the $2.0 million upfront payment made in September 2023 pursuant to the GenFleet Agreement (defined herein), an increase of $0.7 million in contract research organization ("CRO") costs, an increase of $0.4 million in personnel costs, including non-cash stock compensation, an increase of $0.2 million in investigator sponsored trial ("IST") costs, and an increase of $0.2 million in investigator fee costs, partially offset by a decrease of $0.9 million in drug substance and drug product costs.

Research and development expenses consist of costs associated with our research activities, including the development of our product candidates. Research and development expenses include product/ product candidate and/or project-specific costs, as well as unallocated costs. We allocate the expenses related to external research and development services, such as CROs, clinical sites, manufacturing organizations and consultants, by project and/or product candidate. We use our employee and infrastructure resources in a cross-functional manner across multiple research and development projects. Our project costing methodology does not allocate personnel, infrastructure and other indirect costs to specific clinical programs or projects.

Product/ product candidate/ project specific costs include:

- direct third-party costs, which include expenses incurred under agreements with CROs, the cost of consultants who assist with the development of our product candidates on a program-specific basis, clinical site costs, and any other third-party expenses directly attributable to the development of the product candidates;
- costs related to contract manufacturing operations including manufacturing costs in connection with producing product candidates for use in conducting preclinical and clinical studies. Costs associated with manufacturing avutometinib are included in "Avutometinib manufacturing and non-clinical trial specific" category below as these costs relate to both the "Avutometinib + defactinib" and "Avutometinib + other combinations" categories and are not specifically allocated to any particular project. Costs to produce defactinib are included in "Avutometinib + defactinib" below; and
- license fees.

Unallocated costs include:

- research and development employee-related expenses, including salaries, benefits, travel, and stock-based compensation expense;

- cost of consultants, including our scientific advisory board, who assist with our research and development but are not allocated to a specific program; and

- facilities, depreciation, and other allocated expenses, which include direct and allocated expenses for rent and maintenance of facilities, and laboratory supplies.

The table below summarizes our direct research and development expenses for our product/ product candidates/ projects and our unallocated research and development costs for the 2023 Quarter and the 2022 Quarter.

	Three months ended September 30,		
	2023	2022	Change
	(in thousands)		
Product/ product candidate / project specific costs			
Avutometinib ± defactinib	$ 5,020	$ 4,560	$ 460
Avutometinib + other combinations	1,047	672	375
Avutometinib manufacturing and non-clinical trial specific	987	1,541	(554)
GenFleet	2,051	—	2,051
COPIKTRA	3	(7)	10
Unallocated costs			
Personnel costs, excluding stock-based compensation	3,111	2,772	339
Stock-based compensation expense	503	417	86
Other unallocated expenses	1,224	1,333	(109)
Total research and development expense	$ 13,946	$ 11,288	$ 2,658

The $0.5 million increase in avutometinib ± defactinib costs from the 2022 Quarter to the 2023 Quarter is primarily driven by an increase in RAMP 301 trial costs, an increase in RAMP 201 trial costs, and an increase in pre-clinical collaboration costs partially offset by a decrease in defactinib drug substance and drug product costs. The $0.4 million increase of avutometinib + other combinations costs from the 2022 Quarter to the 2023 Quarter is primarily driven by an increase in RAMP 203 trial costs and IST costs. The $0.6 million decrease in avutometinib manufacturing and non-clinical trial specific costs from the 2022 Quarter to the 2023 Quarter is primarily driven a decrease in pre-clinical collaboration costs for avutometinib. The $2.1 million increase in GenFleet (defined herein) costs is primarily driven by the $2.0 million upfront payment made in September 2023 pursuant to the GenFleet Agreement.

Selling, general and administrative expense. Selling, general and administrative expense for the 2023 Quarter was $7.4 million compared to $6.4 million for the 2022 Quarter. The increase of $1.0 million from the 2022 Quarter to the 2023 Quarter primarily resulted from an increase of $0.5 million in personnel costs, including non-cash stock compensation, an increase of $0.2 million of costs in anticipation of potential launch of avutometinib and defactinib in LGSOC, and an increase of $0.3 million in travel and other costs.

Other Income (expense). Other expense for the 2023 Quarter was less than $0.1 million compared to other income of less than $0.1 million in the 2022 Quarter. Other expense for the 2023 Quarter and other income for the 2022 Quarter was comprised of changes in foreign currency exchange rates.

Interest income. Interest income for the 2023 Quarter was $2.2 million compared to $0.3 million for the 2022 Quarter. The increase of $1.9 million from the 2022 Quarter to the 2023 Quarter in interest income is primarily driven by an increase in interest rates and investment balances on short term investments and cash equivalents.

Interest expense. Interest expense for the 2023 Quarter was $1.1 million compared to $0.7 million for the 2022 Quarter. The increase of $0.4 million from the 2022 Quarter to the 2023 Quarter was primarily driven by the interest expense pursuant to the loan and security agreement entered into with Oxford on March 25, 2022 including an additional $15.0 million debt drawdown on March 22, 2023.

Change in fair value of preferred stock tranche liability. The change in fair value of the preferred stock tranche liability of $0.2 million for the 2023 Quarter was comprised of the mark-to-market adjustment related to the second tranche right issued as part of the Securities Purchase Agreement (defined herein). There was no preferred stock tranche liability outstanding during the 2022 Quarter.

Comparison of the nine months ended September 30, 2023 and 2022

	Nine months ended September 30, (dollar amounts in thousands)			
	2023	2022	Change	% Change
Revenue:				
Sale of COPIKTRA license and related assets	$ —	$ 2,596	$ (2,596)	(100)%
Total revenue	—	2,596	(2,596)	(100)%
Operating expenses:				
Research and development	38,854	39,818	(964)	(2)%
Selling, general and administrative	22,091	18,869	3,222	17%
Total operating expenses	60,945	58,687	2,258	4%
Loss from operations	(60,945)	(56,091)	(4,854)	9%
Other income (expense)	(60)	54	(114)	(211)%
Interest income	4,345	446	3,899	874%
Interest expense	(3,019)	(1,413)	(1,606)	114%
Change in fair value of preferred stock tranche liability	(320)	—	(320)	100%
Net loss	$ (59,999)	$ (57,004)	$ (2,995)	5%

Sale of COPIKTRA license and related assets revenue. Sale of COPIKTRA license and related assets revenue for the nine months ended September 30, 2023 (the "2023 Period") was $0.0 million compared to $2.6 million for the nine months ended September 30, 2022 (the "2022 Period"). Sale of COPIKTRA license and related assets revenue for the 2022 Period was comprised of one regulatory milestone for $2.5 million achieved by Secura's sublicensee, CSPC, and $0.1 million related to royalties on COPIKTRA sales in the 2022 Period and future royalties expected to be received pursuant to the Secura APA that were not constrained.

Research and development expense. Research and development expense for the 2023 Period was $38.9 million compared to $39.8 million for the 2022 Period. The $0.9 million decrease from the 2022 Period to the 2023 Period was primarily driven by a decrease of $3.6 million in drug substance and drug product costs, a decrease of $1.1 million in CRO costs, partially offset by the $2.0 million upfront payment pursuant to the GenFleet Agreement, an increase of $0.9 million in personnel costs, including non-cash stock compensation, and increase of $0.9 million in IST costs.

The table below summarizes our direct research and development expenses for our product/ product candidates/ projects and our unallocated research and development costs for the 2023 Period and the 2022 Period.

	Nine months ended September 30,		
	2023	2022	Change
	(in thousands)		
Product/ product candidate / project specific costs			
Avutometinib + defactinib	$ 15,216	$ 18,487	$ (3,271)
Avutometinib + other combinations	3,618	1,633	1,985
Avutometinib manufacturing and non-clinical trial specific	3,764	6,425	(2,661)
GenFleet	2,051	—	2,051
COPIKTRA	82	79	3
Unallocated costs			
Personnel costs, excluding stock-based compensation	9,002	8,268	734
Stock-based compensation expense	1,467	1,337	130
Other unallocated expenses	3,654	3,589	65
Total research and development expense	$ 38,854	$ 39,818	$ (964)

The $3.3 million decrease in avutometinib + defactinib costs from the 2022 Period to the 2023 Period is primarily driven by a decrease in RAMP 202 trial costs, decrease in defactinib drug product and drug substance costs, and RAMP 201 trial costs, partially offset by an increase in RAMP 301 trial costs. The $2.0 million increase of avutometinib + other combinations costs from the 2022 Period to the 2023 Period is primarily driven by an increase in

RAMP 203 trial costs, RAMP 204 trial costs and IST Costs. The $2.7 million decrease in avutometinib manufacturing and non-clinical trial specific costs from the 2022 Period to the 2023 Period is primarily driven a decrease in drug substance and drug product costs for avutometinib, CRO costs, and pre-clinical collaborations. The $2.1 million increase in GenFleet costs is primarily driven by the $2.0 million upfront payment made in September 2023 pursuant to the GenFleet Agreement.

Selling, general and administrative expense. Selling, general and administrative expense for the 2023 Period was $22.1 million compared to $18.9 million for the 2022 Period. The increase of $3.2 million from the 2022 Period to the 2023 Period primarily resulted from an increase of $0.9 million in additional costs in anticipation of potential launch of avutometinib and defactinib in LGSOC, an increase of $0.7 million in consulting and professional fees, an increase of $0.6 million in costs associated with financing activities, an increase of $0.4 million in personnel costs, including non-cash stock compensation, and an increase $0.6 million in travel and other costs.

Other Income (expense). Other expense for the 2023 Period was $0.1 million compared to other income of $0.1 million in the 2022 Period. Other expense for the 2023 Period was comprised of changes in foreign currency exchange rates. Other income for the 2022 Period was comprised of a gain on the sale of fixed assets and changes in foreign currency exchange rates.

Interest income. Interest income for the 2023 Period was $4.3 million compared to $0.4 million for the 2022 Period. The increase of $3.9 million from the 2022 Period to the 2023 Period in interest income is primarily driven by an increase in interest rates and investment balances on short term investments and cash equivalents.

Interest expense. Interest expense for the 2023 Period was $3.0 million compared to $1.4 million for the 2022 Period. The increase of $1.6 million from the 2022 Period to the 2023 Period was primarily driven by the interest expense pursuant to the loan and security agreement entered into with Oxford on March 25, 2022 including an additional $15.0 million debt drawdown on March 22, 2023.

Change in fair value of preferred stock tranche liability. The change in fair value of the preferred stock tranche liability of $0.3 million for the 2023 Period was comprised of the mark-to-market adjustment related to the second tranche right issued as part of the Securities Purchase Agreement (defined herein). There was no preferred stock tranche liability outstanding during the 2022 Period.

LIQUIDITY AND CAPITAL RESOURCES

Sources of liquidity

We have financed our operations to date primarily through public and private offerings of our common stock and pre-funded warrants, sales of common stock under our at-the-market equity offering programs, our loan and security agreement executed with Hercules in March 2017, as amended, the upfront payments and under our license and collaboration agreements with Sanofi, Yakult, and CSPC, the upfront payment under the Secura APA, the issuance of 2018 Notes in October 2018, the proceeds in connection with the PIPE, the Loan Agreement with Oxford, and the issuance of Series B Convertible Preferred Stock. With the commercial launch of COPIKTRA in the United States in September 2018 through our ownership period ending in September 2020, we financed a portion of our operations through product revenue. As of September 30, 2020, we have sold our COPIKTRA license and no longer sell COPIKTRA in the United States. We expect to finance a portion of our business through future potential milestones and royalties received pursuant to the Secura APA.

As of September 30, 2023, we had $165.7 million of cash, cash equivalents, and investments. We primarily invest our cash, cash equivalents and investments in U.S. Government money market funds, agency bonds, corporate bonds and commercial paper of publicly traded companies.

Risks and uncertainties include those identified under *Item 1A. Risk Factors*, in our Annual Report on Form 10-K for the year ended December 31, 2022 as filed with the SEC on March 14, 2023.

Cash flows

The following table sets forth the primary sources and uses of cash for the 2023 Period and the 2022 Period (in thousands):

	Nine months ended September 30,	
	2023	2022
Net cash (used in) provided by:		
Operating activities	$ (56,779)	$ (47,057)
Investing activities	(56,883)	53,160
Financing activities	134,640	51,784
Increase in cash, cash equivalents and restricted cash	**$ 20,978**	$ 57,887

Operating activities. The use of cash in both periods resulted primarily from our net losses adjusted for non-cash charges and changes in the components of working capital. Our cash outflow from net losses adjusted for non-cash charges and adjustments was $55.8 million and $52.0 million for the 2023 Period and the 2022 Period, respectively. Non-cash charges and adjustments were primarily related to change in fair value of the preferred stock tranche liability and stock-based compensation expense in the 2023 Period and stock-based compensation expense in the 2022 Period. Our cash outflow from operating activities due to changes in operating assets and liabilities was $1.0 million for the 2023 Period. Our cash inflow from operating activities due to changes in operating assets and liabilities was $5.0 million for the 2022 Period. Cash outflow due to changes in operating assets and liabilities for the 2023 Period was primarily driven by an increase of $3.0 million in prepaid expenses, other current assets and other assets partially offset by an increase of $1.3 million in accrued expenses and other liabilities, an increase of $0.3 million in deferred liabilities and an increase of $0.2 million in accounts payable. Cash inflow due to changes in operating assets and liabilities for the 2022 Period was primarily driven by an increase of $3.1 million in accounts payable, a decrease of $1.3 million in prepaid expenses, other current assets, and other assets, an increase of $1.0 million in deferred liabilities, a decrease of $0.4 million in accounts receivable partially offset by a decrease of $0.8 million in accrued expenses and other liabilities. The changes in prepaid expenses, other current assets, and other assets in both periods are exclusive of cash received from PanCAN and used on the RAMP 205 study. Cash used in operating activities was $56.8 million and $47.1 million for the 2023 Period and the 2022 Period, respectively.

Investing activities. The cash provided by investing activities for the 2023 Period relates to the net purchases of investments of $56.9 million. The cash provided by investing activities for the 2022 Period relates to the net maturities of investments of $53.2 million.

Financing activities. The cash provided by financing activities for the 2023 Period primarily represents $91.4 million of proceeds from our previously disclosed public offering in June 2023 of common stock and pre-funded warrants to purchase shares of our common stock, net of issuance costs, $28.1 million of proceeds received from issuance of Series B Convertible Preferred Stock, net of issuance costs, $14.9 million of proceeds received pursuant to the loan and security agreement with Oxford, $1.4 million of proceeds received from insurance premium financing and $0.1 million of proceeds received related to our employee stock purchase plan, partially offset by $1.3 million of payments on insurance premium financing. The cash provided by financing activities for the 2022 Period primarily represents $27.4 million of net proceeds received under our at-the market equity offering program, $24.1 million of net proceeds received from the loan and security agreement with Oxford, and $0.3 million of proceeds received related to exercise of stock options and our employee stock purchase plan. Refer to *Note 11. Capital Stock* to our unaudited condensed consolidated financial statements included in this quarterly report for additional details on the January 2023 offering of our Series B Convertible Preferred Stock, the June 2023 offering of our common stock and pre-funded warrants to purchase shares of our common stock, and our at-the-market equity offering program; *Note 7. Debt* to our unaudited condensed consolidated financial statements included in this quarterly report for additional details on the loan and security agreement with Oxford; *Note 9. Notes Payable* to our unaudited condensed consolidated financial statements included in this quarterly report for additional details on the finance agreement with AFCO Premium Credit LLC related to insurance premium financing and the monthly payments of principal and interest related thereto; and *Note 10. Convertible Senior Notes* to our unaudited condensed consolidated financial statements included in this quarterly report for details on our 5.00% Convertible Senior Notes due 2048.

License and Collaboration Agreements

GenFleet Therapeutics (Shanghai), Inc.

On August 24, 2023, we entered into a collaboration and option agreement ("Genfleet Agreement") with GenFleet Therapeutics (Shanghai), Inc. ("GenFleet"), pursuant to which GenFleet granted us the option to obtain the exclusive development and commercialization rights worldwide outside of mainland China, Hong Kong, Macau, and Taiwan for up to three oncology programs targeting RAS pathway driven cancers (the "Genfleet Options"). We may exercise its GenFleet Options on a program-by-program basis.

We made an upfront payment of $2.0 million in September 2023 to GenFleet and will provide $1.5 million of research support over the first three years of the GenFleet Agreement. In addition, pursuant to the GenFleet Agreement, upon achievement of certain development and commercial milestones, and upon us exercising our GenFleet Options, GenFleet will be entitled to receive payments of up to $622.0 million. We have also agreed to pay GenFleet royalties on net sales of licensed products in the Territory ranging from the mid to high single digits.

We may terminate the GenFleet Agreement in its entirety or on a program-by-program basis by providing 90 days written notice to GenFleet. Either party may terminate the GenFleet Agreement in its entirety or on a program-by-program and country-by-country basis, with 60 days' written notice for the other party's material breach if such party fails to cure the breach. Either party may also terminate the GenFleet Agreement in its entirety upon certain insolvency events involving the other party.

CONTRACTUAL OBLIGATIONS AND COMMITMENTS

The disclosure of our contractual obligations and commitments was reported in our Annual Report on Form 10-K for the year ended December 31, 2022. Except as previously disclosed in the Company's subsequent filings with the SEC, including this Quarterly Report on Form 10-Q, there have not been any material changes from the contractual obligations and commitments previously disclosed in such report.

Item 3. Quantitative and Qualitative Disclosures About Market Risk.

We are exposed to market risk related to changes in interest rates. We had cash, cash equivalents and investments of $165.7 million as of September 30, 2023, consisting of cash, U.S. Government money market funds, agency bonds, corporate bonds and commercial paper of publicly traded companies. Our primary exposure to market risk is interest rate sensitivity, which is affected by changes in the general level of U.S. interest rates, particularly because most of our investments are interest bearing. Our available for sale securities are subject to interest rate risk and will fall in value if market interest rates increase. Due to the short-term duration most of our investment portfolio and the low risk profile of our investments, an immediate 100 basis point change in interest rates would not have a material effect on the fair market value of our portfolio.

We contract with CROs and contract manufacturers globally which may be denominated in foreign currencies. We may be subject to fluctuations in foreign currency rates in connection with these agreements. Transactions denominated in currencies other than the functional currency are recorded based on exchange rates at the time such transactions arise. As of September 30, 2023, an immaterial amount of our total liabilities were denominated in currencies other than the functional currency.

On March 25, 2022, we entered into the Loan Agreement, under which we borrowed $25.0 million in March 2022 and $15.0 million in March 2023, for a total of $40.0 million. The Term Loans under the Loan Agreement bear interest at a floating rate equal to (a) the greater of (i) the one-month CME Secured Overnight Financing Rate and (ii) 0.13% plus (b) 7.37%, which is subject to an overall floor and cap. Changes in interest rates will cause interest charges to fluctuate under the Loan Agreement. A 10% increase in current interest rates would have resulted in an immaterial increase in the amount of cash interest expense for the three and nine months ended September 30, 2023 due to the overall interest rate floor and cap.

Item 4. Controls and Procedures.

Evaluation of disclosure controls and procedures

Our management, with the participation of our President and Chief Executive Officer (principal executive officer) and our Chief Financial Officer (principal financial and accounting officer), evaluated the effectiveness of our disclosure controls and procedures as of September 30, 2023. The term "disclosure controls and procedures," as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act of 1934 (Exchange Act), means controls and other procedures of a company that are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the SEC's rules and forms. 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. Based on the evaluation of our disclosure controls and procedures as of September 30, 2023, our President and Chief Executive Officer and our Chief Financial Officer concluded that, as of such date, our disclosure controls and procedures were effective at the reasonable assurance level.

Changes in internal control over financial reporting

There have been no changes in our internal control over financial reporting during the three months ended September 30, 2023, 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.

None.

Item 1A. Risk Factors.

You should carefully review and consider the information regarding certain factors that could materially affect our business, financial condition or future results set forth under *Item 1A. Risk Factors* in our Annual Report on Form 10-K for the fiscal year ended December 31, 2022 as filed with the SEC on March 14, 2023.

Item 2. Unregistered Sales of Equity Securities and Use of Proceeds and Issuer Purchases of Equity Securities.

RECENT SALES OF UNREGISTERED SECURITIES

None.

PURCHASE OF EQUITY SECURITIES

We did not purchase any of our equity securities during the period covered by this Quarterly Report on Form 10-Q.

Item 3. Defaults Upon Senior Securities.

None.

Item 4. Mine Safety Disclosures.

None.

Item 5. Other Information.

None.

Item 6. Exhibits.

The exhibits filed as part of this Quarterly Report on Form 10-Q are set forth on the Exhibit Index, which Exhibit Index is incorporated herein by reference.

EXHIBIT INDEX

3.1	Restated Certificate of Incorporation of the Registrant (incorporated by reference to Exhibit 3.1 to the Annual Report on Form 10-K for the fiscal year ended December 31, 2018, filed by the Registrant on March 12, 2019).
3.2	Certificate of Amendment to the Restated Certificate of Incorporation of the Registrant (incorporated by reference to Exhibit 3.2 to the Annual Report on Form 10-K for the fiscal year ended December 31, 2018, filed by the Registrant on March 12, 2019).
3.3	Amended and Restated Bylaws of the Registrant (incorporated by reference to Exhibit 3.4 to Amendment No. 3 to the Registration Statement on Form S-1 (File No. 333-177677) filed by the Registrant on January 13, 2012).
3.4	Certificate of Amendment to the Restated Certificate of Incorporation of Verastem, Inc. (incorporated by reference to Exhibit 3.1 to the Form 8-K filed by the Registrant with the Securities and Exchange Commission on May 21, 2020).
3.5	Certificate of Designation of Preferences, Rights and Limitations of Series A Convertible Preferred Stock (incorporated by reference to Exhibit 3.1 to the Form 8-K filed by the Registrant with the Securities and Exchange Commission on November 7, 2022)
3.6	Certificate of Designation of Preferences, Rights and Limitations of Series B Convertible Preferred Stock (incorporated by reference to Exhibit 3.1 to the Form 8-K filed by the Registrant with the Securities and Exchange Commission on January 25, 2023)
3.7	Certificate of Amendment to the Restated Certificate of Incorporation of Verastem, Inc. (incorporated by reference to Exhibit 3.1 to the Form 8-K filed by the Registrant with the Securities and Exchange Commission on May 31, 2023).
10.1	Employment Agreement, dated August 2, 2023 by and between Verastem, Inc. and Daniel W. Paterson (incorporated by reference to Exhibit 10.1 to the Form 8-K filed by the Registrant with the Securities and Exchange Commission on August 4, 2023).
10.2	Employment Agreement, dated October 24, 2023 by and between Verastem, Inc. and Daniel Calkins (incorporated by reference to Exhibit 10.1 to the Form 8-K filed by the Registrant with the Securities and Exchange Commission on October 2, 2023).
31.1*	Certification of Principal Executive Officer pursuant to Rules 13a-14(a) or 15d-14(a) of the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2*	Certification of Principal Financial and Accounting Officer pursuant to Rules 13a-14(a) or 15d-14(a) of the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1*	Certification of Principal Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
32.2*	Certification of Principal Financial and Accounting Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
99.1*	Press Release issued by Verastem, Inc. on November 8, 2023 (furnished herewith).
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	The cover page from this Current Report on form 10-Q, formatted in Inline XBRL

* Filed or furnished herewith.

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.

VERASTEM, INC.

Date: November 8, 2023 By: /s/ DANIEL W. PATERSON

Daniel W. Paterson
President and Chief Executive Officer
(Principal executive officer)

Date: November 8, 2023 By: /s/ DANIEL CALKINS

Daniel Calkins
Chief Financial Officer
(Principal financial and accounting officer)

Exhibit 31.1

CERTIFICATIONS

I, Daniel W. Paterson, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Verastem, 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 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 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.

/s/ DANIEL W. PATERSON

Daniel W. Paterson
President and Chief Executive Officer
(Principal executive officer)

Date: November 8, 2023

Exhibit 31.2

CERTIFICATIONS

I, Daniel Calkins, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Verastem, 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 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 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.

/s/ DANIEL CALKINS

Daniel Calkins
Chief Financial Officer
(Principal financial and accounting officer)

Date: November 8, 2023

Exhibit 32.1

CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Quarterly Report on Form 10-Q of Verastem, Inc. (the "Company") for the period ended September 30, 2023 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), the undersigned, Daniel W. Paterson, President and Chief Executive Officer of the Company, hereby certifies, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to his knowledge:

(1) the Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ DANIEL W. PATERSON

Daniel W. Paterson
President and Chief Executive Officer
(Principal executive officer)

Date: November 8, 2023

CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Quarterly Report on Form 10-Q of Verastem, Inc. (the "Company") for the period ended September 30, 2023 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), the undersigned, Daniel Calkins, Chief Financial Officer, of the Company, hereby certifies, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to his knowledge:

(1) the Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ DANIEL CALKINS

Daniel Calkins
Chief Financial Officer
(Principal financial and accounting officer)

Date: November 8, 2023

Verastem Oncology Reports Third Quarter 2023 Financial Results and Highlights Recent Company Progress

Plan to Submit Application for Accelerated Approval for Avutometinib and Defactinib in Recurrent Low-Grade Serous Ovarian Cancer (LGSOC) in H1 2024

Expects to Begin Enrollment in Phase 3 Confirmatory Trial, RAMP 301, of Avutometinib and Defactinib in LGSOC in Q4 2023

Presented Additional Patient Subgroup Data for the Combination of Avutometinib and Defactinib Showing Promising Levels of Response in LGSOC Regardless of Number and Class of Prior Therapies Including After Poor Response to Prior Therapy

Entered Into Synergistic Discovery and Development Collaboration with GenFleet Therapeutics to Advance New Programs Targeting RAS Pathway-Driven Cancers

BOSTON, MA – November 8, 2023 – Verastem Oncology (Nasdaq: VSTM), a biopharmaceutical company committed to advancing new medicines for patients with cancer, today reported financial results for the third quarter ending September 30, 2023 and highlighted recent progress.

"In the third quarter, we presented additional data with robust levels of response from a planned subgroup analysis of the RAMP 201 study supporting the role of avutometinib and defactinib as a potential treatment option for LGSOC regardless of a patient's prior therapy. These data continue to build on the foundational proof of concept and support our plans to submit an application for Accelerated Approval in the first half of 2024," said Dan Paterson, President and Chief Executive Officer, Verastem Oncology. "As part of our broader development program, we were excited to share the initial, promising efficacy and safety data of the combination of avutometinib and sotorasib in G12C-mutant non-small cell lung cancer. In addition, we look forward to our synergistic collaboration with GenFleet Therapeutics that will provide us with the exclusive option to license three new programs to expand our pipeline. This collaboration along with our progress across our broader development platform, will allow us to further address the significant unmet medical needs across RAS pathway-driven cancers."

Third Quarter 2023 and Recent Highlights

Low-Grade Serous Ovarian Cancer (LGSOC)

- The Company plans to submit an application for Accelerated Approval with the U.S. Food and Drug Administration (FDA) in the first half of 2024 for the combination of avutometinib and defactinib based on mature data from the Phase 2 registration-directed trial, RAMP 201, together with the results of the investigator-initiated FRAME trial. The Company also plans to have discussions with global regulatory authorities to bring the combination to additional regions.

- The Company finalized the design of the Phase 3 confirmatory trial (RAMP 301) of avutometinib and defactinib in LGSOC versus standard of care (SOC) chemotherapy (pegylated liposomal doxorubicin, paclitaxel, topotecan) or hormone therapy (letrozole, anastrozole). The trial will enroll approximately 270 patients randomized to either the combination of avutometinib and defactinib or SOC. RAMP 301 is an international collaboration between The GOG Foundation, Inc. (GOG) and the European Network of Gynaecological Oncological Trial groups (ENGOT) sponsored by Verastem Oncology. RAMP 301 is the follow-up confirmatory study being conducted for full regulatory approval in recurrent LGSOC and is expected to begin enrollment in the fourth quarter of this year.

- The results of a planned subgroup analysis of the Phase 2 RAMP 201 trial of avutometinib and defactinib were presented as a late-breaking abstract in an oral presentation at the Annual Global Meeting of the International Gynecologic Cancer Society (IGCS) in November. The data showed the combination demonstrated promising levels of response in recurrent LGSOC regardless of number and class of prior therapies including after poor response to prior therapy. In the combination arm, the observed overall response rate (ORR) was consistent across patients who received 1-3 (45.5%, 5/11, 95% CI 17-77) and ≥4 lines of therapy (44.4%, 8/18, 95% CI 22-69). Prior to enrollment in RAMP 201, only 2/23 (8.7%) patients responded to their last prior treatment in the recurrent setting, whereas the combination of avutometinib and defactinib yielded an ORR of 43.5% (10/23) in this subgroup. The safety profiles of avutometinib and defactinib were similar in the less and more heavily pretreated subgroups and both analyses were consistent with previously reported safety data.

- The Company, in collaboration with the LGSOC Patient Impact Advisory Committee, a global collaboration among leaders in the medical community as well as patient advocacy groups including STAAR Ovarian Cancer Foundation, Cure Our Ovarian Cancer and the World Ovarian Cancer Coalition, announced results of the first-ever LGSOC Patient Impact Survey. The focus of this survey is to better understand and address the particular challenges with diagnosis, disease management and mental, physical, and emotional well-being experienced by people living with LGSOC. More information is available LetsTalkAboutLGSOC.com.

Other Programs

- The Company announced a discovery and development collaboration with GenFleet Therapeutics ("GenFleet") to advance three oncology discovery programs targeting RAS pathway-driven cancers. The collaboration, which builds on the strengths of both companies in oncology small molecule drug development, enables Verastem Oncology to partner its clinical development and regulatory expertise with GenFleet's accomplished discovery capabilities. Verastem Oncology has the exclusive rights to obtain a license to each of the compounds after successful completion of pre-determined milestones in Phase 1 trials and adds to the Company's ability to become a leader in the treatment of RAS pathway-driven cancers.

- The Company presented initial safety, pharmacokinetics and recommended Phase 2 dose (RP2D) in the RAMP 203 trial evaluating the safety, tolerability and efficacy of avutometinib in combination with sotorasib in patients with KRAS G12C-mutant non-small cell lung cancer (NSCLC) at the AACR-NCI-EORTC International Conference on Molecular Targets and Cancer Therapeutics in October. The confirmed ORR was 25% (3/12) across efficacy-evaluable patients and seen in both KRAS G12C inhibitor resistant (14.3%; 1/7) and naïve (40%; 2/5) patients. Avutometinib 4.0 mg PO BIW 21/28 days + sotorasib 960 mg PO QD 28/28 days was selected as RP2D based on dose limiting toxicity assessment. Enrollment of patients with KRAS G12C-mutant NSCLC who are either naïve to or previously treated with a KRAS G12C inhibitor is ongoing in the expansion phase of RAMP 203.

- Dose escalation is ongoing in the RAMP 204 Phase 1/2 clinical trial of avutometinib with Mirati's KRAZATI® (adagrasib) in KRAS G12C-mutant NSCLC. The study is in its second dose cohort after successfully completing the first dose cohort.

- Enrollment is ongoing in the RAMP 205 Phase 1b/2 clinical trial evaluating avutometinib and defactinib in combination with SOC chemotherapy (GEMZAR® (gemcitabine) and ABRAXANE®) in patients with metastatic adenocarcinoma of the pancreas. The trial is supported by the Company's receipt of the first "Therapeutic Accelerator Award" from the Pancreatic Cancer Action Network (PanCAN).

Corporate Updates

- The Company strengthened its executive team in advance of the Company's potential commercial launch of avutometinib in combination with defactinib in LGSOC and to support the advancement of its broader development programs in RAS pathway-driven cancers. The appointments include Mike Crowther to Chief Commercial and Business Strategy Officer, David Mitchell to Senior Vice President, Head of Regulatory Affairs and the promotion of Dan Calkins to Chief Financial Officer from Vice President of Finance.

Third Quarter 2023 Financial Results

Verastem Oncology ended the third quarter of 2023 with cash, cash equivalents and investments of $165.7 million. Total operating expenses for the three months ended September 30, 2023 (the "2023 Quarter") were $21.3 million, compared to $17.7 million for the three months ended September 30, 2022 (the "2022 Quarter").

Research & development expenses for the 2023 Quarter were $13.9 million, compared to $11.3 million for the 2022 Quarter. The increase of $2.6 million, or 23.0%, primarily resulted from a $2.0 million upfront payment made to GenFleet pursuant to the discovery and development collaboration agreement and increases in contract research organization costs.

Selling, general & administrative expenses for the 2023 Quarter were $7.4 million, compared to $6.4 million for the 2022 Quarter. The increase of $1.0 million, or 15.6%, was primarily related to increased personnel costs, including non-cash stock compensation, additional costs in anticipation of a potential launch of avutometinib and defactinib in LGSOC, and increased travel and other costs.

Net loss for the 2023 Quarter was $20.0 million, or $0.75 per share (basic and diluted), compared to net loss of $18.1 million, or $1.10 per share (basic and diluted, each as adjusted for the Company's reverse stock split) for the 2022 Quarter.

For the 2023 Quarter, non-GAAP adjusted net loss was $19.0 million, or $0.71 per share (diluted), compared to non-GAAP adjusted net loss of $16.6 million, or $1.01 per share (diluted, as adjusted for the Company's reverse stock split) for the 2022 Quarter. Please refer to the GAAP to Non-GAAP Reconciliation accompanying this press release.

Use of Non-GAAP Financial Measures

To supplement Verastem Oncology's condensed consolidated financial statements, which are prepared and

presented in accordance with generally accepted accounting principles in the United States (GAAP), the Company uses the following non-GAAP financial measures in this press release: non-GAAP adjusted net loss and non-GAAP adjusted net loss per share. These non-GAAP financial measures exclude certain amounts or expenses from the corresponding financial measures determined in accordance with GAAP. Management believes this non-GAAP information is useful for investors, taken in conjunction with the Company's GAAP financial statements, because it provides greater transparency and period-over-period comparability with respect to the Company's operating performance and can enhance investors' ability to identify operating trends in the Company's business. Management uses these measures, among other factors, to assess and analyze operational results and trends and to make financial and operational decisions. Non-GAAP information is not prepared under a comprehensive set of accounting rules and should only be used to supplement an understanding of the Company's operating results as reported under GAAP, not in isolation or as a substitute for, or superior to, financial information prepared and presented in accordance with GAAP. In addition, these non-GAAP financial measures are unlikely to be comparable with non-GAAP information provided by other companies. The determination of the amounts that are excluded from non-GAAP financial measures is a matter of management judgment and depends upon, among other factors, the nature of the underlying expense or income amounts. Reconciliations between these non-GAAP financial measures and the most comparable GAAP financial measures for the three and nine months ended September 30, 2023, and 2022 are included in the tables accompanying this press release, after the unaudited condensed consolidated financial statements.

About Avutometinib (VS-6766)

Avutometinib is a RAF/MEK clamp that induces inactive complexes of MEK with ARAF, BRAF and CRAF potentially creating a more complete and durable anti-tumor response through maximal RAS pathway inhibition. Avutometinib is currently in late-stage development.

In contrast to other MEK inhibitors, avutometinib blocks both MEK kinase activity and the ability of RAF to phosphorylate MEK. This unique mechanism allows avutometinib to block MEK signaling without the compensatory activation of MEK that appears to limit the efficacy of other inhibitors. The U.S. Food and Drug Administration granted Breakthrough Therapy designation for the combination of Verastem Oncology's investigational RAF/MEK clamp avutometinib, with defactinib, its FAK inhibitor, for the treatment of all patients with recurrent low-grade serous ovarian cancer (LGSOC) regardless of KRAS status after one or more prior lines of therapy, including platinum-based chemotherapy.

Verastem Oncology is currently conducting clinical trials with its RAF/MEK clamp avutometinib in RAS- driven tumors as part of its (**R**af **A**nd **M**ek **P**rogram). RAMP 201 is a registration-directed trial of avutometinib in combination with defactinib in patients with recurrent LGSOC. Verastem Oncology has established clinical collaborations with Amgen and Mirati to evaluate LUMAKRAS® (sotorasib) and KRAZATI® (adagrasib) in combination with avutometinib in KRAS G12C mutant NSCLC as part of the RAMP 203 and RAMP 204 trials, respectively. As part of the "Therapeutic Accelerator Award" Verastem Oncology received from PanCAN, Verastem Oncology is conducting RAMP 205, a Phase 1b/2 clinical trial evaluating avutometinib and defactinib with gemcitabine/nab-paclitaxel in patients with front-line metastatic pancreatic cancer.

About Verastem Oncology

Verastem Oncology (Nasdaq: VSTM) is a development-stage biopharmaceutical company committed to the development and commercialization of new medicines to improve the lives of patients diagnosed with cancer. Our pipeline is focused on novel small molecule drugs that inhibit critical signaling pathways in cancer that promote cancer cell survival and tumor growth, including RAF/MEK inhibition and focal adhesion kinase (FAK) inhibition. For more information, please visit www.verastem.com.

Forward-Looking Statements Notice

This press release includes forward-looking statements about Verastem Oncology's strategy, future plans and prospects, including statements related to its financial condition, the potential clinical value of various of its clinical trials, the timing of commencing and completing trials, including topline data reports, the potential commercial launch of avutometinib in combination with defactinib in LGSOC, the potential benefits of the collaboration with Genfleet and interactions with regulators. The words "anticipate," "believe," "estimate," "expect," "intend," "may," "plan," "predict," "project," "target," "potential," "will," "would," "could," "should," "continue," "can," "promising" and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. Each forward- looking statement is subject to risks and uncertainties that could cause actual results to differ materially from those expressed or implied in such statement.

Applicable risks and uncertainties include the risks and uncertainties, among other things, regarding: the success in the development and potential commercialization of our product candidates, including avutometinib in combination with other compounds, including defactinib, LUMAKRAS® and others; the occurrence of adverse safety events and/or unexpected concerns that may arise from additional data or analysis or result in unmanageable safety profiles as compared to their levels of efficacy; our ability to obtain, maintain and enforce patent and other intellectual property protection for our product candidates; the scope, timing, and outcome of any legal proceedings; decisions by regulatory authorities regarding trial design, labeling and other matters that could affect the timing, availability or commercial potential of our product candidates; whether preclinical testing of our product candidates and preliminary or interim data from clinical trials will be predictive of the results or success of ongoing or later clinical trials; that the timing, scope and rate of reimbursement for our product candidates is uncertain; that third- party payors (including government agencies) may not reimburse; that there may be competitive developments affecting our product candidates; that we may not attract and retain high quality personnel; that data may not be available when expected; that enrollment of clinical trials may take longer than expected; that our product candidates will experience manufacturing or supply interruptions or failures; that we will be unable to successfully initiate or complete the clinical development and eventual commercialization of our product candidates; that the development and commercialization of our product candidates will take longer or cost more than planned, including as a result of conducting additional studies; that our target market for our product candidates might be smaller than we are presently estimating; that we or Chugai Pharmaceutical Co., Ltd. will fail to fully perform under the avutometinib license agreement; that we will not see a return on investment on the payments we have and may continue to make pursuant to the collaboration and option agreement with Genfleet or that Genfleet will fail to fully perform under the agreement; that we or our other collaboration partners may fail to perform under our collaboration agreements; that any of our third party contract research organizations, contract manufacturing organizations, clinical sites, or contractors, among others, who we rely on fail to fully perform; that we may not have sufficient cash to fund our contemplated operations; that we may be unable to obtain adequate financing in the future through product licensing, co-promotional arrangements, public or private equity, debt financing or otherwise; that Secura will achieve the milestones that result in payments to us under our asset purchase agreement with Secura; that we will be unable to execute on our partnering strategies for avutometinib in combination with other compounds; that we will not pursue or submit regulatory filings for our product candidates; and that our product candidates will not receive regulatory approval, become commercially successful products, or result in new treatment options being offered to patients.

Other risks and uncertainties include those identified under the heading "Risk Factors" in Verastem Oncology's Annual Report on Form 10-K for the year ended December 31, 2022 as filed with the Securities and Exchange Commission (SEC) on March 14, 2023 and in any subsequent filings with the SEC. The forward-

looking statements contained in this press release reflect Verastem Oncology's views as of the date hereof, and Verastem Oncology does not assume and specifically disclaims any obligation to update any forward-looking statements whether as a result of new information, future events or otherwise, except as required by law.

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Verastem Oncology
Condensed Consolidated Balance Sheets
(in thousands)
(unaudited)

	September 30, 2023	December 31, 2022
Cash, cash equivalents, & investments	$ 165,663	$ 87,894
Accounts receivable, net	—	31
Prepaid expenses and other current assets	8,822	4,945
Property and equipment, net	35	92
Right-of-use asset, net	1,336	1,789
Restricted cash and other assets	297	299
Total assets	**$ 176,153**	**$ 95,050**
Current Liabilities	$ 23,812	$ 21,663
Long term debt	39,911	24,526
Lease liability, long-term	780	1,470
Other long-term liabilities	51	—
Preferred stock tranche liability	7,260	—
Convertible preferred stock	21,159	—
Stockholders' equity	83,180	47,391
Total liabilities, convertible preferred stock and stockholders' equity	**$ 176,153**	**$ 95,050**

Verastem Oncology
Condensed Consolidated Statements of Operations
(in thousands, except per share amounts)
(unaudited)

	Three months ended September 30,		Nine months ended September 30,	
	2023	2022	2023	2022
Revenue:				
Sale of COPIKTRA license and related assets revenue	$ —	$ —	$ —	$ 2,596
Total revenue	—	—	—	2,596
Operating expenses:				
Research and development	13,946	11,288	38,854	39,818
Selling, general and administrative	7,363	6,421	22,091	18,869
Total operating expenses	21,309	17,709	60,945	58,687
Loss from operations	(21,309)	(17,709)	(60,945)	(56,091)
Other income (expense)	(13)	20	(60)	54
Interest income	2,247	316	4,345	446
Interest expense	(1,129)	(717)	(3,019)	(1,413)
Change in fair value of preferred stock tranche liability	200	—	(320)	—
Net loss	$ (20,004)	$ (18,090)	$ (59,999)	$ (57,004)
Net loss per share—basic and diluted	$ (0.75)	$ (1.10)[1]	$ (2.93)[1]	$ (3.60)[1]
Weighted average common shares outstanding used in computing:				
Net loss per share – basic and diluted	26,790	16,430[1]	20,452[1]	15,834[1]

(1) Amounts have been retroactively restated to reflect the 1-for-12 reverse stock split effected on May 31, 2023

Verastem Oncology
Reconciliation of GAAP to Non-GAAP Financial Information
(in thousands, except per share amounts)
(unaudited)

	Three months ended September 30,		Nine months ended September 30,	
	2023	**2022**	**2023**	**2022**
Net loss reconciliation				
Net loss (GAAP basis)	$ (20,004)	$ (18,090)	$ (59,999)	$ (57,004)
Adjust:				
Stock-based compensation expense	1,517	1,356	4,262	4,760
Non-cash interest, net	(371)	120	(295)	231
Change in fair value of preferred stock tranche liability	(200)	—	320	—
Severance and Other	47	—	85	—
Adjusted net loss (non-GAAP basis)	$ (19,011)	$ (16,614)	$ (55,627)	$ (52,013)
Reconciliation of net loss per share				
Net loss per share – diluted (GAAP Basis)	$ (0.75)	$ (1.10)[1]	$ (2.93)[1]	$ (3.60)[1]
Adjust per diluted share:				
Stock-based compensation expense	0.06	0.08[1]	0.21[1]	0.31[1]
Non-cash interest, net	(0.01)	0.01[1]	(0.02)[1]	0.01[1]
Change in fair value of preferred stock tranche liability	(0.01)	—	0.02[1]	—
Severance and Other	—	—	—[1]	—
Adjusted net loss per share – diluted (non-GAAP basis)	$ (0.71)	$ (1.01)[1]	$ (2.72)[1]	$ (3.28)[1]
Weighted average common shares outstanding used in computing net loss per share—diluted	26,790	16,430[1]	20,452[1]	15,834[1]

(1) Amounts have been retroactively restated to reflect the 1-for-12 reverse stock split effected on May 31, 2023