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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 June 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: 001-38663

Gritstone bio, Inc.

(Exact Name of Registrant as Specified in its Charter)

Delaware	**47-4859534**
(State or Other Jurisdiction of Incorporation or Organization)	**(I.R.S. Employer Identification No.)**
5959 Horton Street, Suite 300 Emeryville, California	**94608**
(Address of Principal Executive Offices)	**(Zip Code)**

(510) 871-6100
(Registrant's Telephone Number, Including Area Code)

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, $0.0001 par value per share	**GRTS**	**The Nasdaq Global Select 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 August 7, 2023, there were 93,075,427 shares of the registrant's common stock, par value $0.0001 per share, outstanding.

Gritstone bio, Inc.
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PART I. FINANCIAL INFORMATION

ITEM 1. FINANCIAL STATEMENTS

Gritstone bio, Inc.
Condensed Consolidated Balance Sheets
(Unaudited)

(In thousands, except share amounts and par value)

	June 30, 2023	December 31, 2022
Assets		
Current assets:		
Cash and cash equivalents	$ 41,414	$ 55,498
Marketable securities	73,119	116,389
Restricted cash	2,437	3,977
Prepaid expenses and other current assets	5,406	7,014
Total current assets	122,376	182,878
Long-term restricted cash	5,290	5,290
Property and equipment, net	20,443	21,335
Lease right-of-use assets	71,985	17,481
Deposits and other long-term assets	2,529	9,739
Long-term marketable securities	—	4,031
Total assets	$ 222,623	$ 240,754
Liabilities and stockholders' equity		
Current liabilities:		
Accounts payable	$ 4,925	$ 8,694
Accrued compensation	6,036	8,215
Accrued liabilities	1,452	4,124
Accrued research and development expenses	2,042	3,343
Lease liabilities, current portion	4,838	5,294
Deferred revenue, current portion	2,818	5,131
Total current liabilities	22,111	34,801
Other liabilities, noncurrent	398	150
Lease liabilities, net of current portion	60,824	15,673
Debt, noncurrent	29,723	19,349
Total liabilities	113,056	69,973
Commitments and contingencies (Notes 6, 8 and 9)		
Stockholders' equity:		
Preferred stock, $0.0001 par value; 10,000,000 shares authorized; no shares issued and outstanding at June 30, 2023 and December 31, 2022	—	—
Common stock, $0.0001 par value; 300,000,000 shares authorized at June 30, 2023 and December 31, 2022; 91,224,210 and 86,894,901 shares issued and outstanding at June 30, 2023 and December 31, 2022, respectively	22	22
Additional paid-in capital	699,979	691,910
Accumulated other comprehensive loss	(125)	(80)
Accumulated deficit	(590,309)	(521,071)
Total stockholders' equity	109,567	170,781
Total liabilities and stockholders' equity	$ 222,623	$ 240,754

See accompanying notes to the unaudited condensed consolidated financial statements.

Gritstone bio, Inc.
Condensed Consolidated Statements of Operations and Comprehensive Loss
(Unaudited)

(In thousands, except share and per share amounts)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
Revenues:				
Collaboration and license revenues	$ 400	$ 2,761	$ 941	$ 7,506
Grant revenues	1,555	2,710	3,456	5,156
Total revenues	1,955	5,471	4,397	12,662
Operating expenses:				
Research and development	30,967	27,347	61,481	55,546
General and administrative	6,716	7,792	13,461	15,747
Total operating expenses	37,683	35,139	74,942	71,293
Loss from operations	(35,728)	(29,668)	(70,545)	(58,631)
Interest income	1,479	153	3,157	200
Interest expense	(985)	—	(1,828)	—
Other expense	(22)	—	(22)	—
Net loss	(35,256)	(29,515)	(69,238)	(58,431)
Other comprehensive loss:				
Unrealized loss on marketable securities	(73)	(19)	(45)	(337)
Comprehensive loss	$ (35,329)	$ (29,534)	$ (69,283)	$ (58,768)
Net loss per share, basic and diluted	$ (0.31)	$ (0.34)	$ (0.60)	$ (0.68)
Weighted-average number of shares used in computing net loss per share, basic and diluted	114,929,523	86,448,632	114,676,261	86,363,116

See accompanying notes to the unaudited condensed consolidated financial statements.

Gritstone bio, Inc.
Condensed Consolidated Statements of Stockholders' Equity
(Unaudited)

(In thousands, except share amounts)

Three Months Ended June 30, 2023:

	Common Stock		Additional Paid-In	Accumulated Other Comprehensive	Accumulated	Total Stockholders'
	Shares	Amount	Capital	Loss	Deficit	Equity
Balance at March 31, 2023	87,848,417	$ 22	$ 695,961	$ (52)	$ (555,053)	$ 140,878
Issuance of common stock upon exercise of stock options	6,000	—	5	—	—	5
Issuance of common stock under the ATM equity offering program, net of issuance costs of $21	246,199	—	623	—	—	623
Issuance of common stock for warrant exercises	2,849,405	—	—	—	—	—
Issuance of common stock under the ESPP	274,189	—	450	—	—	450
Stock-based compensation	—	—	2,940	—	—	2,940
Unrealized loss on marketable securities	—	—	—	(73)	—	(73)
Net loss	—	—	—	—	(35,256)	(35,256)
Balance at June 30, 2023	91,224,210	$ 22	$ 699,979	$ (125)	$ (590,309)	$ 109,567

Three Months Ended June 30, 2022:

	Common Stock		Additional Paid-In	Accumulated Other Comprehensive	Accumulated	Total Stockholders'
	Shares	Amount	Capital	Loss	Deficit	Equity
Balance at March 31, 2022	72,779,508	$ 20	$ 619,862	$ (391)	$ (430,300)	$ 189,191
Issuance of common stock upon exercise of stock options	33,325	—	36	—	—	36
Issuance of common stock under the ESPP	193,256	—	331	—	—	331
Stock-based compensation	—	—	3,354	—	—	3,354
Unrealized loss on marketable securities	—	—	—	(19)	—	(19)
Net loss	—	—	—	—	(29,515)	(29,515)
Balance at June 30, 2022	73,006,089	$ 20	$ 623,583	$ (410)	$ (459,815)	$ 163,378

Continued on next page.

See accompanying notes to the unaudited condensed consolidated financial statements.

Gritstone bio, Inc.
Condensed Consolidated Statements of Stockholders' Equity
(Unaudited)

(In thousands, except share amounts)

Six Months Ended June 30, 2023:

	Common Stock		Additional Paid-In	Accumulated Other Comprehensive	Accumulated	Total Stockholders'
	Shares	Amount	Capital	Loss	Deficit	Equity
Balance at December 31, 2022	86,894,901	$ 22	$ 691,910	$ (80)	$ (521,071)	$ 170,781
Issuance of common stock under the ATM equity offering program, net of issuance costs of $79	854,052	—	2,525	—	—	2,525
Issuance of common stock upon restricted stock units vesting	345,663	—	—	—	—	—
Tax payments related to shares withheld for vested restricted stock units	—	—	(742)	—	—	(742)
Issuance of common stock upon exercise of stock options	6,000	—	5	—	—	5
Issuance of common stock for warrant exercises	2,849,405	—	—	—	—	—
Issuance of common stock under the ESPP	274,189	—	450	—	—	450
Stock-based compensation	—	—	5,831	—	—	5,831
Unrealized loss on marketable securities	—	—	—	(45)	—	(45)
Net loss	—	—	—	—	(69,238)	(69,238)
Balance at June 30, 2023	91,224,210	$ 22	$ 699,979	$ (125)	$ (590,309)	$ 109,567

Six Months Ended June 30, 2022:

	Common Stock		Additional Paid-In	Accumulated Other Comprehensive	Accumulated	Total Stockholders'
	Shares	Amount	Capital	Loss	Deficit	Equity
Balance at December 31, 2021	69,047,878	$ 20	$ 617,523	$ (73)	$ (401,384)	$ 216,086
Issuance of common stock for warrant exercises	3,442,567	—	34	—	—	34
Issuance of common stock upon restricted stock units vesting	215,350	—	—	—	—	—
Tax payments related to shares withheld for vested restricted stock units	—	—	(890)	—	—	(890)
Issuance of common stock upon exercise of stock options	107,038	—	100	—	—	100
Issuance of common stock under the ESPP	193,256	—	331	—	—	331
Stock-based compensation	—	—	6,485	—	—	6,485
Unrealized loss on marketable securities	—	—	—	(337)	—	(337)
Net loss	—	—	—	—	(58,431)	(58,431)
Balance at June 30, 2022	73,006,089	$ 20	$ 623,583	$ (410)	$ (459,815)	$ 163,378

See accompanying notes to the unaudited condensed consolidated financial statements.

Gritstone bio, Inc.
Condensed Consolidated Statements of Cash Flows
(Unaudited)

(In thousands)

	Six Months Ended June 30,	
	2023	**2022**
Operating activities		
Net loss	$ (69,238)	$ (58,431)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	3,706	3,093
Net amortization of premiums and discounts on marketable securities	(1,797)	309
Amortization of debt discount and issuance costs	637	—
Stock-based compensation	5,831	6,485
Non-cash operating lease expense	6,762	4,655
Loss on disposition of property and equipment	21	—
Changes in operating assets and liabilities:		
Prepaid expenses and other current assets	1,608	(119)
Deposits and other long-term assets	3,014	(738)
Accounts payable	(1,295)	(1,437)
Accrued compensation	(2,179)	(1,594)
Accrued and other non-current liabilities	(2,253)	363
Accrued research and development expenses	(1,301)	680
Lease liability	(12,256)	(4,193)
Deferred revenue	(2,313)	(8,861)
Net cash used in operating activities	(71,053)	(59,788)
Investing activities		
Purchase of marketable securities	(17,814)	(28,341)
Maturities of marketable securities	66,867	61,719
Purchase of property and equipment	(3,288)	(3,265)
Net cash provided by investing activities	45,765	30,113
Financing activities		
Proceeds from issuance of common stock upon exercise of stock options, warrants, and other	5	134
Proceeds from issuance of common stock from the ATM equity offering program	2,604	—
Proceeds from long-term debt, net of debt discount and issuance costs	9,962	—
Proceeds from issuance of common stock under the ESPP	450	331
Payments of financing costs	(2,496)	(69)
Payments of financing lease	(119)	(113)
Tax payments related to shares withheld for vested restricted stock units	(742)	(890)
Net cash provided by (used in) financing activities	9,664	(607)
Net decrease in cash, cash equivalents and restricted cash	(15,624)	(30,282)
Cash, cash equivalents and restricted cash at beginning of period	64,765	110,577
Cash, cash equivalents and restricted cash at end of period	$ 49,141	$ 80,295
Supplemental disclosures of non-cash investing and financing information		
Property and equipment purchases accrued but not yet paid	$ 692	$ 1,662
Financing costs included in accrued liabilities and accounts payable	$ 16	$ —
Remeasurement of operating lease right-of-use asset for lease modification	$ —	$ 1,406
Cash paid for interest on debt	$ 1,073	$ —
Assets acquired under leasing obligations	$ 59,320	$ —

See accompanying notes to the unaudited condensed consolidated financial statements.

1. Organization

Description of Business

Gritstone bio, Inc. ("Gritstone" or "the Company") is a clinical stage biotechnology company developing targeted immunotherapies for cancer and infectious disease. The Company was incorporated in the state of Delaware in August 2015, and is based in Emeryville, California and Cambridge, Massachusetts, with a manufacturing facility in Pleasanton, California. The Company operates in one segment.

Liquidity

The Company has incurred operating losses and has an accumulated deficit as a result of ongoing efforts to develop drug product candidates, including conducting preclinical and clinical trials and providing general and administrative support for these operations. To date, none of the Company's product candidates have been approved for sale and therefore the Company has not generated any revenue from sales of commercial products. Management expects operating losses to continue for the foreseeable future. The Company has funded its operations to date primarily through private placements of its convertible preferred stock, the sale of common stock in public offerings and under its "at the market" offering programs, the private placement of common stock and pre-funded warrants, and through proceeds received from its collaboration arrangements. The Company had net losses of $35.3 million and $69.2 million for the three and six months ended June 30, 2023, respectively, and $29.5 million and 58.4 million for the three and six months ended June 30, 2022, respectively. Cash used by operating activities was $71.1 million and $59.8 million during the six months ended June 30, 2023 and 2022, respectively. The Company had an accumulated deficit of $590.3 million and $521.1 million as of June 30, 2023 and December 31, 2022, respectively. As of June 30, 2023, the Company had cash, cash equivalents and marketable securities of $114.5 million. The Company's cash, cash equivalents and marketable securities are not sufficient to fund the Company's planned operations for a period of 12 months from the date the financial statements are issued. To fund the Company's planned operations, the Company will need to raise additional capital. The Company intends to raise additional capital through private and public equity offerings, including our "at-the-market" offering programs, debt financings, and potential future collaboration, license and development agreements. However, there can be no assurance that the Company will be successful in acquiring additional funding at levels sufficient to fund its operations or on terms acceptable to the Company. If the Company is unsuccessful in its efforts to raise additional capital or if sufficient funds on acceptable terms are not available when needed, the Company could be required to significantly reduce operating expenses and delay, reduce the scope of or eliminate one or more of its development programs or its future commercialization efforts, out-license intellectual property rights to its product candidates and sell unsecured assets, or a combination of the above, any of which may have a material adverse effect on the Company's business, results of operations, financial condition and/or its ability to fund its scheduled obligations on a timely basis or at all. Failure to manage discretionary spending or raise additional capital, as needed, may adversely impact the Company's ability to achieve its intended business objectives. These conditions raise substantial doubt about the Company's ability to continue as a going concern for a period of one year from the date of the issuance of these condensed consolidated financial statements. The accompanying condensed consolidated financial statements have been prepared assuming that the Company will continue as a going concern, which contemplates the realization of assets and the settlement of liabilities and commitments in the normal course of business. The condensed consolidated financial statements do not reflect any adjustments relating to the recoverability and classification of assets or the amounts and classification of liabilities that might be necessary if the Company is unable to continue as a going concern.

2. Summary of Significant Accounting Policies

Basis of Presentation

The accompanying interim condensed consolidated financial statements are unaudited and are comprised of the consolidation of the Company and its wholly-owned subsidiary. All intercompany balances and transactions have been eliminated in consolidation. The Company has no unconsolidated subsidiaries or investments accounted for under the equity method.

The accompanying interim condensed consolidated financial statements have been prepared in accordance with United States generally accepted accounting principles ("U.S. GAAP") and the rules and regulations of the Securities and Exchange Commission (the "SEC") for interim reporting.

The interim condensed consolidated financial statements are unaudited and, in the opinion of management, reflect all adjustments, consisting only of normal recurring adjustments, necessary for the fair presentation for interim reporting. The results of operations for any interim period are not necessarily indicative of results of operations for any future period.

Certain information and footnote disclosures typically included in annual financial statements prepared in accordance with U.S. GAAP have been condensed or omitted. Accordingly, these unaudited interim condensed consolidated financial statements should be read in conjunction with the Company's audited financial statements as of and for the year ended December 31, 2022, which are included in the Company's Annual Report on Form 10-K for the year ended December 31, 2022, as filed with the SEC on March 9, 2023.

Use of Estimates

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and judgments that affect the reported amounts of assets and liabilities and disclosures of contingent liabilities as of the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Management bases its estimates on historical experience and on various other market-specific and relevant assumptions that management believes to be reasonable under the circumstances. Actual results could differ from those estimates.

Fair Value of Financial Instruments

U.S. GAAP establishes a fair value hierarchy for instruments measured at fair value that distinguishes between assumptions based on market data (observable inputs) and the Company's own assumptions (unobservable inputs). Observable inputs are inputs that market participants would use in pricing the asset or liability based on market data obtained from sources independent of the Company. Unobservable inputs are inputs that reflect the Company's assumptions about the inputs that market participants would use in pricing the asset or liability and are developed based on the best information available in the circumstances.

Fair value is established as the exchange price, or exit price, representing the amount that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants. As a basis for considering market participant assumptions in fair value measurements, an established three-tier fair value hierarchy distinguishes between the following:

- Level 1 inputs are quoted prices in active markets that are accessible at the market date for identical assets or liabilities.
- Level 2 inputs are inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly.
- Level 3 inputs are unobservable inputs that reflect the Company's own assumptions about the assumptions market participants would use in pricing the assets or liability. Financial assets and liabilities are classified in their entirety based on the lowest level of input that is significant to the fair value measurement.

To the extent that the valuation is based on models or inputs that are less observable or unobservable in the market, the determination of fair value requires more judgment. Accordingly, the degree of judgment exercised by the Company in determining fair value is greatest for instruments categorized in Level 3. A financial instrument's level within the fair value hierarchy is based on the lowest level of any input that is significant to the fair value instrument.

The carrying amounts reflected on the condensed consolidated balance sheets for cash and cash equivalents, prepaid expenses and other current assets, accounts payable, accrued compensation and accrued liabilities approximate their fair values due to their short-term nature.

Debt Issuance Costs and Debt Discounts

Debt issuance costs include legal fees, accounting fees and other direct costs incurred in connection with the execution of the Company's debt financing. Debt discounts represent costs paid to the lenders. Debt issuance costs

and debt discounts are deducted from the carrying amount of the debt liability and are amortized to interest expense over the term of the related debt using the effective interest method.

Concentrations of Credit Risk

Financial instruments that potentially subject the Company to concentrations of credit risk consist of cash, cash equivalents and marketable securities. Cash, cash equivalents and marketable securities are invested through banks and other financial institutions in the United States. Such deposits may be in excess of federally insured limits. The Company maintains cash equivalents and marketable securities with various high-credit-quality and capitalized financial institutions. The Company has not experienced any credit losses in such accounts and does not believe it is exposed to any significant credit risk on these funds.

The Company's investment policy limits investments to certain types of securities issued by the U.S. government, its agencies and institutions with investment-grade credit ratings and places restrictions on maturities and concentration by type and issuer. The Company is exposed to credit risk in the event of a default by the financial institutions holding its cash, cash equivalents and marketable securities and issuers of marketable securities to the extent recorded on the condensed consolidated balance sheets. As of June 30, 2023, the Company has no off-balance sheet concentrations of credit risk.

Other Risks and Uncertainties

The Company is subject to a number of risks similar to those of other clinical-stage biotechnology companies, including dependence on key individuals; the need to develop commercially viable therapeutics; competition from other companies, many of which are larger and better capitalized; and the need to obtain adequate additional financing to fund the development of its products. The Company currently depends on third-party suppliers for key materials and services used in its research and development manufacturing process and is subject to certain risks related to the loss of these third-party suppliers or their inability to supply the Company with adequate materials and services. Further, the Company is subject to broad market risks and uncertainties resulting from recent events, such as the COVID-19 pandemic, the Russian invasion of Ukraine, inflation, rising interest rates and recession risks, as well as supply chain and labor shortages.

Cash, Cash Equivalents and Restricted Cash

Cash equivalents, which consist primarily of highly liquid investments with original maturities of three (3) months or less when purchased, are stated at fair value. These assets include investments in money market funds that invest in U.S. Treasury obligations and certificates of deposit, which are stated at fair value.

The Company has issued letters of credit under certain lease agreements that have been collateralized by cash deposits for an equal amount and are recorded within short-term restricted cash and deposits and other long-term assets on the condensed consolidated balance sheets based on the term of the underlying lease. Additionally, the Company's restricted cash includes payments received under the Coalition for Epidemic Preparedness Innovations ("CEPI") Funding Agreement, dated as of August 14, 2021 (the "CEPI Funding Agreement") and the Gates Foundation Grant Agreement (see Note 9). The Company will utilize the CEPI and Gates Foundation funds as it incurs expenses for services performed under the agreements.

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

	June 30, 2023	December 31, 2022
Cash and cash equivalents	$ 41,414	$ 55,498
Restricted cash	2,437	3,977
Long-term restricted cash	5,290	5,290
Total cash, cash equivalents and restricted cash	$ 49,141	$ 64,765

Leases

The Company determines whether the arrangement is or contains a lease at the inception of the arrangement and if such a lease is classified as a financing lease or operating lease. The majority of the Company's leases are classified as operating leases. Leases with a term greater than one year are included in operating lease ROU Assets, lease liabilities, current portion, and lease liabilities, net of current portion in the Company's condensed consolidated balance sheets as of June 30, 2023 and December 31, 2022. The Company has elected not to recognize on the condensed consolidated balance sheets leases with terms of one year or less. Lease liabilities and their corresponding ROU Assets are recorded based on the present value of lease payments over the expected lease term. In determining the net present value of lease payments, the interest rate implicit in lease contracts is typically not readily determinable. As such, the Company estimates the appropriate incremental borrowing rate, which is the rate that would be incurred to borrow on a collateralized basis over a similar term an amount equal to the lease payments in a similar economic environment. Certain adjustments to the ROU Assets may be required for items such as initial direct costs paid or incentives received and impairment charges if the Company determines the ROU Asset is impaired.

The Company considers a lease term to be the non-cancelable period that it has the right to use the underlying asset, including any periods where it is reasonably assured the Company will exercise the option to extend the contract. Periods covered by an option to extend are included in the lease term if the lessor controls the exercise of that option.

The Company recognizes lease expense on a straight-line basis over the expected lease term.

The Company has elected not to separate lease and non-lease components for its leased assets and accounts for all lease and non-lease components of its agreements as a single lease component. The lease components resulting in an ROU Asset have been recorded on the condensed consolidated balance sheets and amortized as lease expense on a straight-line basis over the lease term.

Revenue Recognition

The Company performs research and development under collaboration, license, grant and clinical development agreements. The Company's revenue primarily consists of collaboration agreements and grant agreements. At contract inception, the Company analyzes a revenue arrangement to determine the appropriate accounting under U.S. GAAP. Currently, the Company's revenue arrangements represent customer contracts within the scope of ASC Topic 606, Revenue from Contracts with Customers (Topic 606) ("ASC 606") or are subject to the contribution guidance in ASC Topic 958-605, Not-for-Profit Entities – Revenue Recognition ("ASC 958-605"), which applies to business entities that receive contributions within the scope of ASC 958-605.

For collaboration agreements, the Company analyzes such arrangements to assess whether they involve joint operating activities performed by parties that are both active participants in the activities and exposed to significant risks and rewards dependent on the commercial success of such activities. This assessment is performed throughout the life of the arrangement based on changes in the responsibilities of all parties in the arrangement. For collaboration arrangements that are considered to be in the scope of the collaboration guidance and that contain multiple elements, the Company first determines which elements of the collaboration are deemed to be within the scope of the collaboration guidance and those that are more reflective of a vendor-customer relationship and, therefore, within the scope of the revenue with contracts with customers guidance. Elements of collaboration arrangements that are reflective of a vendor-customer relationship are accounted for pursuant to the revenue from contracts with customers guidance. The terms of the licensing and collaboration agreements entered into typically include payment of one or more of the following: non-refundable, up-front fees; development, regulatory, and commercial milestone payments; payments for manufacturing supply services; and royalties on net sales of licensed products. Each of these payments results in license, collaboration and other revenues, except for revenues from royalties on net sales of licensed products, which are classified as royalty revenues. The core principle of the accounting for revenue from contracts with customers guidance is to recognize revenues when promised goods or services are transferred to customers in an amount that reflects the consideration that is expected to be received in exchange for those goods or services.

In determining the appropriate amount of revenue to be recognized as the Company fulfills its obligations under each of its agreements, the Company performs the following steps: (i) identification of the promised goods or services in the contract; (ii) determination of whether the promised goods or services are performance obligations, including whether they are distinct in the context of the contract; (iii) measurement of the transaction price, including the constraint on variable consideration; (iv) allocation of the transaction price to the performance obligations based

on estimated selling prices; and (v) recognition of revenue when (or as) the Company satisfies each performance obligation.

Amounts received prior to satisfying the revenue recognition criteria are recorded as deferred revenue in the Company's condensed consolidated balance sheets. If the related performance obligation is expected to be satisfied within the next twelve (12) months, this will be classified in current liabilities. Amounts recognized as revenue prior to receipt are recorded as contract assets in the Company's condensed consolidated balance sheets. If the Company expects to have an unconditional right to receive consideration in the next twelve (12) months, this will be classified in current assets. A net contract asset or liability is presented for each contract with a customer.

At contract inception, the Company assesses the goods or services promised in a contract with a customer and identifies those distinct goods and services that represent a performance obligation. A promised good or service may not be identified as a performance obligation if it is immaterial in the context of the contract with the customer, if it is not separately identifiable from other promises in the contract (either because it is not capable of being separated or because it is not separable in the context of the contract), or if the performance obligation does not provide the customer with a material right.

The Company considers the terms of the contract and its customary business practices to determine the transaction price. The transaction price is the amount of consideration to which the Company expects to be entitled in exchange for transferring promised goods or services to a customer. The consideration promised in a contract with a customer may include fixed amounts, variable amounts, or both. Variable consideration will only be included in the transaction price when it is not considered constrained, which is when it is probable that a significant reversal in the amount of cumulative revenue recognized will not occur.

If it is determined that multiple performance obligations exist, the transaction price is allocated at the inception of the agreement to all identified performance obligations, based on the relative standalone selling prices. The relative selling price for each performance obligation is estimated using objective evidence if it is available. If objective evidence is not available, the Company uses its best estimate of the selling price for the performance obligation.

Revenue is recognized when, or as, the Company satisfies a performance obligation by transferring a promised good or service to a customer. An asset is transferred when, or as, the customer obtains control of that asset, which for a service is considered to be as the services are received and used. The Company recognizes revenue over time by measuring the progress toward complete satisfaction of the relevant performance obligation, using an appropriate input or output method based on the nature of the good or service promised to the customer.

After contract inception, the transaction price is reassessed at every period end and updated for changes, such as resolution of uncertain events. Any change in the transaction price is allocated to the performance obligations on the same basis as at contract inception.

Management may be required to exercise considerable judgment in estimating revenue to be recognized. Judgment is required in identifying performance obligations, estimating the transaction price, estimating the stand-alone selling prices of identified performance obligations (which may include forecasted revenue, development timelines, reimbursement rates for personnel costs, discount rates and probabilities of technical and regulatory success) and estimating the progress towards satisfaction of performance obligations.

For grant funding agreements, grant revenue is recognized during the period that the research and development services occur, as qualifying expenses are incurred. The Company concluded that payments received under these grants represent nonreciprocal contributions, as described in ASC 958, Not-for-Profit Entities, and that the grants are not within the scope of ASC 606 as the organization providing the grant does not meet the definition of a customer. Grant revenue relates primarily to the CEPI and Gates Funding Agreements (see Note 9).

Income Taxes

The Company did not record income tax expense for the three and six months ended June 30, 2023 and 2022, respectively, as the Company expected to be in a cumulative taxable loss position in 2023 and 2022, and the net deferred tax assets are fully offset by a valuation allowance as it is not more likely than not that the benefit will be realized. As of June 30, 2023, the Company remains in a cumulative book loss position and does not have sufficient positive evidence to realize its net deferred tax assets. As such, the Company continues to maintain a full valuation allowance against its net deferred tax assets.

Effective January 1, 2022, a provision of the Tax Cuts and Jobs Act (TCJA) took effect creating a significant change to the treatment of research and experimental expenditures under Section 174 of the Internal Revenue Code (Sec. 174 expenses). Historically, businesses have had the option of deducting Sec. 174 expenses in the year incurred or capitalizing and amortizing the costs over five years. The new TCJA provision, however, eliminates this option and will require Sec. 174 expenses associated with research conducted in the United States to be capitalized and amortized over a five-year period. For expenses associated with research outside of the United States, Sec. 174 expenses will be capitalized and amortized over a 15-year period. This provision did not have a material impact to the Company's condensed consolidated financial statements.

Recently Issued Accounting Pronouncements Not Yet Adopted

In August 2020, the FASB issued ASU No. 2020-06, *Debt - Debt with Conversion and Other Options* (Subtopic 470-20) and *Derivatives and Hedging - Contracts in Entity's Own Equity* ("ASU 2020-06"). The standard eliminates the beneficial conversion and cash conversion accounting models for convertible instruments. It also amends the accounting for certain contracts in an entity's own equity that are currently accounted for as derivatives because of specific settlement provisions. In addition, the standard modifies how particular convertible instruments and certain contracts that may be settled in cash or shares impact the diluted EPS computation. The amendments in ASU 2020-06 are effective for the Company as defined by the SEC for fiscal years beginning after December 15, 2023, including interim periods within those fiscal years. Early adoption is permitted, but not earlier than fiscal years beginning after December 15, 2020. The Company does not expect the adoption of ASU 2020-06 to have a material impact on its condensed consolidated financial statements and related disclosures.

3. Cash Equivalents and Marketable Securities

The amortized costs, unrealized gains and losses and fair values of cash equivalents and marketable securities were as follows (in thousands):

	June 30, 2023			
Description	**Amortized Cost**	**Unrealized Gains**	**Unrealized Losses**	**Fair Value**
Cash equivalents:				
Money market funds	$ 31,922	$ —	$ —	$ 31,922
Total cash equivalents	31,922	—	—	31,922
Short-term marketable securities:				
Certificates of deposit	948	—	—	948
Commercial paper	13,494	1	(24)	13,471
Corporate debt securities	13,233	—	(27)	13,206
U.S. government treasuries	17,923	—	(32)	17,891
U.S. government debt securities	27,157	1	(43)	27,115
Asset backed securities	489	—	(1)	488
Total short-term marketable securities	73,244	2	(127)	73,119
Total	$ 105,166	$ 2	$ (127)	$ 105,041

Description	December 31, 2022 Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value
Cash equivalents:				
Money market funds	$ 38,191	$ —	$ —	$ 38,191
Total cash equivalents	38,191	—	—	38,191
Short-term marketable securities:				
Certificates of deposit	948	1	—	949
Commercial paper	33,318	23	(13)	33,328
Corporate debt securities	21,887	6	(40)	21,853
U.S. government treasuries	35,608	3	(71)	35,540
U.S. government debt securities	24,703	22	(6)	24,719
Total short-term marketable securities	116,464	55	(130)	116,389
Long-term marketable securities:				
Corporate debt securities	933	—	(1)	932
U.S. government treasuries	3,103	—	(4)	3,099
Total long-term marketable securities	4,036	—	(5)	4,031
Total	$ 158,691	$ 55	$ (135)	$ 158,611

All marketable securities held as of June 30, 2023 had contractual maturities of less than one year. There have been no material realized gains or losses on marketable securities for the periods presented. As of June 30, 2023, the Company did not hold any individual securities in an unrealized loss position for 12 months or greater. The Company has the ability and intent to hold all marketable securities that have been in a continuous loss position until maturity or recovery. No significant facts or circumstances have arisen to indicate that there has been any significant deterioration in the creditworthiness of the issuers of the securities held by us. The Company considered the current and expected future economic and market conditions and determined that the estimate of credit losses was not significantly impacted. Thus, there has been no change in estimate of expected credit loss during the three and six months ended June 30, 2023 and 2022 and no allowance for credit loss was recorded at June 30, 2023 and December 31, 2022. The Company will continue to assess the current and expected future economic and market conditions as further development arises.

See Note 4 for further information regarding the fair value of the Company's financial instruments.

4. Fair Value Measurements

The Company's financial assets subject to fair value measurements on a recurring basis and the level of inputs used in such measurements were as follows (in thousands):

Description	June 30, 2023 Total	Level 1	Level 2	Level 3
Cash equivalents:				
Money market funds	$ 31,922	$ 31,922	$ —	$ —
Total cash equivalents	31,922	31,922	—	—
Short-term marketable securities:				
Certificates of deposit	948	—	948	—
Commercial paper	13,471	—	13,471	—
Corporate debt securities	13,206	—	13,206	—
U.S. government treasuries	17,891	17,891	—	—
U.S. government debt securities	27,115	—	27,115	—
Asset backed securities	488	—	488	—
Total short-term marketable securities	73,119	17,891	55,228	—
Total	$ 105,041	$ 49,813	$ 55,228	$ —

Description	December 31, 2022 Total	Level 1	Level 2	Level 3
Cash equivalents:				
Money market funds	$ 38,191	$ 38,191	$ —	$ —
Total cash equivalents	38,191	38,191	—	—
Short-term marketable securities:				
Certificates of deposit	949	—	949	—
Commercial paper	33,328	—	33,328	—
Corporate debt securities	21,853	—	21,853	—
U.S. government treasuries	35,540	35,540	—	—
U.S. government debt securities	24,719	—	24,719	—
Total short-term marketable securities	116,389	35,540	80,849	—
Long-term marketable securities:				
Corporate debt securities	932	—	932	—
U.S. government treasuries	3,099	3,099	—	—
Total long-term marketable securities	4,031	3,099	932	—
Total	$ 158,611	$ 76,830	$ 81,781	$ —

The Company measures the fair value of money market funds and U.S. treasuries based on quoted prices in active markets for identical securities. Commercial paper, corporate debt securities, certificates of deposits, asset backed securities, and U.S. government debt securities are valued taking into consideration valuations obtained from third-party pricing services. These pricing services utilize industry standard valuation models, including both income and market-based approaches, for which all significant inputs are observable, either directly or indirectly, to estimate fair value. These inputs include reported trades of, and broker/dealer quotes on, the same or similar securities, issuer credit spreads; benchmark securities; prepayment/default projections based on historical data; and other observable inputs.

There were no transfers between Level 1 and Level 2 during the periods presented. See Note 3 for further information regarding the amortized cost of the Company's financial instruments.

5. Property and Equipment, Net

Property and equipment and related accumulated depreciation and amortization are as follows (in thousands):

	June 30, 2023	December 31, 2022
Computer equipment and software	$ 1,716	$ 1,155
Furniture and fixtures	3,006	2,285
Laboratory equipment	28,011	27,309
Leasehold improvements	18,634	18,024
	51,367	48,773
Less accumulated depreciation and amortization	(32,096)	(28,782)
Construction-in-progress	1,172	1,344
Total property and equipment, net	$ 20,443	$ 21,335

Depreciation and amortization expense was $1.9 million and $3.7 million for the three and six months ended June 30, 2023, respectively, and $1.5 million and $3.1 million for the three and six months ended June 30, 2022, respectively.

6. Commitments and Contingencies

Leases

The Company leases office, laboratory and storage space in facilities at several locations:

Emeryville Lease

The Company's principal executive offices in Emeryville, California, consisting of office and laboratory space, are leased pursuant to a 120-month operating lease (the "Emeryville Lease"), which the Company entered into in January 2019, with the obligation to pay rent commencing in November 2019. In conjunction with signing the Emeryville Lease, the Company paid a cash security deposit of $0.6 million, which is recorded as a deposit on the Company's condensed consolidated balance sheet as of June 30, 2023. The Emeryville Lease includes a free rent period, an escalation clause for increased rent and a renewal provision allowing the Company to extend this lease for an additional two five-year periods at the then market rental rate. The lessor provided the Company a tenant improvement allowance for a total of $4.0 million to complete the laboratory and office renovation. The Company has determined the tenant improvements to be lessee owned and therefore has recorded a $7.7 million ROU Asset and a $12.2 million lease liability on the condensed consolidated balance sheet as of June 30, 2023. The Company recorded a $8.1 million ROU Asset and a $12.8 million lease liability on the consolidated balance sheet as of December 31, 2022.

Pleasanton Leases

The Company leases 42,620 square feet of office, cleanroom, and laboratory support manufacturing space in Pleasanton, California pursuant to a non-cancelable operating lease (the "Pleasanton Lease"), which the Company entered into in March 2017, with the obligation to pay rent commencing in December 2017. The Pleasanton Lease includes a free rent period, escalating rent payments and a term that expires on November 30, 2024. The Company may extend the lease term for a period of five years at the then market rental rate. The Company obtained an irrevocable letter of credit in March 2017 in the initial amount of approximately $1.0 million as a security deposit to the Pleasanton Lease, which may be drawn down by the landlord in the event the Company fails to fully and faithfully perform its obligations under the Pleasanton lease. The letter of credit may be reduced based on certain levels of cash and cash equivalents the Company holds. In October 2022, the letter of credit was reduced to a balance of $0.6 million. As of June 30, 2023, none of the irrevocable letter of credit amount had been drawn. The Pleasanton Lease further provides that the Company is obligated to pay to the landlord its proportionate share of certain basic operating costs, including taxes and operating expenses.

In connection with the Pleasanton Lease, the Company received a tenant improvement allowance of $1.2 million from the landlord for the costs associated with the design, development and construction of tenant improvements. The unamortized tenant improvement balance is recognized as a component of operating lease ROU Assets on the condensed consolidated balance sheets as of June 30, 2023 and December 31, 2022.

In addition, in May 2019, the Company entered into a 64-month non-cancelable operating lease for additional office space in Pleasanton, California, with an obligation to pay rent commencing in August 2019. In January 2022, the Company amended the lease to add additional leased space and extend the lease expiration date to February 2027.

Cambridge Leases

The Company leases laboratory, office and storage space in several facilities in Cambridge, Massachusetts, pursuant to three separate agreements:

The Company's facility located at 40 Erie Street in Cambridge, Massachusetts is leased pursuant to a 67-month non-cancelable operating lease (the "40 Erie Lease"), which the Company entered into in February 2016, with an obligation to pay rent commencing in October 2016. The lessor provided the Company a tenant improvement allowance for a total of $2.1 million to complete the laboratory and office renovation. In September 2021, the Company executed an amendment to the 40 Erie Lease, which extends its term through April 2025 and provides for monthly base rent amounts, subject to annual increases over the term of the lease.

The Company's facility located at 21 Erie Street in Cambridge, Massachusetts is leased pursuant to a 24-month non-cancelable operating lease (the "21 Erie Lease"), which the Company entered into in September 2018. The 21 Erie Lease has since been amended five times, as a result of which the lease term extends through June 2023.

In March 2021, the Company entered into a 17-month operating lease (the “Cambridge Storage Lease”) for additional office and laboratory storage space in Cambridge, Massachusetts, which commenced on April 1, 2021. The Company also paid an insignificant cash security deposit. The Cambridge Storage Lease was amended in June 2022 to extend the lease term through June 30, 2023.

In conjunction with the 40 Erie Lease, the 21 Erie Lease and the Cambridge Storage Lease, each as amended (if applicable), the Company has paid certain cash security deposits, which in each case included amounts for the applicable last month’s rent and has been classified as part of the operating lease ROU Assets. As of June 30, 2023, of the $0.5 million security deposits, $0.2 million was recorded in prepaids and other assets and the remaining $0.3 million was recorded in deposits and other long-term assets on the Company's condensed consolidated balance sheet. As of December 31, 2022, of the $0.7 million security deposits, $0.4 million was recorded in prepaids and other assets and the remaining $0.3 million was recorded in deposits and other long-term assets on the Company's condensed consolidated balance sheet.

Boston Lease

The Company plans to occupy a newly built facility in Boston, Massachusetts, with office and laboratory space, in the second half of 2023 pursuant to a 120-month operating lease (the “Boston Lease”), which the Company entered into in September 2021. The Boston Lease includes a free rent period, an escalation clause for increased rent and a renewal provision allowing the Company to extend the Boston Lease for two additional five-year periods at the then market rental rate. The landlord provided the Company with a tenant improvement allowance of up to approximately $19.1 million for costs relating to the design, permitting and construction of improvements owned by the landlord. The Company has incurred tenant improvement costs relating to the initial design and construction of the improvements before the commencement date which is accounted for as lease prepayments. The Company’s obligation to pay rent is expected to commence in the second half of 2023, subject to free rent periods of three and six months with respect to certain premises. The Company was provided early access to the premises to install fixtures and equipment 60 days prior to the anticipated rent commencement date. The Boston Lease expires in 2033. The Boston Lease further provides that the Company is obligated to pay to the landlord its proportionate share of certain basic operating costs, including taxes and operating expenses. In connection with the Boston Lease and as a security deposit thereunder, the Company has provided the landlord an irrevocable letter of credit in the amount of approximately $4.6 million, which is collateralized by a restricted cash deposit of $4.7 million, and which may be reduced in the fifth and seventh years of the Boston Lease. As of June 30, 2023, none of the irrevocable letter of credit amount had been drawn.

The Boston Lease commenced in April 2023, when the Company was provided early access to the premises and gained control over the use of the underlying assets. Upon commencement, the Company recognized an ROU asset of $59.3 million and a lease liability of $50.9 million on the condensed consolidated balance sheet. Upon commencement, the ROU asset includes $8.4 million of lease prepayments made before the commencement date, which is primarily related to the lessor owned tenant improvement cost.

The Company’s operating leases include various covenants, indemnities, defaults, termination rights, security deposits and other provisions customary for lease transactions of this nature.

The components of lease costs, which were included in our condensed consolidated statements of operations and comprehensive loss, were as follows (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
Lease cost				
Operating lease cost	$ 4,439	$ 2,268	$ 6,603	$ 4,521
Total lease cost	$ 4,439	$ 2,268	$ 6,603	$ 4,521

Supplemental information related to leases was as follows:

	Six Months Ended June 30,	
	2023	2022
Cash paid for amounts included in the measurement of lease liabilities (in thousands):		
Operating cash flows from operating leases	$ 12,256	$ 4,193
New right-of-use assets obtained in exchange for lease obligations (in thousands):		
Operating leases	$ 59,320	$ 781
Weighted-average remaining lease term (years):		
Operating leases	8.6	5.1
Weighted-average discount rate:		
Operating leases	9.9%	7.4%

As of June 30, 2023, minimum annual rental payments under the Company's lease agreements are as follows (in thousands):

	Lease Financing Obligation
Year ending December 31,	
2023 (remaining six months)	$ 4,625
2024	12,637
2025	10,695
2026	10,413
2027	10,504
Thereafter	51,024
Total minimum payments	99,898
Less: Amounts representing interest expense	(34,236)
Present value of future minimum lease payments	65,662
Less: Current portion of lease liability	(4,838)
Noncurrent portion of lease liability	$ 60,824

Guarantees and Indemnifications

The Company, as permitted under Delaware law and in accordance with its certificate of incorporation and bylaws, and pursuant to indemnification agreements with certain of its officers and directors, indemnifies its officers and directors for certain events or occurrences, subject to certain limits, with respect to which the officer or director is or was serving at the Company's request in such capacity. The term of the indemnification period lasts as long as an officer or director may be subject to any proceeding arising out of acts or omissions of such officer or director in such capacity. The maximum amount of potential future indemnification is unlimited; however, the Company currently holds director and officer liability insurance. This insurance limits the Company's exposure and may enable it to recover a portion of any future amounts paid. The Company believes that the fair value of these indemnification obligations is minimal. Accordingly, the Company has not recognized any liabilities relating to these obligations for any period presented.

7. Balance Sheet Components

Prepaid Expenses and Other Current Assets

Prepaid expenses and other current assets consist of the following (in thousands):

	June 30, 2023	December 31, 2022
Prepaid research and development-related expenses	$ 3,694	$ 4,241
Collaboration receivable	56	135
Prepaid insurance	391	1,158
Interest and other receivables	343	529
Facilities-related deposits	204	384
Other	718	567
Total prepaid expenses and other current assets	$ 5,406	$ 7,014

Deposits and Other Long-Term Assets

Deposits and other long-term assets consist of the following (in thousands):

	June 30, 2023	December 31, 2022
Lease security deposits	$ 934	$ 934
Prepaid research and development-related expenses	450	643
Prepaid rent	1,145	8,162
Total deposits and other long-term assets	$ 2,529	$ 9,739

8. Debt

In July 2022, the Company entered into a loan and security agreement (the “Loan Agreement”) with Hercules Capital, Inc. (“Hercules”) and Silicon Valley Bank (“SVB”), which provides the Company a 60-month term loan facility for up to $80.0 million in borrowing capacity across five potential tranches. At the closing of the Loan Agreement, the Company drew $20.0 million from the first tranche and in March 2023, the Company drew an additional $10.0 million. The remaining tranches provide up to $50.0 million borrowing capacity and become available upon the Company meeting certain milestones set forth in the Loan Agreement. In the fourth quarter of 2022, one milestone had been achieved, which provides the Company the ability to draw up to $10 million through December 15, 2023. As of June 30, 2023, the additional $10 million remains available to be drawn by the Company. The term loan is secured by substantially all of the Company’s assets, other than intellectual property. There are no warrants associated with the Loan Agreement.

Borrowings under the Loan Agreement bear interest (i) at an annual cash rate equal to the greater of (x) the lesser of (1) the prime rate (as customarily defined) and (2) 5.50%, in either case, plus 3.15%, and (y) 7.15% and (ii) at an annual payment-in-kind rate which may equal 2.00%. The Company is required to make monthly interest-only payments prior to the amortization date of January 1, 2025, subject to a potential six-month and one-year extension upon satisfaction of certain conditions. The interest-only payment date has been extended an additional six months based on the Company's achievement of one of the milestones as set forth in the Loan Agreement. In addition, the Company paid a $150,000 facility charge upon closing, and the Company must pay a facility charge equal to 0.50% of the principal amount of any borrowings made pursuant to the amounts under the last four tranches.

All unpaid principal and accrued and unpaid interest with respect to each term loan is due and payable in full on July 19, 2027. At the Company’s option, the Company may prepay all or any portion of the outstanding borrowings, plus accrued and unpaid interest thereon and fees and expenses, subject to a prepayment premium ranging from zero to 2.5%, during the first three years after closing, depending on the year of such prepayment. Upon repayment of the term loan, the Company is required to make a final payment fee to the lenders equal to 5.75% of the aggregate original principal amount of the loan. Debt issuance costs have been treated as debt discounts on the Company’s consolidated balance sheet and together with the final payment are being amortized to interest expense throughout the life of the term loan using the effective interest rate method.

In March 2023, Gritstone, Hercules and SVB amended the Loan Agreement to change the minimum liquidity requirements. Under the amended Loan Agreement, beginning on the earliest occurrence of certain milestones or April 1, 2024, and at all times thereafter, so long as the Company's market capitalization is no greater than $400.0 million, the Company is subject to a minimum liquidity requirement equal to the then outstanding balance under the Loan Agreement multiplied by 0.55 or 0.45, which multiplier depends on whether the Company achieves certain performance milestones.

The Company's obligations under the Loan Agreement, as amended, are subject to acceleration upon the occurrence of customary events of default, including payment default, insolvency and the occurrence of certain events having a material adverse effect on the Company, including (but not limited to) material adverse effects upon the business, operations, properties, assets or financial condition of the Company and its subsidiaries, taken as a whole. As of June 30, 2023, the Company is in compliance with all covenants in the Loan Agreement, as amended.

As of June 30, 2023, there were debt discounts, unamortized issuance costs and unaccreted value of the final fee of $2.0 million which were recorded as a direct deduction from the term loan on the condensed consolidated balance sheet. Interest expense related to the Loan Agreement was $1.0 and $1.8 million, respectively, for the three and six months ended June 30, 2023. The effective interest rate on the term loan, including the amortization of the debt discount and issuance costs, and accretion of the final payment, was 13%. The components of the long-term debt balance are as follows:

	June 30, 2023
Principal loan balance	$ 30,000
Final fee	1,725
Unamortized debt discount, issuance costs, and unaccreted value of final fee	(2,002)
Long term debt, net	$ 29,723

As of June 30, 2023, the estimated future principal payments due (excluding the final payment fee) were as follows:

2023 (remaining six months)	$ —
2024	—
2025	6,616
2026	14,108
2027	9,276
Total principal payments	$ 30,000

9. Collaboration and License Agreements and Grant Revenue

2seventy bio, Inc.

In August 2018, the Company entered into a Research Collaboration and License Agreement with bluebird bio, Inc. ("bluebird"). In November 2021, bluebird assigned the Research Collaboration and License Agreement (the "2seventy Agreement") to its affiliate, 2seventy bio, Inc. ("2seventy"), in connection with bluebirds restructuring and subsequent spin-out of 2seventy. Under the terms of the 2seventy Agreement, the Company provides to 2seventy tumor-specific targets across several tumor types and, in certain cases, T cell receptors (TCR) directed to those targets. The Company received a non-refundable upfront payment of $20.0 million, and 2seventy also concurrently acquired 768,115 shares of the Company's Series C convertible preferred stock for $10.0 million at $13.04 per share. Per the 2seventy Agreement, 2seventy was also provided an option to acquire shares of the Company's common stock at the same price as all other investors in connection with the Company's initial public offering ("IPO"). In October 2018, 2seventy purchased 666,667 shares of the Company's common stock at the price to the public of $15.00 per share for a total of $10.0 million. Under the terms of the 2seventy Agreement, the Company is eligible to earn development, regulatory, and sales-based milestones in an amount of up to $1.2 billion, and single-digit royalties on sales of products that utilize the technology subject to the 2seventy Agreement. None of these events had occurred as of June 30, 2023, and no royalties were due from the sale of licensed products.

In August 2019, the Company entered into a First Amendment to the 2seventy Agreement, which extended the timeline for the Company and 2seventy to execute a Patient Selection Services Agreement from within one year to within two years after the effective date of the 2seventy Agreement. In August 2020, the Company entered into a Second Amendment, which extended the timeline of the Patient Selection Services Agreement to within three years and also extended the Tissue Analysis Period from February 28, 2021 to June 30, 2021. In April 2021, the Company entered into a Third Amendment, which removed the Patient Selection Services Agreement in its entirety and extended the Tissue Analysis Period from June 30, 2021 to December 31, 2021. The amendments were entered into for administrative purposes, and the Company determined the amendments were not a modification of contract under the contract with customers guidance.

2seventy may terminate the 2seventy Agreement by giving a 120-day prior written notice to the Company at any time after the effective date of the agreement. Unless terminated early, the agreement has a term that ends upon the last payment owed by the Company on a licensed product. The 2seventy Agreement may be terminated for cause by either party based on uncured material breach by the other party or bankruptcy of the other party. Upon early termination, all ongoing activities under the agreement and all mutual collaboration, development and commercialization licenses and sublicenses will terminate. The licenses granted by the Company to 2seventy under the licensed intellectual property will remain in effect in accordance with their respective terms. Additionally, all of 2seventy's payment obligations that have not yet accrued related to future milestone and royalty payments will be reduced by 50% for the remainder of the agreement term.

The Company concluded that 2seventy is a customer, and the contract is not subject to guidance on collaborative arrangements. This is because the Company granted to 2seventy a license to its intellectual property and provided research and development services, all of which are outputs of the Company's ongoing activities, in exchange for consideration.

The Company identified the following three material promises under the 2seventy Agreement: (i) transfer of a license to intellectual property and related technology know-how ("License and Know-How"); (ii) the obligation to perform target selection and TCR generation services ("Research and Development Services"); and (iii) participation on the Joint Steering Committee (the "JSC"). The Company provided to 2seventy standard indemnification and protection of licensed intellectual property, which is part of assurance that the license meets the contract's specifications and is not an obligation to provide goods or services.

The Company considered that the License and Know-How has standalone functionality, was considered to be functional intellectual property, and is capable of being distinct. However, the Company determined that the License and Know-How is not distinct from the Research and Development Services or participation on the JSC within the context of the 2seventy Agreement, because 2seventy is dependent on the Company to execute the Research and Development Services and participate on the JSC in order for 2seventy to benefit from the License and Know-How. As such, the License and Know-How is combined with the Research and Development Services and participation on the JSC into a single performance obligation, and the transaction price under this arrangement will be allocated to this single performance obligation.

The Company has also determined that all other goods or services that are contingent upon 2seventy reaching various milestones are not considered performance obligations at the inception of the arrangement.

The transaction price at the inception of the 2seventy Agreement consisted of the upfront payment of $20.0 million and the $10.0 million received from 2seventy for the purchase of the Company's Series C convertible preferred stock. The sale of the Series C convertible preferred stock was not considered to be a performance obligation, as it was a separate financing component of the transaction. Accordingly, $10.0 million of the transaction price was allocated to the issuance of 768,115 shares of Series C convertible preferred stock at fair value of $13.04 per share and recorded in stockholders' equity.

The variable consideration related to the remaining development, regulatory, and sales-based milestones payments has not been included in the initial transaction price and continues to be fully constrained as of June 30, 2023. As part of its evaluation of the constraint, the Company considered numerous factors, including that receipt of the milestones is outside the control of the Company and contingent upon initiation of clinical trials for early-stage targets and 2seventy's development efforts. Any variable consideration related to sales-based milestones (including royalties) will be recognized when the related sales occur, as they were determined to relate predominantly to the License and Know-How granted to 2seventy. The Company will re-evaluate the transaction price in each reporting period and as uncertain events are resolved or other changes in circumstances occur.

For revenue recognition purposes, the Company determined that the duration of the 2seventy Agreement began on the effective date in August 2018 and ends upon completion of the Research and Development Services, which is also when participation on the JSC is no longer an obligation. The contract duration is defined as the period in which parties to the contract have present enforceable rights and obligations. The Company also analyzed the impact of 2seventy terminating the agreement prior to August 2023 and determined, considering both quantitative and qualitative factors, that there were substantive non-monetary penalties to 2seventy for doing so.

Revenue is recognized when, or as, the Company satisfies its performance obligation by transferring the promised services to 2seventy. Revenue is being recognized over time using a cost-based input method, based on internal labor cost effort to perform the research services, since the internal labor cost incurred over time is thought to best reflect the transfer of services to 2seventy. In applying a cost-based input method of revenue recognition, we use actual costs incurred relative to budgeted costs to fulfill the combined performance obligation. A cost-based input method of revenue recognition requires us to make estimates of costs to complete the performance obligation. The cumulative effect of any revisions to estimated costs to complete the performance obligation will be recorded in the period in which changes are identified and amounts can be reasonably estimated. A significant change in these assumptions and estimates could have a material impact on the timing and amount of revenue recognized in future periods.

During the three and six months ended June 30, 2023, the Company recognized $0.3 million and $0.7 million, respectively, and during the three and six months ended June 30, 2022, the Company recognized $2.3 million and $6.3 million, respectively, in collaboration revenue under the 2seventy Agreement. The amount of collaboration revenue recognized during the three and six months ended June 30, 2022 included cumulative catch-up adjustments increasing contribution revenue by $2.0 million and $5.5 million, respectively, due to revisions to estimated costs to complete the remaining performance obligation. The adjustments resulted in a decrease in the Company’s loss from operations of $2.0 million and a decrease in loss per share of $0.02 for the three months ended June 30, 2022, and a decrease in the Company's loss from operations of $5.5 million and a decrease in loss per share of $0.06 for the six months ended June 30, 2022. Deferred revenue of $0.3 million and $1.0 million was recorded on the condensed consolidated balance sheets in current liabilities as of June 30, 2023 and December 31, 2022, respectively. Deferred revenue relates to the performance obligations identified under the 2seventy Agreement and will be recognized over the period the performance obligations are expected to be satisfied, which is currently estimated to be through September 2023.

Changes in the deferred revenue balance during the six months ended June 30, 2023 for the 2seventy Agreement are as follows (in thousands):

	Deferred Revenue
Balance at December 31, 2022	$ 1,047
Additions	—
Deductions	(747)
Balance at June 30, 2023	$ 300

There were no receivables or net contract assets recorded as of June 30, 2023 and December 31, 2022 associated with the 2seventy Agreement.

Gilead Sciences, Inc.

In January 2021, the Company entered into a Collaboration, Option and License Agreement (the “Gilead Collaboration Agreement”) with Gilead Sciences, Inc. (“Gilead”) to research and develop a vaccine-based immunotherapy as part of Gilead’s efforts to find a curative treatment for HIV infection. Under the terms of the Gilead Collaboration Agreement, the Company granted to Gilead an exclusive, worldwide license to develop and commercialize a HIV-specific therapeutic vaccine utilizing the Company’s technology. Gilead is responsible for conducting all development and commercialization activities beginning with a Phase 1 study, and the Company is responsible for contributing to preclinical research studies and participation in a joint steering committee (collectively, “research and development activities”). Concurrently with execution of the Gilead Collaboration Agreement, the Company and Gilead entered into a Supply Agreement (the “Gilead Supply Agreement”) under which the Company will supply research product and GMP product (“Product Supply”) that may be required under the Gilead Collaboration Agreement until Gilead completes its first GMP product batch, and the Company will participate in a joint manufacturing team (collectively, “product supply activities”). In addition, the Company also concurrently entered into a Stock Purchase Agreement (the “Gilead Stock Purchase Agreement”) under which Gilead acquired, in

a private placement transaction, 1,169,591 shares of the Company's common stock. The common shares were issued to Gilead with certain registration rights and certain standstill and market stand-off provisions. The Company determined that these concurrent contracts represent a combined arrangement ("the Gilead Arrangement").

Under the Gilead Collaboration Agreement, the Company received a non-refundable upfront payment of $30.0 million. Under the Gilead Collaboration Agreement and the Gilead Supply Agreement, the Company will receive additional reimbursement payments for expenses incurred in the research and development activities and product supply activities. Under the Gilead Stock Purchase Agreement, the common shares were sold at a price of $25.65 per share for a total of $30.0 million. The Company's common stock at fair value on closing was $18.10 per share. If Gilead decides to move forward with development beyond the initial Phase 1 study (the "Option"), the Company will receive a $40.0 million non-refundable option fee and will be eligible to receive up to an aggregate of $685.0 million if certain clinical, regulatory and commercial milestones are achieved, as well as tiered royalties ranging from the mid-single digits to low double-digits on net sales of a therapeutic product utilizing its technology. None of these events had occurred as of June 30, 2023 and no royalties were due from the sale of licensed products.

Gilead may terminate the Gilead Collaboration Agreement for convenience by giving a 90-day prior written notice to the Company at any time after the effective date of the agreement. Unless terminated early, the agreement has a term that ends upon the expiration of the royalty term, or, if the Option is not exercised, by the end of the Option term. The Gilead Collaboration Agreement may be terminated for cause by either party based on uncured material breach by the other party, insolvency of the other party, or patent challenge. Upon early termination, all ongoing activities under the agreement and all mutual collaboration, development and commercialization licenses and sublicenses will terminate. The licenses granted by the Company to Gilead under the licensed intellectual property will remain in effect in accordance with their respective terms. Additionally, if terminated early by Gilead for convenience or by the Company for material breach or insolvency, all of Gilead's payment obligations for reimbursable costs or for future milestone and royalty payments remain. If terminated early by Gilead for material breach or insolvency, all of Gilead's unaccrued payment obligations related to future milestone and royalty payments will be reduced by 50% for the remainder of the agreement term. Furthermore, Gilead may terminate the Gilead Supply Agreement without cause by giving six months prior written notice and any active orders with 60-day notice without terminating the agreement, and either party may terminate based on an uncured material breach, insolvency of the other party, or in the event that the Gilead Collaboration Agreement is terminated. Upon termination, the Company will deliver all supply products that have been produced and destroy, reimburse or deliver materials that Gilead has reimbursed, and Gilead must pay for any manufacturing costs that the Company has actually incurred or committed to pay, including any cancellation costs owed to subcontractors.

The Company concluded that Gilead is a customer and therefore revenue recognition should be accounted for in accordance with ASC 606, because the Company granted to Gilead licenses to its intellectual property and will provide research and development services and Supply of Product, as defined below, all of which are outputs of the Company's ongoing activities, in exchange for consideration. The Option, if exercised by Gilead, will be considered a modification that increases the scope of the arrangement beyond the Option Term.

The Company identified the following performance obligations under the Gilead Collaboration Agreement: (i) licenses including an exclusive (in the HIV field), royalty-free, worldwide collaboration license and transfer of know-how and an exclusive (in the HIV field) worldwide, royalty-bearing development and commercial license subject to restrictions on its use during the Option Term and an exclusive option to release such restrictions; (ii) preclinical research and development activities, manufacturing-related activities, and participation on a Joint Steering Committee; and (iii) product supply, including research and GMP product, until Gilead completes its first GMP batch, and participation on a Joint Manufacturing Team.

The Company considered that the licenses and know-how have standalone functionality, are considered to be functional intellectual property and are capable of being distinct. The Company also determined that the research and development activities and product supply by Gritstone could be provided by resources otherwise available to Gilead and thus are capable of being distinct.

The Company has also determined that the pricing for optional goods and services and release of license restrictions upon exercise of the Option do not constitute material rights and are not a potential performance obligation. The Company evaluated whether there is an interdependence between the promises and determined that the licenses are a combined solution and the predominant performance obligation, while the other promises are separately identifiable in the context of the contract; however, the research and development activities are dependent on the research product supply, which is accounted for as a combined performance obligation. As a result, the Company

identified three performance obligations in the Gilead Arrangement: (i) exclusive licenses and know-how, (ii) research and development activities and product supply, and (iii) GMP product supply.

The transaction price at the inception of the Gilead Collaboration Agreement consisted of the upfront payment of $30.0 million and the $30.0 million received for the sale of the Company's common stock. The sale of the common stock was not considered to be a performance obligation, as it was a separate financing component of the transaction. Accordingly, $21.2 million of the transaction price was allocated to the issuance of 1,169,591 shares of the Company's common stock at fair value on closing of $18.10 per share and recorded in stockholders' equity. The remaining $8.8 million of the common stock purchase price in excess of the fair value of the shares received is added to the transaction price for the Gilead Collaboration Agreement. In addition, the initial transaction price includes estimated variable consideration for budgeted reimbursement of research and development costs and product supply. The variable consideration related to reimbursable costs and product supply has been constrained as of June 30, 2023 based on the current research and development plan forecast. The Company will re-evaluate the transaction price in each reporting period and as uncertain events are resolved or other changes in circumstances occur.

The Company determined that the variable consideration for the $40.0 million option exercise fee and for the development, regulatory, and sales-based milestones payments were probable of significant revenue reversal as their achievement was highly dependent on factors outside the Company's control. As a result, these payments were fully constrained and were not included in the transaction price. Any variable consideration related to sales-based milestones (including royalties) will be recognized when the related sales occur, as they were determined to relate predominantly to the exclusive licenses and know-how granted to Gilead.

The transaction price is allocated to the performance obligation based upon relative standalone selling prices, which were determined for the exclusive licenses and know-how using an adjusted market approach and for the research and development activities and product supply using a cost plus reasonable margin approach. Variable consideration is allocated to the specific performance obligations to which it relates.

For revenue recognition purposes, the Company determined that the duration of the contract began on the effective date in January 2021 and ends upon (i) the completion of the Option term, which is expected to end within four years after the effective date, if the Option is not exercised or (ii) the expiration of the royalty-term on a product-by-product and country-by-country basis. The Company also analyzed the impact of Gilead terminating the agreement prior to the end of the Option term and determined, considering both quantitative and qualitative factors, that there were substantive non-monetary penalties to Gilead for doing so.

Revenue for the exclusive licenses and know-how was recognized on the effective date of the Gilead Collaboration Agreement at the point in time that the licenses are effective. The research and development activities and product combined performance obligation and the GMP product supply performance obligation are recognized over time when, or as, the Company transfers the promised goods and services to Gilead. Research and development service and product supply revenues will be recognized over time using a cost-based input method, based on internal and external labor cost effort to perform the services, costs to acquire research materials, and costs of product supply, since the costs incurred over time are thought to best reflect the transfer of goods and services to Gilead. In applying a cost-based input method of revenue recognition, we use actual costs incurred relative to estimated total costs to fulfill each performance obligation. A cost-based input method of revenue recognition requires us to make estimates of costs to complete the performance obligation. The cumulative effect of any revisions to estimated costs to complete the performance obligation and associated variable consideration will be recorded in the period in which changes are identified and amounts can be reasonably estimated. A significant change in these assumptions and estimates could have a material impact on the timing and amount of revenue recognized in future periods.

For the three and six months ended June 30, 2023, the Company did not record any license revenue and recorded $0.1 million and $0.2 million, respectively, as collaboration revenue as a result of satisfying its performance obligations by transferring the promised goods and services estimated by the costs incurred for the Gilead Collaboration Agreement. For the three and six months ended June 30, 2022, the Company did not record any license revenue and recorded $0.5 million and $1.2 million, respectively, as collaboration revenue as a result of satisfying its performance obligations by transferring the promised goods and services estimated by the costs incurred for the Gilead Collaboration Agreement. There was no contract asset recorded on the condensed consolidated balance sheets as of June 30, 2023 or December 31, 2022. There was $0.1 million recorded as deferred revenue as of June 30, 2023 and December 31, 2022 associated with the Gilead Collaboration Agreement.

Changes in the deferred revenue balance during the six months ended June 30, 2023 for the Gilead Collaboration Agreement are as follows (in thousands):

	Deferred Revenue
Balance at December 31, 2022	$ 107
Additions	—
Deductions	(26)
Balance at June 30, 2023	$ 81

There was $0.1 million of receivables recorded on the condensed consolidated balance sheet as a current asset in the prepaid expenses and other current assets balance as of June 30, 2023 and December 31, 2022, associated with the Gilead Collaboration Agreement.

The Company deferred $0.1 million in incremental costs to acquire the Gilead Collaboration Agreement in the first quarter of 2021 allocated to performance obligations recognized over time, which will be recognized over time in each period proportionate to revenue recognition. There were no deferred contract acquisition costs amortized during the three and six months ended June 30, 2023 as they were fully amortized during the year ended December 31, 2022. Deferred contract acquisition costs amortized during the three and six months ended June 30, 2022 were negligible.

Arbutus Biopharma Corporation

In October 2017, the Company entered into an Exclusive License Agreement with Arbutus and its wholly-owned subsidiary, Protiva Biotherapeutics Inc. Certain terms of the agreement were modified by amendment in July 2018. Under the license agreement, the Company has an exclusive license to utilize certain Arbutus intellectual property, including patents and know-how relating to immunotherapy. During the three and six months ended June 30, 2023 and 2022, the Company had no research and development expense under the agreement. The Company is obligated to pay Arbutus certain milestone payments up to $123.5 million on achievement of specified events, and royalties on sales of its licensed products. Following the acceptance of our investigational new drug application for GRANITE by the FDA, the Company made a $2.5 million development milestone payment to Arbutus in September 2018 that was recorded as research and development expense. In August 2019, a milestone was met following the initial patient treatment of SLATE in the Company's GO-005 clinical trial. In 2019, the Company recorded $3.0 million as research and development expense in connection with the milestone. None of the other events had occurred as of June 30, 2023, and no royalties were due from the sale of licensed products.

Non-Profit Hospital Cancer Center

In January 2016, the Company entered into an Exclusive License Agreement with a non-profit hospital cancer center. Under the license agreement, the Company has an exclusive license to utilize certain patents and know-how relating to immunotherapy for an insignificant upfront payment, cash milestone payments on achievement of specified events, and low single digit royalties on sales of licensed products. The achievement of the milestones and payment of royalties is dependent upon obtaining regulatory approval. Upon achievement of a milestone related to the Company's Phase 1 clinical trial for GRANITE, GO-004, in December 2018 the Company recorded an insignificant amount to research and development expense for amounts owed to the Hospital Cancer Center, which was paid to the hospital in February 2019. None of the other milestone events had occurred as of June 30, 2023 and no royalties were due from the sales of licensed products.

Genevant Sciences GmbH

In October 2020, the Company entered into an Option and License and Development Agreement (the "2020 Genevant License Agreement") with Genevant Sciences GmbH ("Genevant"), pursuant to which Genevant granted the Company exclusive license rights under certain intellectual property related to Genevant's LNP technology for a single therapeutic indication, and the Company agreed to pay Genevant an initial payment of $2.0 million, up to an aggregate of $71.0 million in specified development, regulatory, and commercial milestones, and low to mid-single digit royalties on net sales of licensed products. The upfront payment of $2.0 million was included in research and development expense for the year ended December 31, 2020. Genevant is a spin-off of Arbutus, and the 2020 Genevant License Agreement expands Gritstone's intellectual property rights to such LNP technology originally obtained pursuant to the Company's license agreement with Arbutus. Prior to the 2020 Genevant License Agreement, the

Company licensed Arbutus' LNP technology for indications in the oncology space. The remainder of Arbutus' IP portfolio was transferred to Genevant in the spin-off. In March 2022, a milestone in the amount of $1.0 million was met, which was included in research and development expense for the year ended December 31, 2022.

Pursuant to the 2020 Genevant License Agreement, Genevant also granted the Company certain options to license the LNP technology for additional therapeutic indications of up to $1.5 million for each indication and $1.0 million to extend the option term. The 2020 Genevant License Agreement continues in effect until the last to expire royalty term or early termination. It is terminable by the Company for convenience with 90 days prior written notice or immediately if based on certain product safety or efficacy or regulatory criteria. Either party may terminate the agreement for material breach, subject to a cure period, and Genevant may terminate the agreement if the Company challenges a licensed patent.

In January 2021, the Company entered into a Non-Exclusive License and Development Agreement (the "2021 Genevant License Agreement") with Genevant. Pursuant to the 2021 Genevant License Agreement, the Company obtained a nonexclusive license to Genevant's LNP technology to develop and commercialize self-amplifying RNA ("samRNA") vaccines against SARS-CoV-2, the virus that causes COVID-19. Under the 2021 Genevant License Agreement, the Company made a $1.5 million upfront payment to Genevant, and Genevant is eligible to receive from the Company up to an aggregate of $141.0 million in contingent milestone payments per product, plus certain tiered royalties, upon achievement of development and commercial milestones. In certain scenarios, in lieu of milestones and royalties, Genevant will be entitled to a percentage of amounts that the Company receives from sublicenses under the 2021 Genevant License Agreement, subject to certain conditions. In March 2021, a milestone in the amount of $1.0 million was met following the initial patient treatment in the Phase 1 clinical trial conducted through the NIAID-supported Infectious Diseases Clinical Research Consortium ("IDCRC"). Both the $1.5 million upfront and $1.0 million milestone payments were recorded as research and development expense for the year ended December 31, 2021. None of the other milestone events had occurred as of June 30, 2023.

Coalition for Epidemic Preparedness Innovations

On August 14, 2021, the Company entered into the CEPI Funding Agreement with CEPI, under which CEPI agreed to provide funding of up to $20.6 million to the Company to advance the Company's program, which is developing a second-generation COVID-19 vaccine, with an initial clinical trial in South Africa. Under the terms of the agreement, CEPI will fund a multi-arm Phase 1 study evaluating the CORAL program's samRNA vaccine in naïve, convalescent, and HIV+ patients. The study will evaluate three different samRNA vaccine constructs that each target both the spike protein and other SARS-CoV-2 targets and are designed to drive both robust B and T cell immune responses. The funding will also support pre-clinical studies, scale-up and formulation development to enable manufacturing of large quantities of stable vaccine product.

Under the terms of the CEPI Funding Agreement, among other things, the Company and CEPI agreed on the importance of global equitable access to the vaccine produced pursuant to the CEPI Funding Agreement. The vaccine, if approved, is expected to be made available to the COVAX Facility for procurement and allocation. The COVAX Facility aims to deliver equitable access to COVID-19 vaccines for all countries, at all levels of development, that wish to participate.

The scope and continuation of the CEPI Funding Agreement may be amended depending on ongoing developments of the COVID-19 outbreak and the success of the Company's COVID-19 vaccine candidate developed under the CEPI Funding Agreement relative to other third-party COVID-19 vaccine candidates or treatments. If the World Health Organization (WHO), CEPI or a regulatory authority having jurisdiction over a clinical trial performed under the CEPI Funding Agreement determines that a third-party product candidate has substantially greater potential than the Company's COVID-19 vaccine candidate developed under the CEPI Funding Agreement and should be prioritized instead for a particular trial, the Company must consider in good faith any written request of CEPI not to proceed with a clinical trial of such COVID-19 vaccine candidate (the determination of whether to proceed or not with such trial shall be made by the Company in its sole discretion). In addition, CEPI has the right to unilaterally terminate the CEPI Funding Agreement upon prior written notice if CEPI determines that (i) there are material safety, regulatory, scientific misconduct or ethical issues with the project undertaken by the Company under the CEPI Funding Agreement, (ii) the project undertaken by the Company under the CEPI Funding Agreement should be terminated, (iii) the Company becomes unable to discharge its obligations under the CEPI Funding Agreement, (iv) the Company fails to meet certain criteria set forth in the CEPI Funding Agreement, or (v) the Company commits fraud or a financial irregularity, as such terms are defined in the CEPI Funding Agreement.

In December 2021, the Company and CEPI entered into an amendment to the CEPI Funding Agreement, under which CEPI agreed to provide additional funding of up to $5.0 million, for a total of up to $25.6 million, to the Company to conduct a Phase I clinical trial of the Company's Omicron vaccine candidate in South Africa.

CEPI advances grant funds upon request by the Company consistent with the agreed upon amounts and schedules as provided in the CEPI Funding Agreement. The first tranche of funding of $11.3 million was received in September 2021, the second tranche of funding of $2.7 million was received in April 2022 and the third tranche of funding of $1.2 million was received in June 2023.

Payments received in advance that are related to future performance are deferred and recognized as grant revenue when the research and development activities are performed. Cash payments received under the CEPI Funding Agreement are restricted as to their use until expenditures contemplated in the funding agreement are incurred. The Company recognized grant revenue of $1.1 million and $2.6 million, respectively, during the three and six months ended June 30, 2023, and $2.4 million and $4.7 million, respectively, during the three and six months ended June 30, 2022 under the CEPI Funding Agreement. As of June 30, 2023 and December 31, 2022, short-term deferred revenue of $1.7 million and $3.0 million, respectively, was recorded on the condensed consolidated balance sheets. Deferred revenue will be recognized over the period in which the funding agreement activities related to the tranches of funding are expected to take place, which is currently estimated to be through the end of the year 2023. As of June 30, 2023 and December 31, 2022, $1.7 million and $3.0 million, respectively, was recorded as short-term restricted cash on the condensed consolidated balance sheet.

Changes in the deferred revenue balance during the six months ended June 30, 2023 for the CEPI Funding Agreement are as follows (in thousands):

	Deferred Revenue
Balance at December 31, 2022	$ 2,952
Additions	1,215
Deductions	(2,509)
Balance at June 30, 2023	$ 1,658

Gates Foundation

In November 2021, the Company entered into a Grant Agreement with the Gates Foundation ("Gates Grant Agreement"), under which the Company will develop an optimal immunogen in the context of a therapeutic human papillomavirus ("HPV") vaccine. In consideration for the work to be performed, the Gates Foundation provided the Company with an upfront payment of $2.2 million in December 2021, and additional $0.7 million was received in April 2023.

Payments received in advance that are related to future performance are deferred and recognized as grant revenue when the research and development activities are performed. Cash payments received under the Gates Grant Agreement are restricted as to their use until expenditures contemplated in the funding agreement are incurred. The Company did not recognize any grant revenue under the Gates Grant Agreement in 2021. The Company recognized grant revenue of $0.5 million and $0.9 million, respectively, during the three and six months ended June 30, 2023, and $0.3 million and $0.5 million, respectively, during the three and six months ended June 30, 2022 under the Gates Grant Agreement. As of June 30, 2023 and December 31, 2022, short-term deferred revenue of $0.8 million and $1.0 million, respectively, was recorded on the condensed consolidated balance sheets. Deferred revenue will be recognized over the period in which the funding agreement activities related to the tranches of funding are expected to take place, which is currently estimated to be through the year ended 2023.

Changes in the deferred revenue balance during the six months ended June 30, 2023 for the Gates Grant Agreement are as follows (in thousands):

	Deferred Revenue
Balance at December 31, 2022	$ 1,025
Additions	700
Deductions	(946)
Balance at June 30, 2023	$ 779

10. Stockholders' Equity

The Company's amended and restated certificate of incorporation provides for 300,000,000 shares of common stock and 10,000,000 shares of preferred stock authorized for issuance, each with a par value of $0.0001 per share.

As of June 30, 2023 and December 31, 2022, no shares of preferred stock were issued and outstanding.

As of June 30, 2023 and December 31, 2022, there were 91,224,210 and 86,894,901 shares of common stock issued and outstanding, respectively. Holders of the Company's common stock are entitled to one vote per share.

Sale of Common Stock and Pre-Funded Warrants

In December 2020, the Company entered into two private placement financing transactions (collectively, the "First PIPE Financing"), as follows: (i) to sell 5,543,351 shares of its common stock at a price of $3.34 per share and pre-funded warrants (the "Warrants") to purchase 27,480,719 shares of common stock at a price of $3.34 per share (of which $3.33 per share was prepaid by each purchaser), and (ii) to sell an additional 4,043,127 shares of its common stock at a price per share of $3.71. In connection with the First PIPE Financing, the Company received aggregate net proceeds of approximately $119.8 million. The Warrants are exercisable upon issuance at an exercise price of $0.01 per share.

The outstanding Warrants generally may not be exercised if the holder's aggregate beneficial ownership would be more than 9.99% of the total issued and outstanding shares of the Company's common stock following such exercise. The exercise price and number of shares of common stock issuable upon the exercise of the Warrants (the "Warrant Shares") are subject to adjustment in the event of any stock dividends and splits, reverse stock split, recapitalization, reorganization or similar transaction, as described in the Warrant agreements. Under certain circumstances, the Warrants may be exercisable on a "cashless" basis. In connection with the issuance and sale of the common stock and Warrants, the Company granted the purchasers certain registration rights with respect to the Warrants and the Warrant Shares.

The Warrants were classified as a component of permanent stockholders' equity within additional paid-in-capital and were recorded at the issuance date using a relative fair value allocation method. The Warrants are equity classified because they are freestanding financial instruments that are legally detachable and separately exercisable from the equity instruments, are immediately exercisable, do not embody an obligation for the Company to repurchase its shares, permit the holders to receive a fixed number of common shares upon exercise, are indexed to the Company's common stock and meet the equity classification criteria. In addition, such Warrants do not provide any guarantee of value or return. The Company valued the Warrants at issuance, concluding their sales price approximated their fair value, and allocated net proceeds from the sale proportionately to the common stock and Warrants, of which $87.7 million, net of issuance costs, was allocated to the Warrants and recorded as a component of additional paid-in-capital.

In September 2021, the Company completed a PIPE financing transaction, in which it sold 5,000,000 shares of its common stock at a price of $11.00 per share pursuant to a securities purchase agreement entered into on September 16, 2021 (the "Second PIPE Financing"). The Company received aggregate net proceeds of approximately $52.7 million after deducting placement agent commissions and offering expenses payable by the Company. In connection with the issuance and sale of the common stock, the Company agreed to file a registration statement with the SEC registering the resale of the shares of common stock issued in the Second PIPE Financing.

In March 2022, the Company filed a Registration Statement on Form S-3 with the SEC (the "2022 Shelf Registration Statement"), covering the offering of up to $250.0 million of common stock, preferred stock, debt securities, warrants and units. The 2022 Shelf Registration Statement included a prospectus supplement covering the issuance and sale of up to $100.0 million of the Company's common stock, from time to time, through an "at-the-market" offering program (the "2022 ATM Offering Program") under the Securities Act. The SEC declared the 2022 Shelf Registration Statement effective as of May 6, 2022.

In connection with the 2022 ATM Offering Program, in March 2022, the Company also entered into a sales agreement (the "2022 Sales Agreement") with Cowen, pursuant to which Cowen will act as the Company's sales agent and, from time to time, offer and sell shares of the Company's common stock having an aggregate offering price of up to $100.0 million. Cowen is entitled to compensation for its services equal to up to 3.0% of the gross proceeds of any shares of common stock sold under the 2022 Sales Agreement. In addition, the Company agreed to reimburse a portion of Cowen's expenses in connection with the 2022 ATM Offering Program up to $50,000

. As of December 31, 2022, the Company has received aggregate proceeds from its 2022 ATM Offering Program of $19.6 million, net of commissions and offering costs, pursuant to the issuance of 7,034,948 shares of its common stock. As of June 30, 2023, the Company has received aggregate proceeds from its 2022 ATM Offering Program of $22.1 million, net of commissions and offering costs, pursuant to the issuance of 7,889,000 shares of its common stock.

In October 2022, the Company completed a PIPE financing transaction, in which it sold 6,637,165 shares of its common stock at a price of $2.26 per share pursuant to a securities purchase agreement entered into on October 24, 2022 and pre-funded warrants (the "Warrants") to purchase 13,274,923 shares of common stock at a price of $2.26 per share (of which $2.2599 per share was prepaid by each purchaser) (the "Third PIPE Financing"). The Company received aggregate net proceeds of approximately $42.4 million after deducting placement agent commissions and offering expenses payable by the Company. In connection with the issuance and sale of the common stock, the Company agreed to file a registration statement with the SEC registering the resale of the shares of common stock issued in the Third PIPE Financing. The Warrants are exercisable upon issuance at an exercise price of $0.0001 per share.

The outstanding Warrants generally may not be exercised if the holder's aggregate beneficial ownership would be more than 9.99% of the total issued and outstanding shares of the Company's common stock following such exercise. The exercise price and number of shares of common stock issuable upon the exercise of the Warrants (the "Warrant Shares") are subject to adjustment in the event of any stock dividends and splits, reverse stock split, recapitalization, reorganization or similar transaction, as described in the Warrant agreements. Under certain circumstances, the Warrants may be exercisable on a "cashless" basis. In connection with the issuance and sale of the common stock and Warrants, the Company granted the purchasers certain registration rights with respect to the Warrants and the Warrant Shares.

The Warrants were classified as a component of permanent stockholders' equity within additional paid-in-capital and were recorded at the issuance date using a relative fair value allocation method. The Warrants are equity classified because they are freestanding financial instruments that are legally detachable and separately exercisable from the equity instruments, are immediately exercisable, do not embody an obligation for the Company to repurchase its shares, permit the holders to receive a fixed number of common shares upon exercise, are indexed to the Company's common stock and meet the equity classification criteria. In addition, such Warrants do not provide any guarantee of value or return. The Company valued the Warrants at issuance, concluding their sales price approximated their fair value, and allocated net proceeds from the sale proportionately to the common stock and Warrants, of which $28.2 million, net of issuance costs, was allocated to the Warrants and recorded as a component of additional paid-in-capital.

Common Stock Warrants

As of June 30, 2023, the following warrants to purchase shares of the Company's common stock were issued and outstanding:

Issue Date	Expiration Date	Exercise Price	Number of Warrants Outstanding
December 28, 2020	None	$ 0.01	10,713,733
October 24, 2022	None	$ 0.0001	13,274,923
			23,988,656

There were 2,859,971 warrants exercised during the three and six months ended June 30, 2023 resulting in the Company issuing 2,849,405 shares of common stock due to net exercise of some of the warrants. During the six months ended June 30, 2022, 3,442,567 warrants were exercised resulting in the Company issuing 3,442,567 shares of common stock.

11. Stock-Based Compensation

Award Incentive Plans

In August 2015, the Company's board of directors approved the 2015 Equity Incentive Plan ("2015 Plan"). In connection with the Company's IPO and the effectiveness of the 2018 Award Incentive Plan ("2018 Plan"), discussed below, the 2015 Plan terminated. The 92,815 shares of common stock that were then unissued and available for future issuance under the 2015 Plan became available under the 2018 Plan.

In September 2018, the Company's board of directors approved the 2018 Plan. Under the 2018 Plan, a total of 2,690,000 shares of common stock were initially reserved for issuance under the 2018 Plan, plus the number of shares remaining available for future awards under the 2015 Plan, as of the effective date of the 2018 Plan. The number of shares of common stock reserved for issuance under the 2018 Plan will automatically increase on January 1 of each year, beginning on January 1, 2019 and continuing through and including January 1, 2028, by 4% of the total number of shares of the Company's outstanding stock on December 31 of the preceding calendar year, or a lesser number of shares determined by the Company's board of directors. The 2018 Plan provides, among others, for the grant of options, stock appreciation rights, restricted stock awards, restricted stock unit awards and performance bonus awards.

The maximum number of shares that may be issued upon the exercise of stock options under the 2018 Plan is 45,000,000.

The Company's board of directors has the authority to determine to whom options will be granted, the number of shares, the term, and the exercise price. If an individual owns stock representing 10% or more of the outstanding shares, the price of each share shall be at least 110% of the fair market value, as determined by the board of directors. Options granted have a term of up to 10 years and generally vest over a 4-year period with a straight-line vesting.

Material Features of the 2021 Employment Inducement Incentive Award Plan

In April 2021, the Company's board of directors adopted the 2021 Employment Inducement Incentive Award Plan (the "2021 Plan"), pursuant to Nasdaq Listing Rule 5635(c)(4). The principal purpose of the 2021 Plan is to enhance our ability to attract, retain and motivate employees who are expected to make important contributions to us by providing such individuals with equity ownership opportunities. Awards granted under the 2021 Plan are intended to constitute "employment inducement awards" under Nasdaq Listing Rule 5635(c)(4), and, as such, the 2021 Plan is intended to be exempt from the Nasdaq Listing Rules regarding shareholder approval of stock option and stock purchase plans. A total of 790,400 shares of our common stock ("Share Limit") were initially reserved for issuance under the 2021 Plan. The Share Limit may be increased by the Company's board of directors. The 2021 Plan provides for the grant of non-qualified stock options, restricted stock units, restricted stock awards, stock appreciation rights, and other stock-based and cash-based awards. The 2021 Plan does not provide for the grant of incentive stock options. Awards under the 2021 Plan may be granted to eligible employees who are either new employees or who are commencing employment with the Company or one of its subsidiaries following a bona fide period of non-employment with the Company, and for whom such awards are granted as a material inducement to commencing employment with the Company or one of its subsidiaries. Awards under the 2021 Plan may not be granted to the Company's consultants or non-employee directors.

The 2021 Plan is administered by our board of directors and the Company's compensation committee, acting pursuant to the delegation by our board of directors. In the event of a change in control in which the Company's successor refuses to assume or substitute any outstanding award under the 2021 Plan, the vesting of such award will accelerate in full. The Company's board of directors may terminate, amend, or modify the 2021 Plan at any time, provided that no termination or amendment may materially impair any rights under any outstanding award under the 2021 Plan without the consent of the holder.

On April 21, 2022, the Company's board of directors increased the number of shares available under the 2021 Plan by 700,000 shares. On February 2, 2023, the Company's board of directors increased the number of shares available under the 2021 Plan by 1,300,000 shares.

Stock Option Activity

A summary of the 2018 Plan and 2021 Plan activity is as follows:

	Number of Shares Available for Issuance	Options Outstanding			
		Number of Shares	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Term (in years)	Aggregate Intrinsic Value (in thousands)
Balance at December 31, 2022	4,814,394	6,951,620	$ 7.92	8.08	$ 1,089
Authorized	4,775,796	—	$ —		
Granted	(4,046,553)	531,766	$ 2.31		
Exercised	—	(6,000)	$ 0.76		
Canceled	410,882	(137,273)	$ 6.30		
Balance at June 30, 2023	5,954,519	7,340,113	$ 7.55	7.74	$ 188
Vested and exercisable at June 30, 2023		3,963,515	$ 8.74	6.98	$ 174
Vested and expected to vest at June 30, 2023		6,924,135	$ 7.66	7.68	$ 186

For the six months ended June 30, 2023 and 2022, the total intrinsic value of stock option awards exercised was immaterial and $0.3 million, respectively, determined at the date of option exercise, and the total cash received upon exercise of stock options was not significant for either period. The aggregate intrinsic value was calculated as the difference between the exercise prices of the underlying stock option awards and the estimated fair value of the common stock on the date of exercise.

As of June 30, 2023, $11.8 million of total unrecognized compensation cost related to non-vested employee and consultant options is expected to be recognized over a weighted-average period of 2.0 years. The total fair value of shares vested during the six months ended June 30, 2023 was $4.2 million.

Stock-based compensation expense and awards granted to non-employees were $0.3 million and immaterial, respectively, for the six months ended June 30, 2023 and 2022.

Restricted Stock Units

We have granted restricted stock unit awards under the 2018 Equity Plan. Our restricted stock unit awards have a term of up to 10 years and generally vest over a 6 month, 1 or 2-year period. The following table summarizes our restricted stock unit activity during the six months ended June 30, 2023:

	Number of Shares	Weighted-Average Grant Date Fair Value
Outstanding, unvested at December 31, 2022	561,526	$ 5.38
Issued	3,514,787	$ 3.29
Vested	(561,526)	$ 5.38
Canceled/Forfeited	(57,746)	$ 3.29
Outstanding, unvested at June 30, 2023	3,457,041	$ 3.29

Stock-Based Compensation Expense

Total stock-based compensation for all awards granted to employees, consultants and the Company's 2018 Employee Stock Purchase Plan ("ESPP"), before taxes, is as follows (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
Research and development expenses	$ 1,631	$ 1,723	$ 3,244	$ 3,468
General and administrative expenses	1,309	1,631	2,587	3,017
Total	$ 2,940	$ 3,354	$ 5,831	$ 6,485

12. Net Loss Per Common Share

Basic net loss per share is calculated by dividing the net loss by the weighted-average number of shares of common stock outstanding during the period, without consideration for common stock equivalents.

The following table sets forth the computation of the basic and diluted net loss per share (in thousands, except for share and per share amounts):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
Numerator:				
Net loss	$ (35,256)	$ (29,515)	$ (69,238)	$ (58,431)
Denominator:				
Weighted-average common shares outstanding, basic and diluted	114,929,523	86,448,632	114,676,261	86,363,116
Net loss per share, basic and diluted	$ (0.31)	$ (0.34)	$ (0.60)	$ (0.68)

In December 2020, the Company issued and sold the 2020 Warrants to purchase 27,480,719 shares of common stock at a nominal exercise price of $0.01 per share and, in October 2022, the Company issued and sold the 2022 Warrants to purchase 13,274,923 shares of common stock at a nominal exercise price of $0.0001 per share (see Note 10). The shares of common stock into which the 2020 and 2022 Warrants may be exercised are considered outstanding for the purposes of computing earnings per share, because the shares may be issued for little or no consideration, they are fully vested and the Warrants are immediately exercisable upon their issuance date.

During a period of net loss, basic net loss per share is the same as diluted net loss per share, as the inclusion of all potential common shares outstanding would have been anti-dilutive. Potentially dilutive securities that were not included in the diluted per share calculations because they would be anti-dilutive were as follows:

	June 30,	
	2023	2022
Options issued and outstanding and ESPP shares issuable and outstanding	7,596,222	7,200,540
Restricted stock subject to future vesting	3,457,041	627,863
Total	11,053,263	7,828,403

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 the condensed consolidated financial statements and notes thereto included elsewhere in this report, and our audited financial statements and related notes thereto included as part of our Annual Report on Form 10-K for the year ended December 31, 2022. This discussion and analysis, and other parts of this report, contain forward-looking statements, including, but not limited to, our clinical and regulatory development plans for our product candidates; our expectations regarding the data to be derived in our ongoing and planned clinical trials; the timing of commencement of our future nonclinical studies, clinical trials and research and development programs; our ability to discover, develop and advance product candidates into, and successfully complete, clinical trials; our plans and strategy regarding maintaining existing and entering into new collaborations and/or partnerships; the timing or likelihood of regulatory filings and approvals for our product candidates; our expectations regarding the impact of the COVID-19 pandemic or the end of the COVID-19 pandemic on our operations; and the sufficiency of our capital resources. These forward-looking statements are identified by their use of terms and phrases, such as "believe," "could," "aim," "expect," "intend," "may," "plan," "will," and other similar terms and phrases, including references to assumptions. Such forward-looking statements involve substantial risks and uncertainties that could cause the outcome of Gritstone's programs, future results, performance or achievements to differ significantly from those expressed or implied by the forward-looking statements, including that interim results obtained may differ from those at completion of the studies and clinical trials. Such risks and uncertainties include, among others, the uncertainties inherent in the drug development process, including our programs' clinical development, the process of designing and conducting preclinical and clinical trials, the regulatory approval processes, the timing of regulatory filings, the challenges associated with manufacturing drug products, our ability to successfully establish, protect and defend its intellectual property and other matters that could affect the sufficiency of existing cash to fund our operations. Our actual results could differ materially from those discussed in these forward-looking statements. For a further description of the risks and uncertainties that could cause actual results to differ from those expressed in these forward-looking statements, as well as risks relating to our business in general, see the section titled "Risk Factors" included elsewhere in this Quarterly Report on Form 10-Q and our Annual Report on Form 10-K for the year ended December 31, 2022. These forward-looking statements speak only as of the date hereof. Except as required by law, we assume no obligation to update or revise these forward-looking statements for any reason.

Overview

We are a clinical-stage biotechnology company focused on combining immunological insights with proprietary technologies and capabilities to develop next-generation vaccines. Specifically, we discover, develop, manufacture and deliver vaccine-based immunotherapy candidates against cancer and infectious disease. Our goal is to unlock more potent and durable immunity by harnessing vaccine innovation. We aim to achieve that goal by leveraging our in-house capabilities and technologies to address the shortcomings of currently available vaccines and immunotherapies.

The immune system sits at the nexus of many diseases, and we believe that immune response modulation is core to several transformational product classes. Recent advances have pointed to T cells as being central to the success of cancer immunotherapy and critical in the elimination of virally infected cells. We believe that our scientific approach of focusing on generating antigen-specific T cells, particularly the challenging but critical cytotoxic CD8+ T cell subclass, has the potential to drive transformational therapeutic and prophylactic benefits.

In oncology, we develop personalized vaccines that aim to destroy tumors through CD8+ (killer) T cell recognition of tumor cells by virtue of their surface display of neoantigens, peptides that are presented on cancer cells when certain mutations occur in tumor DNA. In infectious disease, we develop both therapeutic and prophylactic vaccines targeting both T cells and B cells. We believe we are leading the field of development and application of self-amplifying mRNA (samRNA), a rapidly emerging platform technology. Our unique approach to immunogen design, whereby our vaccines deliver, as appropriate, whole proteins to drive neutralizing antibodies (nAbs) and/or protein fragments to drive T cell responses, has the potential to both neutralize incoming pathogens (through nAbs) and kill infected cells through CD8+ T cell recognition of foreign, pathogen-derived peptides displayed on the surface of infected cells.

Our clinical programs include GRANITE, an individualized neoantigen-based vaccine program; SLATE, an "off-the-shelf" neoantigen-based vaccine program; CORAL, a second-generation SARS-CoV-2 vaccine program; and HIV, an HIV vaccine program in collaboration with Gilead Sciences, Inc (Gilead).

The table below summarizes key information about our clinical trials.

Program	Phase	Status	Indication(s)	Collaborator	Commercial Rights
GRANITE	2/3	Enrollment Completed (Ph2 portion); Treatment Ongoing	MSS-CRC* first line maintenance	—	Gritstone
GRANITE	1/2	Completed	Early stage & advanced solid tumors	—	Gritstone
SLATE	1/2	Active, not recruiting	KRAS Advanced Solid Tumors	—	Gritstone
HIV	1	Ongoing	HIV treatment/cure	Gilead Sciences	Gilead**
CORAL	1	Active, not recruiting	SARS-CoV-2 in South Africa	CEPI	Gritstone
CORAL	1	Completed	SARS-CoV-2 booster	—	Gritstone
CORAL	1	Active, not recruiting	SARS-CoV-2 naïve & booster	NIAID, IDCRC	Gritstone

* MSS-CRC = microsatellite stable colorectal cancer
** Gilead is responsible for conducting a Phase 1 study

Beyond GRANITE, SLATE, CORAL and the HIV collaboration with Gilead, we continue to apply our broad set of capabilities in oncology and infectious diseases through promising preclinical work and partnerships.

COVID-19 Impact on our Business

Since the COVID-19 pandemic began, providers of healthcare services have had to deal with significant strains on their operations. These strains have affected all healthcare institutions, including those where we conduct our clinical trials, with some institutions prohibiting or postponing the initiation of new clinical trials, slowing or halting enrollment in existing trials and restricting the on-site monitoring of clinical trials. Although our operations have not been materially impacted by the COVID-19 pandemic, we have experienced slowing of patient recruitment and sample collection in our ongoing clinical trials. Additionally, as a result of the COVID-19 pandemic, competition for potential patients in our trials may be further exaggerated as a result of multiple clinical site closures. To date, the COVID-19 pandemic has not materially affected our supply chain or production schedule, but further escalation of the health crisis has the potential to cause delays in our supply chain and manufacturing operations, which could materially adversely impact our business.

In response to the COVID-19 pandemic, we have implemented heightened health and safety measures designed to comply with applicable federal, state and local guidelines, and transitioned to a flexible work environment, where employees who can work from home effectively are allowed to do so. We have implemented virtual meeting and messaging technology and encourage employees to follow local health authority guidance. As the pandemic and its impacts continue to evolve, we may need to undertake additional actions that could impact our operations if required by applicable laws or regulations or if we determine such actions to be in the best interests of our employees. Yet, we note that on May 11, 2023, the COVID-19 Public Health Emergency declared by the U.S. Department of Health and Human Services, declared under Section 319 of the Public Health Service Act, expired. Previously, on May 4, 2023, the World Health Organization Director-General determined that COVD-19 is now an established and ongoing health issue which no longer constitutes a public health emergency of international concern. At this time, it is not clear what, if any, impact these developments may have on our business, financial condition, results of operations or prospects.

Oncology Program Updates

We are developing a portfolio of vaccine-based cancer immunotherapy product candidates using a heterologous prime (ChAd)/boost (samRNA) approach aimed at the highly targeted activation of tumor-specific neoantigens (TSNA) in solid tumors. Our two clinical-stage programs (GRANITE, which is "individualized" and SLATE, which is "off-the-shelf") aim to induce a substantial neoantigen-specific CD8+ T cell response using neoantigen-containing immunotherapies. GRANITE patients receive a product candidate made specifically for them, based upon their tumor DNA/RNA sequence. In contrast, SLATE patients receive an off-the-shelf product candidate made for a subset of patients based on common driver mutations.

GRANITE – Individualized Vaccine Program for Solid Tumors

Our first oncology program, GRANITE, consists of individualized neoantigen-based immunotherapy candidates for solid tumors. GRANITE was granted Fast Track designation by the FDA for the treatment of microsatellite stable colorectal cancer (MSS-CRC) in 2018.

Data generated from our Phase 1/2 study evaluating GRANITE in combination with checkpoint inhibitors in 3rd line MSS-CRC and other advanced solid tumors demonstrated positive results. Among all cohorts (n=29), the vaccine regimen was shown to be generally well-tolerated with no dose limiting toxicities and demonstrated consistent and potent CD8+ neoantigen-specific T cell induction. Additionally, an association between molecular responses (as measured by a >30% reduction from baseline in circulating tumor DNA, ctDNA) and improved clinical outcomes (including overall survival) was observed in patients with MSS-CRC.

As of August 31, 2022, 55% of patients within the MSS-CRC cohort (n=13) demonstrated a molecular response (6/11 evaluable patients). Among molecular responders (n=6), the median overall survival (mOS) had not yet been reached and was expected to exceed at least 22 months. This compares to mOS of 7.8 months in evaluable MSS-CRC patients who did not exhibit a molecular response in the study, and a mOS of 6-7 months for patients who receive standard of care (Trifluridine/tipiracil combo and Regorafenib monotherapy). Interim results from the Phase 1/2 study of GRANITE were published in Nature Medicine in August 2022.

Upon assessing initial results of the GRANITE Phase 1/2 study, we discussed potential registrational paths with the FDA and subsequently initiated a randomized, controlled Phase 2/3 trial in newly diagnosed metastatic CRC patients that has registrational intent (NCT05141721). The study, which is evaluating GRANITE as a maintenance treatment in patients with first-line MSS-CRC who have completed FOLFOX (or FOLFOXFIRI)-bevacizumab induction therapy, was announced in late 2021. The first patient was enrolled in the ongoing Phase 2 portion of the Phase 2/3 study in January 2022, and enrollment in the Phase 2 portion of the study was completed in August 2023. We expect to share preliminary efficacy data from the Phase 2 portion of the Phase 2/3 study in the first quarter of 2024.

SLATE – "Off the shelf" Vaccine Program for Solid Tumors

Our second oncology program, SLATE, consists of “off-the-shelf”, TSNA-directed immunotherapy product candidates. SLATE contains a fixed cassette with TSNA that are shared across a subset of cancer patients rather than a cassette unique to an individual patient, which distinguishes it as a potential off-the-shelf alternative candidate to GRANITE. The key differentiator and advantage of SLATE as compared to GRANITE is speed. SLATE vaccines are produced and delivered to clinical sites proactively and can be administered rapidly upon patient selection (achieved by standard commercial screening for driver mutations). We believe vaccines capable of targeting neoantigens from common tumor driver mutations, such as SLATE, have a clear potential clinical utility and commercialization advantages that are complementary to individualized vaccines.

An initial version of SLATE (SLATE v1) was studied in a Phase 1/2 study in patients with metastatic solid tumors (n = 26). SLATE v1 demonstrated induction of CD8+ T cells against multiple KRAS driver mutations and greatest activity was observed in a subset of NSCLC patients with KRASmut G12C mutations. With these initial data, we developed a second SLATE candidate that exclusively includes epitopes from mutated KRAS (SLATE-KRAS) and evaluated it under the same study protocol. In results shared during ESMO 2022, SLATE-KRAS exhibited immunogenic superiority over SLATE v1 in human HLA-transgenic mice and cancer patients and demonstrated similar molecular response and overall survival trends as those seen in the Phase 1/2 study of GRANITE. In 38 patients with advanced solid tumors evaluating both SLATE v1 (n =26) and SLATE-KRAS (n=12), the candidates demonstrated a 39% molecular response rate (MRR, molecular response defined as >30% reduction in ctDNA from baseline) in evaluable patients with MSS-CRC and NSCLC and among the 18 patients with NSCLC, a molecular response was correlated with extended mOS (mOS of 9.6 months in molecular responders versus 4.5 months in non-responders).

We believe the results to date demonstrate our ability to both accurately define shared neoantigen targets and engineer the SLATE cassette and vaccine to optimize immune response based on those specific mutations. Having optimized and validated the SLATE cassette, we now believe the SLATE platform is ready for “plug and play” application across solid tumor indications and shared tumor neoantigen classes. In advancing SLATE, we aim to combine the potential benefits of the full spectrum of tumor antigens with the practicality of the “off-the-shelf” approach.

In February 2023, we announced that we entered into a clinical trial agreement with the National Cancer Institute (NCI) to evaluate an autologous T cell therapy expressing a T cell receptor targeting mutated KRAS in combination with our KRAS-directed vaccine candidate, SLATE-KRAS, in a Phase 1 study led by Steven A. Rosenberg, M.D., Ph.D. Under the terms of the agreement, Gritstone will provide the SLATE-KRAS vaccine as requested by NCI. NCI is responsible for conducting the study.

Infectious Disease Program Updates

In early 2021, we initiated two programs in infectious diseases: CORAL, a second-generation prophylactic program against COVID-19, and a collaboration with Gilead Sciences to develop a therapeutic vaccine against HIV. Our infectious disease programs aim to deliver vaccine candidates that induce both B cell and T cell immunity with the potential to drive potent and durable immune response that can be applied for either protective or therapeutic benefit. This approach has demonstrated the ability to generate robust CD8+ T cells and neutralizing antibodies against SARS-CoV-2 in multiple preclinical and clinical studies and is being evaluated against multiple other pathogens in Gritstone-owned and partnered studies. We believe that initially evaluating our approach against SARS-CoV-2 can provide proof of concept for a number of infectious diseases.

HIV Vaccine Collaboration with Gilead Sciences

In January 2021, we entered into a collaboration, option and license agreement with Gilead to research and develop a vaccine-based immunotherapy for HIV. Together, we plan to develop an HIV-specific therapeutic vaccine using our proprietary prime-boost vaccine platform, comprised of samRNA and adenoviral vectors, with antigens developed by Gilead. The collaboration and the program are progressing, and a Phase I trial is ongoing. If Gilead decides to progress development beyond the Phase 1 study by exercising their exclusive option, the Company will receive a $40.0 million non-refundable option exercise fee.

In February 2023, the first data from a preclinical study conducted in collaboration with Gilead were presented at the Conference on Retroviruses and Opportunistic Infections (CROI) 2023. The results showed that simian immunodeficiency virus (SIV), Chimpanzee Adenovirus (ChAd) and self-amplifying mRNA (samRNA) vaccines induced a strong and broad CD8+ T cell immune response, which was significantly enhanced in combination with immune modulators.

CORAL – Second Generation COVID-19 Vaccine Program

The CORAL program was initiated in 2021 in response to emerging limitations of first-generation COVID-19 vaccines. Today it serves as proof-of-concept for our ability to drive more potent and durable responses than those of current vaccines in prophylactic applications. As seen in COVID-19 and other infectious diseases, immune responses can vary, viruses mutate, and neutralizing antibodies wane, necessitating re-dosing (boosters). An approach capable of inducing a potent, broad immune response could have utility across a variety of viral and infectious diseases,

In multiple ongoing Phase 1 trials, we have generated early data demonstrating the potential ability of our vaccines to elicit potent and durable neutralizing antibody responses, and potent cytotoxic cellular responses against Spike and other conserved targets regions of the virus. These results have also provided early signals of the potential advantages of self-amplifying mRNA over first-generation mRNA.

Across the three active Phase 1 trials (CORAL-BOOST, CORAL-CEPI and CORAL-NIH), there are multiple constructs being evaluated with various antigenic cassettes designed to target Wild Type, Beta and Omicron variants. The trials are evaluating our approach in different populations including elderly adults, immunocompromised individuals, those naïve to the virus and previously vaccinated individuals using different vaccine regimens. In all, these trials are designed to answer core questions regarding self-amplifying mRNA dose regimen, and the patient populations that could be applicable to other infectious diseases.

We believe that our CORAL vaccine candidates have the potential to improve both B cell and T cell responses to Spike and other viral proteins. By creating a cassette that targets several viral antigens including Spike protein and additional T cell epitopes from the SARS-CoV-2 virus, some of which are highly conserved between viral strains (such as SARS and SARS-CoV-2), we believe our vaccine candidates may have pan-coronavirus potential to protect against future coronavirus pandemics. While mutations in the Spike protein may reduce protection by antibodies (since the antibody target changes its shape), broad T cell immunity and long-term memory to different viral proteins may

provide a second layer of clinical protection. The CORAL program is supported by the Gates Foundation, the Coalition for Epidemic Preparedness Innovation (CEPI) and the National Institute of Allergy and Infectious Diseases (NIAID).

Components of Our Operating Results

Collaboration and License and Grant Revenue

To date, we have not generated any revenue from product sales, and we do not expect to generate any revenue from product sales for the foreseeable future. For the three and six months ended June 30, 2023, we recognized $2.0 million and $4.4 million, respectively, of revenue from the 2seventy Agreement, the Gilead Collaboration Agreement and the grant agreements with CEPI and the Gates Foundation. We recognized $5.5 million and $12.7 million for the three and six months ended June 30, 2022, respectively, of revenue from the 2seventy Agreement, the Gilead Collaboration Agreement, and the grant agreements with CEPI and the Gates Foundation. See Note 9 to our condensed consolidated financial statements for additional information.

In the future, we expect to continue to recognize revenue from the 2seventy Agreement, Gilead Collaboration Agreement and our grant agreements with CEPI and the Gates Foundation and may generate revenue from product sales or other collaboration agreements, strategic alliances and licensing arrangements. We expect our revenue to fluctuate from quarter-to-quarter and year-to-year as a result of the timing and amount of license fees, milestones, reimbursement of costs incurred and other payments and product sales, to the extent that any are successfully commercialized. If we fail to complete the development of our product candidates in a timely manner or obtain regulatory approval for them, our ability to generate future revenue, and our results of operations and financial position, would be materially adversely affected.

Operating Expenses

Research and Development Expenses

Since our inception, we have focused significant resources on our research and development activities, including conducting preclinical studies, manufacturing development efforts and related development activities for our product candidates.

Research and development activities account for a significant portion of our operating expenses. Research and development costs are expensed as incurred. These costs include:

- External research and development expenses, including:
  - expenses incurred under arrangements with third parties, including clinical research organizations (CROs), preclinical testing organizations, contract manufacturing organizations (CMOs), academic and non-profit institutions and consultants;
  - fees related to our license agreements;
- Internal research and development expenses, including (i) headcount-related expenses, such as salaries, payroll taxes, benefits, non-cash stock-based compensation and travel, for employees contributing to research and (ii) development activities, including the costs associated with the development of our EDGE™ platform; and
- Other expenses, which include direct and allocated expenses for laboratories, facilities and other costs.

Pursuant to our Arbutus License Agreement, Arbutus granted us a worldwide, exclusive license to certain technology of Arbutus, including Arbutus' portfolio of proprietary and clinically validated LNP products and associated intellectual property, as well as technology transfer of Arbutus' manufacturing know-how. During the three and six months ended June 30, 2023 and 2022, we had no research and development expense under the agreement.

Pursuant to our 2020 Genevant License Agreement, Genevant granted us exclusive license rights under certain intellectual property related to Genevant's LNP technology for a single indication, and we agreed to pay Genevant an initial payment of $2.0 million, and up to an aggregate of $71.0 million in specified development, regulatory, and commercial milestones, and low to mid-single digit royalties on net sales of licensed products. The upfront payment of $2.0 million was included in research and development expense during 2020. In March 2022, a milestone in the

amount of $1.0 million was met, which was included in research and development expense for the six months ended June 30, 2022. No research and development expense was recorded for the three and six months ended June 30, 2023.

Pursuant to our 2021 Genevant License Agreement, we obtained a nonexclusive license to Genevant's LNP technology to develop and commercialize samRNA vaccines against SARS-CoV-2, the virus that causes COVID-19. Under the 2021 Genevant License Agreement, we made a $1.5 million upfront payment to Genevant, and Genevant is eligible to receive from us up to $141.0 million in contingent milestone payments per product, plus certain royalties on future product sales or licensing (or, in certain scenarios and subject to certain conditions, in lieu of these milestone payments and royalties Genevant would receive a percentage of amounts we receive from sublicenses). In March 2021, a milestone was met following the initial patient treatment in the Phase 1 clinical trial conducted through the NIAID-supported IDCRC. Both the $1.5 million upfront and $1.0 million milestone payments were recorded as research and development expense for the six months ended June 30, 2021. No research and development expense was recorded for the three and six months ended June 30, 2023 or 2022.

We expect our research and development expenses to increase substantially in the future as we continue to advance our product candidates into and through clinical studies and pursue regulatory approval. Conducting the necessary clinical studies to obtain regulatory approval is costly and time-consuming, and such clinical studies generally become larger and more costly to conduct as they advance into later stages. The successful development of our product candidates is highly uncertain. The actual probability of success for our product candidates may be affected by a variety of risks and uncertainties associated with drug development, including those set forth in the section entitled "Risk Factors" included in Part II, Section 1A of this Quarterly Report on Form 10-Q and in Part I, Item 1A "Risk Factors" in our Annual Report on Form 10-K for the year ended December 31, 2022.

The following table summarizes our research and development expenses by program and category (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2023	2022	2023	2022
GRANITE program external expenses	$ 5,108	$ 3,446	$ 10,517	$ 6,144
SLATE program external expenses	727	676	1,343	1,472
CORAL program external expenses	1,347	3,196	3,480	6,200
Other program external research and development expenses	6,267	5,536	12,019	12,239
Personnel-related expenses [(1)]	11,161	10,371	23,012	20,958
Other unallocated research and development expenses	6,357	4,122	11,110	8,533
Total research and development expenses	$ 30,967	$ 27,347	$ 61,481	$ 55,546

(1) Personnel-related expenses include stock-based compensation expense of $1.6 million and $3.2 million, respectively, for the three and six months ended June 30, 2023, and $1.7 million and $3.5 million, respectively, for the three and six months ended June 30, 2022.

We do not track internal related expenses on a program-by-program basis, because our research and development employees and infrastructure resources are utilized across our development programs.

General and Administrative Expenses

Our general and administrative expenses consist primarily of salaries and related costs, including payroll taxes, benefits, non-cash stock-based compensation and travel. Other general and administrative expenses include legal costs of pursuing patent protection of our intellectual property, and professional service fees for auditing, tax and general legal services. We expect our general and administrative expenses to continue to increase in the future as we expand our operating activities and prepare for potential commercialization of our current and future product candidates, increase our headcount and support our operations, including increased expenses related to legal, accounting, regulatory and tax-related services associated with maintaining compliance with requirements of the Nasdaq Global Select Market and the SEC, directors and officers liability insurance premiums and investor relations activities. Allocated expenses consist of rent expenses related to our office and research and development facilities, depreciation and other allocated costs not otherwise included in research and development expenses.

Interest Income

Interest income consists primarily of interest income and investment income earned on our cash, cash equivalents and marketable securities.

Interest Expense

Interest expense consists primarily of interest expense related to our debt facility. A portion of the interest expense is non-cash expense relating to the accretion of the final payment fees and amortization of debt discount and debt issuance costs associated with the Loan Agreement.

Results of Operations

Comparison of the Three and Six Months Ended June 30, 2023 and 2022

The following table sets forth the significant components of our results of operations (in thousands):

	Three Months Ended June 30,		
	2023	2022	Change
Revenues:			
Collaboration and license revenues	$ 400	$ 2,761	$ (2,361)
Grant revenues	1,555	2,710	(1,155)
Total revenues	1,955	5,471	(3,516)
Operating expenses:			
Research and development	30,967	27,347	3,620
General and administrative	6,716	7,792	(1,076)
Total operating expenses	37,683	35,139	2,544
Loss from operations	(35,728)	(29,668)	(6,060)
Interest income	1,479	153	1,326
Interest expense	(985)	—	(985)
Other expense	(22)	—	(22)
Net loss	$ (35,256)	$ (29,515)	$ (5,741)

	Six Months Ended June 30,		
	2023	2022	Change
Revenue:			
Collaboration and license revenues	$ 941	$ 7,506	$ (6,565)
Grant revenues	3,456	5,156	(1,700)
Total revenue	4,397	12,662	(8,265)
Operating expenses:			
Research and development	61,481	55,546	5,935
General and administrative	13,461	15,747	(2,286)
Total operating expenses	74,942	71,293	3,649
Loss from operations	(70,545)	(58,631)	(11,914)
Interest income	3,157	200	2,957
Interest income	(1,828)	—	(1,828)
Other expense	(22)	—	(22)
Net loss	$ (69,238)	$ (58,431)	$ (10,807)

Collaboration and License and Grant Revenues

Collaboration and license revenues from our collaboration arrangements and grant revenues were $2.0 million and $4.4 million for the three and six months ended June 30, 2023, respectively. During the three months ended June 30, 2023, we recorded $0.1 million in collaboration revenue related to the Gilead Collaboration Agreement, $0.3 million in collaboration revenue related to the 2seventy Agreement, $1.1 million in grant revenue from the CEPI Funding Agreement, and $0.5 million in grant revenue from the Gates Foundation. During the six months ended June

30, 2023, we recognized $0.7 million in collaboration revenue related to the 2seventy Agreement, $0.2 million in collaboration revenue related to the Gilead Collaboration Agreement, $2.6 million in grant revenue from the CEPI Funding Agreement, and $0.9 million in grant revenue from the Gates Foundation.

Collaboration and license revenues from our collaboration arrangements and grant revenues were $5.5 million and $12.7 million for the three and six months ended June 30, 2022, respectively. During the three months ended June 30, 2022, we recognized $2.3 million in collaboration revenue related to the 2seventy Agreement, $0.5 million in collaboration revenue related to the Gilead Collaboration Agreement, $2.4 million in grant revenue from the CEPI Funding Agreement, and $0.3 million in grant revenue from the Gates Foundation. During the six months ended June 30, 2022, we recognized $6.3 million in collaboration revenue related to the 2seventy Agreement, $1.2 million in collaboration revenue related to the Gilead Collaboration Agreement, $4.7 million in grant revenue from the CEPI Funding Agreement, and $0.5 million in grant revenue from the Gates Foundation. The amount of collaboration revenue recognized related to the 2seventy Agreement during the three and six months ended June 30, 2022 included cumulative catch-up adjustments increasing contribution revenue by $2.0 million and $5.5 million, respectively, due to revisions to estimated costs to complete the remaining performance obligation.

See Note 9 to our condensed consolidated financial statements for additional information.

Research and Development Expenses

Research and development expenses were $31.0 million and $61.5 million for the three and six months ended June 30, 2023, respectively, and $27.3 million and $55.5 million for the three and six months ended June 30, 2022, respectively.

The increase of $3.6 million for the three months ended June 30, 2023 compared to the three months ended June 30, 2022 was primarily due to increases of $1.0 million in personnel-related expenses, $1.0 million in laboratory supplies, and $2.5 million in facilities related costs, offset by decreases of $0.8 million in outside services, consisting primarily of clinical trial and other chemistry, manufacturing and controls ("CMC") related expenses and $0.1 million in milestone and license payments.

The increase of $5.9 million for the six months ended June 30, 2023 compared to the six months ended June 30, 2022 was primarily due to increases of $2.5 million in personnel-related expenses, $1.8 million in laboratory supplies, $3.2 million in facilities related costs, offset by decreases of $1.1 million in milestone and license payments and $0.5 million in outside services, consisting primarily of clinical trial and other CMC related expenses.

General and Administrative Expenses

General and administrative expenses were $6.7 million for the three months ended June 30, 2023 compared to $7.8 million for the three months ended June 30, 2022. The decrease of $1.1 million was primarily attributable to decreases of $1.3 million in outside services and $0.1 million in personnel-related expenses, offset by an increase of $0.3 million in facilities related costs.

General and administrative expenses were $13.5 million for the six months ended June 30, 2023 compared to $15.7 million for the six months ended June 30, 2022. The decrease of $2.2 million was primarily attributable to decreases of $2.3 million in outside services, offset by increase of $0.1 million in facilities related costs.

Interest Income

Interest income was $1.5 million and $3.2 million, respectively, for the three and six months ended June 30, 2023, and $0.2 million for each of the three and six months ended June 30, 2022. The income for both periods represents interest and investment income from cash, cash equivalents and marketable securities. The increase for both periods was primarily due to higher interest rates in 2023 as compared to 2022.

Interest Expense

Interest expense was $1.0 million and $1.8 million for the three and six months ended June 30, 2023, and nil for each of the three and six months ended June 30, 2022. Interest expense is primarily comprised of the contractual coupon interest expense, the amortization of the debt discount and issuance costs and the accretion of the final payment fee associated with the Loan Agreement.

Liquidity and Capital Resources

Sources of Liquidity

Since our inception, we have funded our operations primarily through sales of our convertible preferred stock, sales of our common stock in public offerings and under our "at-the-market" offering programs, private placements of our common stock and pre-funded warrants, and our collaborations, including with the receipt of proceeds under the 2seventy Agreement and the Gilead Collaboration Agreement, and non-dilutive grants from various nonprofit organizations. As of June 30, 2023, we had cash, cash equivalents, and marketable securities of $114.5 million and an accumulated deficit of $590.3 million, compared to cash, cash equivalents, and marketable securities of $175.9 million and an accumulated deficit of $521.1 million as of December 31, 2022. The Company's cash, cash equivalents and marketable securities are not sufficient to fund the Company's planned operations for a period of 12 months from the date the financial statements are issued. Additionally, we do not expect positive cash flows from operations in the foreseeable future. Historically, we have incurred operating losses as a result of ongoing efforts to develop our cancer immunotherapy candidates, including conducting ongoing research and development and providing general and administrative support for these operations. We expect to continue to incur net operating losses for at least the next several years as we advance GRANITE, SLATE, and CORAL and any future product candidates through clinical development, seek regulatory approval, prepare for and, if approved, proceed to commercialization, continue our research and development efforts and invest in our manufacturing facility.

In September 2021, we completed the Second PIPE Financing, pursuant to which we sold an aggregate of 5,000,000 shares of common stock at a per share purchase price of $11.00. In connection with the Second PIPE Financing, we received $55.0 million in aggregate gross cash proceeds and incurred related costs of $2.3 million.

In February 2021, we received a non-refundable upfront payment of $30.0 million under the Gilead Collaboration Agreement and $30.0 million under the Gilead Stock Purchase Agreement.

In September 2021, we received an upfront payment of $11.3 million under the CEPI Funding Agreement.

In March 2022, we filed the 2022 Shelf Registration Statement, covering the offering of up to $250.0 million of various equity and debt securities, including the sale and issuance of up to $100.0 million worth of shares of our common stock under the 2022 ATM Offering Program. Through June 30, 2023, we have received aggregate proceeds from our 2022 ATM Offering Program of $22.1 million, net of commissions and offering costs, pursuant to the issuance of 7,889,000 shares. As of June 30, 2023, we have $77.2 million available under the 2022 ATM Offering Program.

In April 2022, we received the second tranche payment of $2.7 million under the CEPI Funding Agreement.

In July 2022, we entered into a Loan Agreement with Hercules and SVB, which provides us with a 60-month term loan facility for the Company up to $80.0 million in borrowing capacity across five potential tranches. At the closing of the Loan Agreement, we drew $20.0 million from the first tranche, and we drew the additional $10.0 million in March 2023. The remaining tranches provide up to $50.0 million borrowing capacity and become available if and when we meet certain milestones set forth in the Loan Agreement. In the fourth quarter of 2022, one milestone had been achieved, which provides the Company the ability to draw up to $10 million through December 15, 2023. As of June 30, 2023, the Company has not drawn the additional $10 million. The term loan is secured by substantially all of our assets, other than intellectual property. There are no warrants associated with the Loan Agreement. See Note 8 to our condensed consolidated financial statements for additional information.

In March 2023, Gritstone, Hercules and SVB amended the Loan Agreement to change the minimum liquidity requirements. Under the amended Loan Agreement, beginning on the earliest occurrence of certain milestones or April 1, 2024, and at all times thereafter, so long as the Company's market capitalization is no greater than $400.0 million, the Company is subject to a minimum liquidity requirement equal to the then outstanding balance under the Loan Agreement multiplied by 0.55 or 0.45, which multiplier depends on whether the Company achieves certain performance milestones.

In October 2022, we completed the Third PIPE Financing, pursuant to which we sold an aggregate of 6,637,165 shares of common stock at a per share purchase price of $2.26 and pre-funded warrants to purchase 13,274,923 shares of common stock at a price of $2.26 per share (of which $2.2599 per share was prepaid by each purchaser). The aggregate gross cash proceeds to us for the securities sold in the Third PIPE Financing was $45.0 million, and related costs were $2.6 million.

In April 2023, we received $0.7 million under the Gates Grant Agreement.

In June 2023, we received the third tranche payment of $1.2 million under the CEPI Funding Agreement.

Future Funding Requirements

We do not expect positive cash flows from operations in the foreseeable future. Historically, we have incurred operating losses as a result of ongoing efforts to develop our cancer and infectious disease immunotherapy candidates, including conducting ongoing research and development, clinical and preclinical studies and providing general and administrative support for these operations. We do not have any products approved for sale, and we do not expect to generate any meaningful revenue unless and until we obtain regulatory approval of and commercialize any of our current and future product candidates and/or enter into additional significant collaboration or grant agreements with third parties. We do not know when, or if, either will occur. We expect to continue to incur net operating losses for at least the next several years and we expect the losses to increase as we advance our GRANITE, SLATE, and CORAL programs, as well as any future product candidates, through clinical development, seek regulatory approval, prepare for and, if approved, proceed to commercialization, continue our research and development efforts and invest in our manufacturing facility. We are subject to all the risks typically related to the development of new product candidates, and we may encounter unforeseen expenses, difficulties, complications, delays and other unknown factors that may adversely affect our business. Moreover, we incur substantial costs associated with operating as a public company. We anticipate that we will need substantial additional funding in connection with our continuing operations.

Until we can generate a sufficient amount of revenue from the commercialization of immunotherapy product candidates or from additional significant collaboration or license agreements with third parties, if ever, we expect to finance our future cash needs through private and public equity offerings, including our “at-the-market” offering programs, debt financings, and potential future collaboration, license and development agreements. Additional capital may not be available on reasonable terms, if at all. If we are unable to raise additional capital in sufficient amounts or on terms acceptable to us, we may have to significantly delay, scale back or discontinue the development or commercialization of one or more of our current or future product candidates. If we raise additional funds by issuing equity or convertible debt securities, it could result in dilution to our existing stockholders and increased fixed payment obligations. In addition, as a condition to providing additional funds to us, future investors may demand, and may be granted, rights superior to those of existing stockholders. If we incur indebtedness, we could become subject to covenants that would restrict our operations and potentially impair our competitiveness, such as limitations on our ability to incur additional debt, limitations on our ability to acquire, sell or license intellectual property rights, and other operating restrictions that could adversely impact our ability to conduct our business. Additionally, any future collaborations we enter into with third parties may provide capital in the near term, but we may have to relinquish valuable rights to our product candidates or grant licenses on terms that are not favorable to us. Any of the foregoing could significantly harm our business, financial condition and prospects.

Since our inception, we have incurred significant losses and negative cash flows from operations. We have an accumulated deficit of $590.3 million as of June 30, 2023. We expect to incur substantial additional losses in the future as we conduct and expand our research and development activities. These conditions raise substantial doubt about our ability to continue as a going concern for a period of one year from the date of the issuance of our unaudited interim condensed consolidated financial statements. The accompanying unaudited interim condensed consolidated financial statements and related notes have been prepared assuming that we will continue as a going concern, which contemplates the realization of assets and the settlement of liabilities and commitments in the normal course of business. The unaudited interim condensed consolidated financial statements and related notes do not reflect any adjustments relating to the recoverability and classification of assets or amounts and classification of liabilities that might be necessary if we are unable to continue as a going concern.

We have based our projections of operating capital requirements on assumptions that may prove to be incorrect, and we may use all our available capital resources sooner than we expect. Because of the numerous risks and uncertainties associated with research, development and commercialization of product candidates, we are unable to estimate the exact amount of our operating capital requirements. Our future capital requirements depend on many factors, including:

- the scope, progress, results and costs of developing our product candidates, and of conducting preclinical studies and clinical trials, including our clinical trials for GRANITE, SLATE and CORAL;

- the timing of, and the costs involved in, obtaining regulatory approvals for our oncology and infectious disease immunotherapy product candidates; in particular, any costs incurred in connection with any future regulatory requirements that may be imposed by the FDA or foreign regulatory bodies;
- the number and characteristics of any additional product candidates we develop or acquire;
- the timing and amount of any milestone, royalty or other payments we are required to make pursuant to any current or future collaboration or license agreements;
- the cost of manufacturing our product candidates we successfully commercialize, including the cost of scaling up our internal manufacturing operations;
- the cost of building a sales force in anticipation of product commercialization;
- the cost of commercialization activities, including building a commercial infrastructure, marketing, sales and distribution costs;
- our ability to maintain existing, and establish new, strategic collaborations, licensing or other arrangements, and the financial terms of any such agreements, including the timing and amount of any future milestone, royalty or other payments due under any such agreement;
- any product liability or other lawsuits related to our products;
- the costs to attract, hire and retain skilled personnel;
- the costs associated with being a public company;
- the costs involved in preparing, filing, prosecuting, maintaining, defending and enforcing our intellectual property portfolio; and
- the timing, receipt and amount of sales of future approved products, if any.

A change in the outcome of any of these or other variables with respect to the development of any of our current and future product candidates could significantly change the costs and timing associated with the development of that product candidate. Furthermore, our operating plans may change in the future, and we will need additional funds to meet operational needs and capital requirements associated with such operating plans.

Cash Flows

The following table sets forth a summary of the primary sources and uses of cash for each of the periods presented below (in thousands):

	Six Months Ended June 30,	
	2023	**2022**
Cash used in operating activities	$ (71,053)	$ (59,788)
Cash provided by investing activities	45,765	30,113
Cash provided by (used in) financing activities	9,664	(607)
Net decrease in cash and cash equivalents	$ (15,624)	$ (30,282)

Cash Used in Operating Activities

During the six months ended June 30, 2023, cash used in operating activities was $71.1 million, which consisted of net loss of $69.2 million, adjusted by non-cash charges of $15.1 million and net changes in our operating assets and liabilities of $17.0 million. The non-cash charges consisted primarily of depreciation and amortization expense of $3.7 million, net amortization of premiums and discounts on marketable securities of $1.8 million and amortization of debt discount and issuance costs of $0.6 million, stock-based compensation of $5.8 million and non-cash operating lease expense of $6.8 million. The change in our operating assets and liabilities was primarily due to decreases of $2.2 million in accrued compensation, $2.3 million in accrued and other non-current liabilities, $1.2 million in accrued research and development expense, $12.3 million in lease liability, $2.3 million in deferred revenue, $1.3 million in accounts payable and increases of $3.0 million in deposits and other long-term assets and $1.6 million in prepaid expenses and other current assets.

During the six months ended June 30, 2022, cash used in operating activities was $59.8 million, which consisted of net loss of $58.4 million, adjusted by non-cash charges of $14.5 million and net changes in our operating assets and liabilities of $15.9 million. The non-cash charges consisted primarily of depreciation and amortization expense of $3.1 million, stock-based compensation of $6.5 million, non-cash operating lease expense of $4.6 million and net amortization of premiums and discounts on marketable securities of $0.3 million. The change in our operating assets and liabilities was primarily due to decreases of $8.9 million in deferred revenue, $1.6 million in accrued compensation, $4.2 million in lease liability, $1.4 million in accounts payable, $0.1 million in prepaid expenses and other current assets, and $0.7 million in deposits and other long term assets, offset by increases of $0.3 million in accrued and other non-current liabilities and $0.7 million in accrued research and development expenses.

Cash Provided by Investing Activities

During the six months ended June 30, 2023, cash provided by investing activities was $45.8 million, which consisted of $66.9 million in proceeds from the maturity of marketable securities, offset by $17.8 million in purchases of marketable securities and $3.3 million of capital expenditures to purchase property and equipment.

During the six months ended June 30, 2022, cash provided by investing activities was $30.1 million, which consisted of $61.7 million in proceeds from the maturity of marketable securities, offset by $28.3 million in purchases of marketable securities and $3.3 million of capital expenditures to purchase property and equipment.

Cash Provided by (Used in) Financing Activities

During the six months ended June 30, 2023, cash provided by financing activities was $9.7 million, which primarily consisted of $9.9 million in proceeds from long-term debt, net of debt discount and issuance costs, $2.6 million in proceeds from the issuance of common stock under the 2022 ATM Offering program, and $0.5 million in proceeds from the issuance of common stock under the employee stock purchase plan, offset by $2.5 million in financing and offering costs, $0.7 million in taxes paid related to net share settlement of restricted stock units and $0.1 million in payment of financing lease.

During the six months ended June 30, 2022, cash used in financing activities was $0.6 million, which primarily consisted of $0.9 million in tax withholding on vesting of restricted stock units and $0.1 million in payment of financing costs, offset by $0.1 million in proceeds from the issuance of common stock from option and warrant exercises and $0.3 million in proceeds from issuance of common stock under the employee stock purchase plan.

Off-Balance Sheet Arrangements

We have not entered into any off-balance sheet arrangements, as defined under SEC rules.

Contractual Obligations and Commitments

We lease office, laboratory and storage space in facilities at several locations in California and Massachusetts. The terms of our lease agreements have expiration dates between 2023 to 2033. The total future minimum lease payments under the agreements are $99.9 million, of which $4.6 million of the payments are due in 2023. See Note 6 to our condensed consolidated financial statements.

We are party to license agreements pursuant to which we have in-licensed various intellectual property rights. The license agreements obligate us to make certain milestone payments related to achievement of specified events, as well as royalties in the low-single digits based on sales of licensed products. During the three and six months ended June 30, 2023 and 2022, no royalties were due from the sales of licensed products. The table above does not include any milestone or royalty payments to the counterparties to these agreements as the amounts, timing and likelihood of such payments are not known. See Note 9 to our condensed consolidated financial statements for additional information.

From time to time, in the normal course of business, we enter into contracts with CROs for clinical trials, CMOs for clinical supply manufacturing and with vendors for preclinical research studies and other services and products for operating purposes, which generally provide for termination within 30 days of notice. Therefore, all such contracts are cancelable contracts and not included in the table above.

Critical Accounting Policies and Use of Estimates

This discussion and analysis of financial condition and results of operation is based on our unaudited condensed consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States, or U.S. GAAP. The preparation of financial statements requires management to make estimates and judgments that affect the reported amounts of assets and liabilities and disclosures of contingent assets and liabilities as of the date of the financial statements and the reported amounts of expenses during the reporting period. On an ongoing basis, management evaluates its estimates, including those related to preclinical study trial accruals, fair value of assets and liabilities, and the fair value of common stock and stock-based compensation. Management bases its estimates on historical experience and on various other market-specific and relevant assumptions that management believes to be reasonable under the circumstances. Actual results could differ from those estimates.

There have been no changes to our critical accounting policies since we filed our Annual Report on Form 10-K for the year ended December 31, 2022 with the SEC on March 9, 2023. For a description of our critical accounting policies, please refer to that Annual Report on Form 10-K.

Recent Accounting Pronouncements

Refer to Note 2. Summary of Significant Accounting Policies in the notes to our unaudited interim condensed consolidated financial statements in Part I, Item 1 of this Quarterly Report, for a discussion of recent accounting pronouncements.

Item 3. Quantitative and Qualitative Disclosures About Market Risk

Interest Rate Risk

There have been no material changes in market risk from the information provided in "Item 7A. Quantitative and Qualitative Disclosures About Market Risk" in our Annual Report on Form 10-K for the year ended December 31, 2022.

Item 4. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

As of June 30, 2023, our management, with the participation of our principal executive, financial and accounting officers, performed an evaluation of the effectiveness of the design and operation of our disclosure controls and procedures as defined in Rules 13a-15(e) and 15d-15(e) of the Exchange Act. Our disclosure controls and procedures are designed to ensure that information required to be disclosed in the reports we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms, and that such information is accumulated and communicated to our management, including the principal executive, financial and accounting officers, to allow timely decisions regarding required disclosures.

Any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objective, and management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based on this evaluation, our Chief Executive Officer and Chief Financial Officer concluded that, as of June 30, 2023, the design and operation of our disclosure controls and procedures were effective at the reasonable assurance level.

Changes in Internal Control over Financial Reporting

There was no change in our internal control over financial reporting identified in connection with the evaluation required by Rule 13a-15(e) and 15d-15(e) of the Exchange Act that occurred during the three and six months ended June 30, 2023 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

PART II. OTHER INFORMATION

ITEM 1. Legal Proceedings

From time to time, we may become involved in litigation or other legal proceedings. We are not currently a party to any litigation or legal proceedings that, in the opinion of our management, are likely to have a material adverse effect on our business. Regardless of the outcome, litigation can have an adverse impact on us because of defense and settlement costs, diversion of management resources and time and other factors.

ITEM 1A. Risk Factors

Investing in our common stock involves a high degree of risk. You should carefully consider the risks described below, as well as the other information in this report, including our financial statements and the related notes and "Management's Discussion and Analysis of Financial Condition and Results of Operations," before deciding whether to invest in our common stock. The occurrence of any of the events or developments described below, or in Part I, Item 1A of our Annual Report on Form 10-K filed with the SEC on March 9, 2023 could have a material adverse effect on our business, results of operations, financial condition, prospects and stock price. In such an event, the market price of our common stock could decline, and you may lose all or part of your investment. Many of the following risks and uncertainties are, and will be, exacerbated by the COVID-19 pandemic, inflation, the high interest rate environment, and any worsening of the global business and economic environment as a result. Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also impair our business operations.

There have been no material changes to the risk factors set forth in Part I, Item 1A of our Annual Report on Form 10-K for the year ended December 31, 2022 filed with the SEC on March 9, 2023, except as set forth below.

Our recurring losses from operations and negative cash flows have raised substantial doubt regarding our ability to continue as a going concern. We will require substantial additional funding to finance our operations, and if we are unable to raise capital, we could be forced to delay, reduce the scope of or eliminate certain of our development programs, or explore other strategic options.

Our recurring losses from operations and negative cash flows raise substantial doubt about our ability to continue as a going concern. Our ability to continue as a going concern will require us to obtain additional capital to fund our operations. The perception of our ability to continue as a going concern may make it more difficult for us to obtain financing for the continuation of our operations and could result in the loss of confidence by our investors, vendors, collaborators and employees.

Our ability to continue as a going concern is dependent upon our ability to raise additional capital through outside sources. We plan to raise additional capital through the sale of convertible stock, additional equity, debt financings or strategic alliances with third parties. Such financing and funding may not be available at all, or on terms that are favorable to us. Failure to raise additional capital could have a material adverse effect on our business, results of operations, financial condition and/or our ability to fund our scheduled obligations on a timely basis or at all.

ITEM 2. Unregistered Sales of Equity Securities and Use of Proceeds

Unregistered Sales of Equity Securities

Not applicable.

Use of Proceeds

Not applicable.

Issuer Purchases of Equity Securities

Not applicable.

ITEM 3. Defaults Upon Senior Securities

None.

ITEM 4. Mine Safety Disclosures

Not applicable.

ITEM 5. Other Information

None.

ITEM 6. EXHIBITS

Exhibit Number	Exhibit Description	Incorporated by Reference			Filed Herewith
		Form	Date	Number	
3.1(a)	Amended and Restated Certificate of Incorporation.	8-K	10/02/2018	3.1	
3.1(b)	Certificate of Amendment to Amended and Restated Certificate of Incorporation.	8-K	05/06/2021	3.1	
3.2	Amended and Restated Bylaws.	8-K	05/06/2021	3.2	
4.1	Reference is made to exhibits 3.1 through 3.2.				
4.2	Form of Common Stock Certificate.	S-1/A	09/17/2018	4.2	
4.3	Description of Common Stock.	10-K	03/10/2022	4.3	
31.1	Certification of Chief Executive Officer of Gritstone bio, Inc., as required by Rule 13a-14(a) or Rule 15d-14(a) under the Securities Exchange Act of 1934, as amended.				X
31.2	Certification of Chief Financial Officer of Gritstone bio, Inc., as required by Rule 13a-14(a) or Rule 15d-14(a) under the Securities Exchange Act of 1934, as amended.				X
32.1*	Certification by the Chief Executive Officer and Chief Financial Officer, as required by Rule 13a-14(b) or Rule 15d-14(b) under the Securities Exchange Act of 1934, as amended, and Section 1350 of Chapter 36 of Title 18 of the United States Code (18 U.S.C. §1350).				X

101.INS	Inline XBRL Instance Document	X
101.SCH	Inline XBRL Taxonomy Extension Schema Document	X
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document	X
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document	X
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document	X
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document	X
104	The cover page from the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2023 has been formatted in Inline XBRL.	X

* The certification attached as Exhibit 32.1 that accompanies this report is not deemed filed with the SEC and is not to be incorporated by reference into any filing of Gritstone bio, Inc. under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, whether made before or after the date of this Form 10-Q, irrespective of any general incorporation language contained in such filing.

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.

Gritstone bio, Inc.

Date: August 9, 2023

By: /s/ Andrew Allen

Andrew Allen, M.D., Ph.D.
President and Chief Executive Officer
(Principal Executive Officer)

By: /s/ Vassiliki Economides

Vassiliki Economides
Chief Financial Officer
(Principal Financial Officer)

Exhibit 31.1

CERTIFICATION PURSUANT TO
RULES 13a-14(a) AND 15d-14(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934,
AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Andrew Allen, M.D., Ph.D., certify that:

1. I have reviewed this quarterly report on Form 10-Q of Gritstone bio, 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(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: August 9, 2023

By: /s/ Andrew Allen
Andrew Allen, M.D., Ph.D.
President and Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

CERTIFICATION PURSUANT TO
RULES 13a-14(a) AND 15d-14(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934,
AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Vassiliki Economides, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Gritstone bio, 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(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: August 9, 2023

By: /s/ Vassiliki Economides

Vassiliki Economides
Chief Financial Officer
(Principal Financial Officer)

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 Gritstone bio, Inc. (the "Company") for the period ended June 30, 2023, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), Andrew Allen, M.D., Ph.D., President and Chief Executive Officer (Principal Executive Officer) of the Company, and Vassiliki Economides, Chief Financial Officer (Principal Financial Officer) of the Company, respectively, hereby certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

(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.

Date: August 9, 2023

/s/ Andrew Allen
Andrew Allen, M.D., Ph.D.
President and Chief Executive Officer
(Principal Executive Officer)

Date: August 9, 2023

/s/ Vassiliki Economides
Vassiliki Economides
Chief Financial Officer
(Principal Financial Officer)