UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, DC 20549

FORM 10-Q

(Mark One)

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

For the quarterly period ended September 30, 2022

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: 001-39979

VOR BIOPHARMA INC.

(Exact Name of Registrant as Specified in its Charter)

Delaware	**81-1591163**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**
100 Cambridgepark Drive, Suite 101 Cambridge, Massachusetts	**02140**
(Address of principal executive offices)	**(Zip Code)**

Registrant's telephone number, including area code: (617) 655-6580

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	VOR	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 ☒

Number of shares of the registrant's Common Stock outstanding as of November 4, 2022 was 38,666,158.

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Note Regarding Company References

Throughout this Quarterly Report on Form 10-Q, the "Company," "Vor," "Vor Bio," "Vor Biopharma Inc.," "we," "us," and "our," except where the context requires otherwise, refer to Vor Biopharma Inc. and its consolidated subsidiary, and "our board of directors" refers to the board of directors of Vor Biopharma Inc.

Special Note Regarding Forward-Looking Statements

This Quarterly Report on Form 10-Q contains forward-looking statements that involve substantial risks and uncertainties. All statements, other than statements of historical facts, contained in this Quarterly Report on Form 10-Q, including statements regarding our strategy, future operations, future financial position, future revenue, projected costs, prospects, plans, and objectives of management, are forward-looking statements. In some cases, you can identify forward-looking statements by terms such as "may," "will," "should," "expect," "plan," "anticipate," "could," "intend," "target," "project," "estimate," "believe," "estimate," "predict," "potential" or "continue" or the negative of these terms or other similar expressions intended to identify statements about the future. These statements speak only as of the date of this Quarterly Report on Form 10-Q and involve known and unknown risks, uncertainties and other important factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements.

We have based these forward-looking statements largely on our current expectations and projections about future events and financial trends that we believe may affect our business, financial condition and results of operations. These forward-looking statements include, without limitation, statements about:

- the timing, progress and results of our preclinical studies and clinical trials of our product candidates, including statements regarding the timing of initiation, enrollment and completion of studies or trials and related preparatory work, the period during which the results of the trials will become available and our research and development programs;
- the timing of any submission of filings for regulatory approval of, and our ability to obtain and maintain regulatory approvals for, our product candidates for any indication;
- the impacts of the COVID-19 pandemic, which could continue to adversely impact our business, including our preclinical studies and clinical trials;
- our ability to identify patients with the diseases treated by our product candidates, and to enroll patients in trials;
- our expectations regarding the market acceptance and opportunity for and clinical utility of our product candidates, if approved for commercial use;
- our expectations regarding the scope of any approved indication for any product candidate;
- our ability to successfully commercialize our product candidates;
- our estimates of our expenses, ongoing losses, future revenue, capital requirements and our need for or ability to obtain additional funding before we can expect to generate any revenue from product sales;
- our ability to establish or maintain collaborations or strategic relationships;
- our ability to identify, recruit and retain key personnel, including executive officers and members of management;
- our reliance upon intellectual property licensed from third parties and our ability to obtain such licenses on commercially reasonable terms or at all;
- our ability to protect and enforce our intellectual property position for our product candidates, and the scope of such protection;
- our financial performance;
- the period over which we estimate our existing cash, cash equivalents and marketable securities will be sufficient to fund our future operating expenses and capital expenditure requirements;
- our competitive position and the development of and projections relating to our competitors or our industry;
- the impact of laws and regulations; and
- our expectations regarding the time during which we will be an emerging growth company under the Jumpstart Our Business Startups Act of 2012.

You should read this Quarterly Report on Form 10-Q and the documents that we have filed as exhibits to this Quarterly Report on Form 10-Q completely and with the understanding that our actual future results may be materially different from what we

expect. The forward-looking statements contained in this Quarterly Report on Form 10-Q are made as of the date of this Quarterly Report on Form 10-Q, and we do not assume any obligation to update any forward-looking statements, whether as a result of new information, future events or otherwise, except as required by applicable law. You should refer to the "Summary Risk Factors" section in "Part I. Item 2, Management's Discussion and Analysis of Financial Condition and Results of Operations" in this Quarterly Report on Form 10-Q and "Part I, Item 1A. Risk Factors" in our Annual Report on Form 10-K for the year ended December 31, 2021 for a discussion of material factors that may cause our actual results or events to differ materially from those expressed or implied by our forward-looking statements.

PART I—FINANCIAL INFORMATION

Item 1. Financial Statements (Unaudited).

VOR BIOPHARMA INC.
CONDENSED CONSOLIDATED BALANCE SHEETS
(UNAUDITED)

(in thousands, except share amounts)	September 30, 2022	December 31, 2021
Assets		
Current assets:		
Cash and cash equivalents	$ 60,827	$ 119,801
Marketable securities	75,240	87,668
Prepaid expenses	4,891	4,836
Other current assets	1,771	2,094
Total current assets	142,729	214,399
Restricted cash equivalents	2,413	2,413
Property and equipment, net	12,963	6,853
Operating lease right-of-use assets	45,390	15,670
Other assets	2,878	3,255
Total assets	$ 206,373	$ 242,590
Liabilities and stockholders' equity		
Current liabilities:		
Accounts payable	$ 824	$ 1,545
Accrued liabilities	6,288	6,335
Operating lease liabilities	3,757	1,839
Other current liabilities	233	434
Total current liabilities	11,102	10,153
Long-term liabilities:		
Operating lease liabilities—non-current	36,537	16,174
Total liabilities	47,639	26,327
Stockholders' equity:		
Preferred stock, $0.0001 par value; 10,000,000 shares authorized as of September 30, 2022 and December 31, 2021; 0 shares issued and outstanding as of September 30, 2022 and December 31, 2021	—	—
Common stock, $0.0001 par value; 400,000,000 shares authorized as of September 30, 2022 and December 31, 2021; 38,503,966 and 37,375,428 shares issued and 38,393,211 and 37,174,741 outstanding as of September 30, 2022 and December 31, 2021, respectively	4	4
Additional paid-in capital	358,215	346,382
Accumulated other comprehensive loss	(1,178)	—
Accumulated deficit	(198,307)	(130,123)
Total stockholders' equity	158,734	216,263
Total liabilities and stockholders' equity	$ 206,373	$ 242,590

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

VOR BIOPHARMA INC.
CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS AND COMPREHENSIVE LOSS
(UNAUDITED)

(in thousands, except share and per share amounts)	Three Months Ended September 30,		Nine Months Ended September 30,	
	2022	2021	2022	2021
Operating expenses:				
Research and development	$ 16,875	$ 12,925	$ 47,488	$ 34,836
General and administrative	7,226	5,677	21,205	15,876
Total operating expenses	$ 24,101	$ 18,602	$ 68,693	$ 50,712
Loss from operations	$ (24,101)	$ (18,602)	$ (68,693)	$ (50,712)
Other income:				
Interest income	313	48	509	65
Total other income	313	48	509	65
Net loss	$ (23,788)	$ (18,554)	$ (68,184)	$ (50,647)
Cumulative dividends on redeemable convertible preferred stock	—	—	—	(1,228)
Net loss attributable to common stockholders	$ (23,788)	$ (18,554)	$ (68,184)	$ (51,875)
Net loss per share attributable to common stockholders, basic and diluted	$ (0.63)	$ (0.50)	$ (1.81)	$ (1.62)
Weighted-average common shares outstanding, basic and diluted	38,009,022	36,934,311	37,582,463	32,067,535
Other comprehensive loss:				
Unrealized gain (loss) on available for sale investments	148	—	(1,178)	—
Total other comprehensive loss	148	—	(1,178)	—
Comprehensive loss attributable to common stockholders	$ (23,640)	$ (18,554)	$ (69,362)	$ (51,875)

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

VOR BIOPHARMA INC.
CONDENSED CONSOLIDATED STATEMENTS OF REDEEMABLE CONVERTIBLE PREFERRED STOCK AND STOCKHOLDERS' EQUITY (DEFICIT)
(UNAUDITED)

(in thousands, except share amounts)	Common Stock Shares	Common Stock Amount	Additional Paid-In Capital	Accumulated other comprehensive loss	Accumulated Deficit	Total Stockholders' Equity
Balance at December 31, 2021	37,174,741	$ 4	$ 346,382	$ 0	$ (130,123)	$ 216,263
Issuance of common stock upon vesting and exercise of stock options	161,573	—	247	—	—	247
Stock-based compensation expense	—	—	1,746	—	—	1,746
Other comprehensive loss	—	—	—	(1,072)	—	(1,072)
Net loss	—	—	—	—	(22,737)	(22,737)
Balance at March 31, 2022	37,336,314	$ 4	$ 348,375	$ (1,072)	$ (152,860)	$ 194,447
Issuance of common stock upon vesting and exercise of stock options	74,358	—	146	—	—	146
Issuance of common stock from open market sales agreement	95,564	—	553	—	—	553
Stock-based compensation expense	—	—	1,741	—	—	1,741
Other comprehensive loss	—	—	—	(254)	—	(254)
Net loss	—	—	—	—	(21,659)	(21,659)
Balance at June 30, 2022	37,506,236	$ 4	$ 350,815	$ (1,326)	$ (174,519)	$ 174,974
Issuance of common stock upon vesting and exercise of stock options	126,509	—	279	—	—	279
Issuance of common stock from open market sales agreement	760,466	—	3,792	—	—	3,792
Stock-based compensation expense	—	—	3,329	—	—	3,329
Other comprehensive loss	—	—	—	148	—	148
Net loss	—	—	—	—	(23,788)	(23,788)
Balance at September 30, 2022	38,393,211	$ 4	$ 358,215	$ (1,178)	$ (198,307)	$ 158,734

(in thousands, except share amounts)	Series A-1 Preferred Stock Shares	Series A-1 Preferred Stock Amount	Series A-2 Preferred Stock Shares	Series A-2 Preferred Stock Amount	Series B Preferred Stock Shares	Series B Preferred Stock Amount	Common Stock Shares	Common Stock Amount	Additional Paid-In Capital	Accumulated Deficit	Total Stockholders' Equity (Deficit)
Balance at December 31, 2020	20,000,000	$ 2	107,194,866	$ 42,786	124,519,220	$ 64,548	505,074	$ 1	$ 2,158	$ (61,224)	$ (59,065)
Issuance of Series B redeemable convertible preferred stock	—	—	—	—	87,259,605	45,375	—	—	—	—	—
Conversion of redeemable convertible preferred stock into common stock upon closing of initial public offering	(20,000,000)	(2)	(107,194,866)	(42,786)	(211,778,825)	(109,923)	24,924,501	2	152,709	—	152,711
Issuance of common stock upon closing of initial public offering, net of offering costs and underwriter fees of $17,132	—	—	—	—	—	—	11,302,219	1	186,307	—	186,308
Issuance of common stock upon vesting and exercise of stock options	—	—	—	—	—	—	38,216	—	65	—	65
Stock-based compensation expense	—	—	—	—	—	—	—	—	891	—	891
Net loss	—	—	—	—	—	—	—	—	—	(13,723)	(13,723)
Balance at March 31, 2021	—	$ —	—	$ —	—	$ —	36,770,010	$ 4	$ 342,130	$ (74,947)	$ 267,187
Issuance of common stock upon vesting and exercise of stock options	—	—	—	—	—	—	115,362	—	224	—	224
Stock-based compensation expense	—	—	—	—	—	—	—	—	1,067	—	1,067
Net loss	—	—	—	—	—	—	—	—	—	(18,370)	(18,370)
Balance at June 30, 2021	—	$ —	—	$ —	—	$ —	36,885,372	$ 4	$ 343,421	$ (93,317)	$ 250,108
Issuance of common stock upon vesting and exercise of stock options	—	—	—	—	—	—	132,910	—	249	—	249
Stock-based compensation expense	—	—	—	—	—	—	—	—	1,154	—	1,154
Net loss	—	—	—	—	—	—	—	—	—	(18,554)	(18,554)
Balance at September 30, 2021	—	$ —	—	$ —	—	$ —	37,018,282	$ 4	$ 344,824	$ (111,871)	$ 232,957

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

VOR BIOPHARMA INC.
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
(UNAUDITED)

(in thousands)	Nine Months Ended September 30, 2022	2021
Cash flows from operating activities		
Net loss	$ (68,184)	$ (50,647)
Adjustments to reconcile net loss to net cash used in operations:		
Depreciation expense	1,893	1,039
Non-cash lease expense	4,008	2,260
Stock-based compensation	6,816	3,112
Other	163	38
Changes in operating assets and liabilities:		
Operating lease liability	(10,594)	(1,840)
Prepaid expenses and other current assets	316	(5,537)
Accounts payable and accrued liabilities	(542)	333
Other assets	(674)	(315)
Net cash used in operating activities	(66,798)	(51,557)
Cash flow from investing activities		
Purchases of marketable securities	(5,044)	(82,972)
Proceed from maturities of marketable securities	16,130	—
Purchases of property and equipment	(8,141)	(2,726)
Net cash used in investing activities	2,945	(85,698)
Cash flow from financing activities		
Proceeds from issuance of redeemable convertible preferred stock	—	45,375
Proceeds from the issuance of common stock upon closing of initial public offering, net of underwriter fees	—	189,199
Payment of initial public offering costs	—	(2,215)
Proceeds from the issuance of common stock from open market sales agreement	4,345	—
Proceeds from stock option exercises	534	245
Net cash provided by financing activities	4,879	232,604
Net (decrease) increase in cash, cash equivalents and restricted cash equivalents	(58,974)	95,349
Cash, cash equivalents and restricted cash equivalents, beginning of period	$ 122,214	$ 50,098
Cash, cash equivalents and restricted cash equivalents, end of period	$ 63,240	$ 145,447
Supplemental disclosure of non-cash activities		
Lease incentive paid by the landlord on behalf of the Company	$ 7,872	$ —
Operating right-of-use assets and operating lease liability recorded upon lease commencement	$ 23,376	$ 35
Purchases of property and equipment in accounts payable and accrued liabilities	$ 56	$ 18
Conversion of redeemable convertible preferred stock to common stock upon closing of the initial public offering	$ —	$ 152,711

A reconciliation of the cash, cash equivalents and restricted cash equivalents reported within the condensed consolidated balance sheets that sum to the total of the same amounts shown in the statements of cash flows is as follows:

(in thousands)	For the Nine Months Ended September 30, 2022	2021
Cash and cash equivalents	$ 60,827	$ 143,034
Restricted cash equivalents	2,413	2,413
Total cash, cash equivalents and restricted cash equivalents as shown on the statements of cash flows	$ 63,240	$ 145,447

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

1. Nature of the Business

Vor Biopharma Inc. (the "Company") is a clinical-stage cell and genome engineering company that combines a novel patient engineering approach with targeted therapies to provide a single company solution for patients suffering from hematological malignancies. The Company's proprietary platform leverages its expertise in hematopoietic stem cell ("HSC") biology, genome engineering and targeted therapy development to genetically modify HSCs to remove surface targets expressed by cancer cells. The Company is headquartered in Cambridge, Massachusetts. The Company was incorporated on December 30, 2015.

Risks and Uncertainties

The Company is subject to a number of risks common to development stage companies in the biotechnology industry, including, but not limited to, risks of failure of preclinical studies and clinical trials, dependence on key personnel, protection of proprietary technology, reliance on third party organizations, risks of obtaining regulatory approval for any product candidate that it may develop, development by competitors of technological innovations, compliance with government regulations, the impact of the COVID-19 pandemic, including impacts related to the variants of the virus, geopolitical tensions, adverse macroeconomic conditions and the need to obtain additional financing.

The Company anticipates that it will continue to incur significant operating losses for the next several years as it continues to develop its product candidates. The Company believes that its existing cash, cash equivalents and marketable securities at September 30, 2022 will be sufficient to allow the Company to fund its current operations through at least a period of one year after the date the financial statements are issued.

2. Summary of Significant Accounting Policies

Basis of Presentation

The accompanying condensed consolidated financial statements have been prepared in conformity with accounting principles generally accepted in the United States of America ("GAAP"). Any reference in these notes to applicable guidance is meant to refer to the authoritative GAAP as found in the Accounting Standards Codification and Accounting Standards Update ("ASU") of the Financial Accounting Standards Board ("FASB").

Use of Estimates

The preparation of the condensed consolidated financial statements in conformity with GAAP requires the Company's management to make estimates and assumptions that affect the reported amounts of assets and liabilities at the date of the condensed consolidated financial statements and the reported amount of expenses during the reporting period. Actual results could differ from those estimates. Management considers many factors in selecting appropriate financial accounting policies in developing the estimates and assumptions that are used in the preparation of the condensed consolidated financial statements. Management must apply significant judgment in this process. Management's estimation process often may yield a range of potentially reasonable estimates and management must select an amount that falls within that range of reasonable estimates. Estimates are used in the following areas, among others: estimating the fair value of the Company's common stock (prior to its initial public offering); accrued expenses and research and development expenses.

Unaudited Interim Financial Information

The condensed consolidated financial statements of the Company included herein have been prepared pursuant to the rules and regulations of the Securities and Exchange Commission (the "SEC"). The unaudited condensed consolidated financial statements include the accounts of the Company and its wholly owned subsidiary. All intercompany transactions and balances have been eliminated in consolidation. In the opinion of management, the information furnished reflects all adjustments, all of which are of a normal and recurring nature, necessary for a fair presentation of the results for the reported interim periods. The results of operations for interim periods are not necessarily indicative of results to be expected for the full year or any other interim period.

The accompanying condensed consolidated balance sheet as of December 31, 2021 has been derived from the Company's audited consolidated financial statements for the year ended December 31, 2021. Certain information and footnote disclosures normally included in financial statements prepared in accordance with GAAP have been condensed or omitted pursuant to rules and regulations. However, the Company believes that the disclosures are adequate to make the information presented not misleading. These unaudited interim condensed consolidated financial statements should be read in conjunction with the audited annual

consolidated financial statements and notes in the Company's Annual Report on Form 10-K for the year ended December 31, 2021 (the "2021 Annual Report").

During the nine months ended September 30, 2022, other than the adoption of ASU 2016-13, *Financial Instruments - Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments*, as discussed below, and addition of the cloud computing arrangement accounting policy, there have been no changes to the Company's significant accounting policies as described in the 2021 Annual Report.

Measurement of Credit Losses

For financial assets measured at fair value through other comprehensive loss, the Company must record an allowance for credit losses at the end of each reporting period in the condensed consolidated statement of operations. When developing an estimate of expected credit losses on financial assets, the Company will consider available information relevant to assessing the collectability of cash flows. This information may include internal information, external information, or a combination of both, relating to past events, current conditions, and reasonable and supportable forecasts for financial asset pools.

The Company's investment in corporate bonds and U.S. treasury securities, reported as available-for-sale investments, and the associated accrued interest reported as other current assets on the condensed consolidated balance sheets, is the only financial asset pool. The financial asset pool was determined by the type of financial asset instrument and its credit quality. Management does not expect a credit loss with this financial asset pool and determined an allowance was not required based on the issuers' current high quality credit ratings and the lack of default history on its obligations.

Cloud Computing Arrangements

The Company capitalizes implementation costs for cloud computing arrangement service contracts. The Company's cloud computing arrangements relate to its enterprise resource planning and manufacturing software. For such cloud computing service contracts, the Company capitalizes certain implementation costs as prepaid expenses in the consolidated balance sheets. The Company amortizes these capitalized cloud computing implementation costs into general and administrative expenses using the straight-line method over the fixed, non-cancellable term of the associated hosting arrangement, plus any reasonably certain renewal periods.

Recently Adopted Accounting Pronouncements

In June 2016, the FASB issued ASU 2016-13, *Financial Instruments – Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments*, which has been subsequently amended by ASU 2018-19, ASU 2019-04, ASU 2019-05, ASU 2019-10, ASU 2019-11 and ASU 2020-03 ("ASU 2016-13"). This standard requires that credit losses be recorded using an expected losses model rather than the incurred losses model that was previously used and establishes additional credit risk disclosures associated with financial assets. The adoption of this standard on January 1, 2022, did not have a significant impact on the Company's financial statements.

3. Marketable Securities

The amortized cost and estimated fair value of marketable securities, by contractual maturity are as follows:

	September 30, 2022			
(in thousands)	Amortized Cost	Gross Unrealized Holding Gains	Gross Unrealized Holding Losses	Fair Value
Maturing in one year or less				
Corporate bonds	$ 6,433	$ —	$ (107)	$ 6,326
U.S. Treasuries	69,985	—	(1,071)	68,914
Total	$ 76,418	$ —	$ (1,178)	$ 75,240

(in thousands)	December 31, 2021 Amortized Cost	Gross Unrealized Holding Gains	Gross Unrealized Holding Losses	Fair Value
Maturing in one year or less				
Corporate bonds	$ 7,603	$ —	$ —	$ 7,603
U.S. Treasuries	30,119	—	—	30,119
Maturing after one year through five years				
Corporate bonds	5,006	—	—	5,006
U.S. Treasuries	44,940	—	—	44,940
Total	$ 87,668	$ —	$ —	$ 87,668

The unrealized losses of the Company's marketable securities above were a result of market interest rate increases. The contractual terms of those investments do not permit the issuer to settle the securities at a price less than par value. The Company's intent is to hold the investments until their maturity and any change in fair value that is not credit related is recognized as other comprehensive income (loss), net of applicable taxes. A credit-related impairment is recognized as an allowance to the balance sheet with a corresponding adjustment to earnings. The Company did not recognize any credit losses related to marketable securities for the nine months ended September 30, 2022.

4. Fair Value Measurements

The following tables present information about the Company's financial assets and liabilities measured at fair value on a recurring basis:

(in thousands)	September 30, 2022 Level 1	Level 2	Level 3	Total
Cash equivalents				
Money market funds	$ 60,109	$ —	$ —	$ 60,109
Marketable securities				
Corporate bonds	—	6,326	—	6,326
U.S. Treasuries	—	68,914	—	68,914
Total marketable securities	—	75,240	—	75,240
Restricted cash equivalents				
Money market funds	2,413	—	—	2,413
Total	$ 62,522	$ 75,240	$ —	$ 137,762

(in thousands)	December 31, 2021 Level 1	Level 2	Level 3	Total
Cash equivalents				
Money market funds	$ 95,339	$ —	$ —	$ 95,339
Marketable securities				
Corporate bonds	—	12,609	—	12,609
U.S. Treasuries	—	75,059	—	75,059
Total marketable securities	—	87,668	—	87,668
Restricted cash equivalents				
Money market funds	2,413	—	—	2,413
Total	$ 97,752	$ 87,668	$ —	$ 185,420

The fair value of the Company's cash equivalents and restricted cash equivalents is based on quoted market prices in active markets with no valuation adjustment. The fair value of marketable securities was determined based on observable market inputs. There were no transfers between levels during the nine months ended September 30, 2022.

5. Property and Equipment, Net

Property and equipment, net consisted of the following:

(in thousands)	September 30, 2022	December 31, 2021
Computer equipment and software	$ 432	$ 317
Laboratory equipment	9,499	8,457
Manufacturing equipment	5,348	—
Other	567	163
Construction in progress	1,094	—
Total	16,940	8,937
Less: Accumulated depreciation	(3,977)	(2,084)
Property and equipment, net	$ 12,963	$ 6,853

Depreciation expense for the three and nine months ended September 30, 2022 was $0.9 million and $1.9 million, respectively, and for the three and nine months ended September 30, 2021 was $0.3 million and $1.0 million, respectively.

6. Accrued Liabilities

Accrued liabilities consisted of the following:

(in thousands)	September 30, 2022	December 31, 2021
Employee-related and other expenses	$ 3,205	$ 4,178
Research and development expenses	1,498	797
Professional fees	1,401	743
Property and equipment	19	—
Other	165	617
Total accrued liabilities	$ 6,288	$ 6,335

7. Stock-Based Compensation

Stock Incentive Plan

As of September 30, 2022, the Company had 430,011 shares of its common stock available for future issuance under its stock incentive plan.

Stock Options

The Company's stock options generally vest over 48 months with 25% vesting after one year followed by ratable monthly vesting over the remaining three years and have a contractual term of 10 years. The weighted-average assumptions used principally in determining the fair value of options granted were as follows:

	Nine Months Ended September 30,	
	2022	2021
Fair value of common stock	$ 5.08	$ 20.27
Expected term (in years)	5.9	6.0
Expected volatility	78.5%	78.8%
Risk-free interest rate	2.2%	0.8%
Dividend yield	—	—

During the nine months ended September 30, 2022 and 2021, the Company granted stock options to purchase 2,617,264 shares and 637,884 shares of its common stock, respectively, with a weighted-average grant-date fair value of $7.47 and $13.71 per share, respectively. As of September 30, 2022, total unrecognized compensation expense related to stock options was $16.8 million, which is expected to be recognized over a weighted-average period of 2.33 years.

As of September 30, 2022, options for 110,755 shares of Company common stock with a weighted average exercise price of $2.10 were exercised and unvested. The underlying proceeds from the unvested exercises of $0.2 million is recorded in other current liabilities on the condensed consolidated balance sheet.

Restricted Stock Units

During the nine months ended September 30, 2022, the Company granted 2,009,000 restricted stock units with a weighted average grant date fair value of $5.64 per share. As of September 30, 2022, total unrecognized compensation expense related to restricted stock units was $9.1 million, which is expected to be recognized over a weighted-average period of 1.33 years. The Company did not grant any restricted stock units during the nine months ended September 30, 2021.

Stock-Based Compensation

Stock-based compensation expense was allocated as follows:

	Three Months Ended September 30,		Nine Months Ended September 30,	
(in thousands)	**2022**	**2021**	**2022**	**2021**
Research and development	$ 2,064	$ 630	$ 3,769	$ 1,621
General and administrative	1,265	524	3,047	1,491
Total stock-based compensation expense	$ 3,329	$ 1,154	$ 6,816	$ 3,112

8. Leases

Cambridgepark Lease Amendments

On June 15, 2021, the Company entered into the first lease amendment (“First Lease Amendment”) and second lease amendment (“Second Lease Amendment” and, together with the First Lease Amendment, the “Lease Amendments”) with PPF Off 100 Cambridge Park Drive, LLC (the “Landlord”). The Lease Amendments amended the Company’s lease agreement for its corporate office and laboratory facilities with the Landlord in Cambridge, Massachusetts to add additional leased space in the same building (the “Amended Cambridgepark Lease”).

The First Lease Amendment and Second Lease Amendment commenced for accounting purposes on January 28, 2022 and April 29, 2022, respectively. The terms of the Lease Amendments are through September 2030 for approximately $8.4 million and $22.3 million in fixed payments for the First Lease Amendment and Second Lease Amendment, respectively. There are no options to extend the Lease Amendments.

Payments due associated with the Lease Amendments include fixed and variable payments. Variable payments relate to the Company’s share of the Landlord’s operating costs associated with the underlying assets and are recognized when the event on which those payments are assessed. The Amended Cambridgepark Lease does not contain a residual value guarantee. The Lease Amendments term end dates are coterminous with the existing lease agreement. In conjunction with the Lease Amendments, the Company was required to increase its irrevocable standby letter of credit to $2.4 million for the benefit of the Landlord, which has been secured by money market investments and is presented as restricted cash equivalents.

For further information regarding the Company’s Cambridgepark lease, please see Note 10 to the consolidated financial statements included in the 2021 Annual Report.

The elements of lease expense were as follows:

	Three Months Ended September 30,		Nine Months Ended September 30,	
(in thousands)	**2022**	**2021**	**2022**	**2021**
Operating lease cost	$ 1,994	$ 756	$ 4,506	$ 2,260
Short-term lease cost	—	—	—	52
Variable lease cost	567	342	1,209	776
Total lease cost	$ 2,561	$ 1,098	$ 5,715	$ 3,088

Amounts reported in the condensed consolidated balance sheets and the weighted-average lease term and discount rate information were as follows:

(in thousands except weighted-average amounts)	September 30, 2022	December 31, 2021
Assets		
Operating lease right-of-use assets	$ 45,390	$ 15,670
Liabilities		
Operating lease liabilities, current	$ 3,757	$ 1,839
Operating lease liabilities, non-current	36,537	16,174
Total lease liabilities	$ 40,294	$ 18,013
Weighted Average Lease Term and Discount Rate		
Weighted-average remaining lease term (years)	7.9	8.64
Weighted-average discount rate	8.2%	9.4%

The following table represents other lease activity:

	Nine Months Ended September 30,	
(in thousands)	2022	2021
Other Information		
Cash paid for amounts included in the measurement of lease liabilities		
Operating cash flows for operating leases	$ 10,594	$ 1,840
Right-of-use assets obtained in exchange for lease obligations	$ 32,294	$ 35

9. Significant Agreements

Since December 31, 2021, there have been no material changes to the key terms of the Company's license agreements. For further information regarding the Company's existing license agreements, please see Note 11 to the consolidated financial statements included in the 2021 Annual Report.

10. Net Loss Per Share

The following table sets forth the computation of the Company's basic and diluted net loss per share for the three and nine months ended September 30, 2022 and 2021:

	Three Months Ended September 30,		Nine Months Ended September 30,	
(in thousands, except share and per share amounts)	2022	2021	2022	2021
Numerator:				
Net loss	$ (23,788)	$ (18,554)	$ (68,184)	$ (50,647)
Cumulative dividends on redeemable convertible preferred stock	—	—	—	(1,228)
Net loss attributable to common stockholders	$ (23,788)	$ (18,554)	$ (68,184)	$ (51,875)
Denominator:				
Weighted-average number of common shares outstanding, basic and diluted	38,009,022	36,934,311	37,582,463	32,067,535
Net loss per share attributable to common stockholders, basic and diluted	$ (0.63)	$ (0.50)	$ (1.81)	$ (1.62)

As of the three and nine months ended September 30, 2022 and 2021, the Company's potentially dilutive securities were stock options, unvested restricted stock and restricted stock units. The Company excluded the following potential common shares from the computation of diluted net loss per share attributable to common stockholders because including them would have had an anti-dilutive effect:

	As of September 30,	
	2022	2021
Options to purchase common stock	6,305,131	5,176,641
Unvested restricted stock	110,755	229,132
Restricted stock units	1,918,300	—

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 unaudited condensed consolidated financial statements and related notes included elsewhere in this Quarterly Report on Form 10-Q and with our Annual Report on Form 10-K for the year ended December 31, 2021 (the "2021 Annual Report").

Summary Risk Factors

Our business is subject to a number of risks that if realized could materially affect our business, financial condition, results of operations, cash flows and access to liquidity. These risks are addressed further in the "Part II. Item 1A. Risk Factors" section of this Quarterly Report. Our principal risks include the following:

- We have incurred significant net losses since inception. We expect to incur net losses for the foreseeable future and may never achieve or maintain profitability.
- We will need substantial additional funding. If we are unable to raise capital when needed, we would be forced to delay, reduce or eliminate our research and product development programs or future commercialization efforts.
- We have a limited operating history, have not yet completed any clinical trials and have no history of commercializing products, which may make it difficult to evaluate the success of our business to date and to assess our future viability.
- Engineered hematopoietic stem cells ("eHSCs") are a novel technology that is not yet clinically validated for human use. The approaches we are taking to create eHSCs are unproven and may never lead to marketable products.
- We are substantially dependent on the success of our two most advanced product candidates, VOR33 and VCAR33. If we are unable to complete development of, obtain approval for and commercialize VOR33 or VCAR33 in a timely manner, our business will be harmed.
- We may not be successful in our efforts to identify, develop or commercialize additional product candidates. If these efforts are unsuccessful, we may never become a commercial stage company or generate any revenues.
- We have not successfully tested our product candidates in clinical trials and any favorable preclinical results are not predictive of results that may be observed in clinical trials.
- Development of a product candidate such as VOR33, which is intended for use in combination or in sequence with an already approved therapy, will present increased complexity and more or different challenges than development of a product candidate for use as a single agent.
- If our product candidates, the delivery modes we rely on to administer them, and/or the conditioning, administration process or related procedures or treatments which may be used alongside our product candidates cause serious adverse events, undesirable side effects or unexpected characteristics, such events, side effects or characteristics could delay or prevent regulatory approval of the product candidates, limit their commercial potential or result in significant negative consequences following any potential marketing approval, even if these side effects or characteristics are unrelated to our product candidate.
- We face significant competition in an environment of rapid technological change, and there is a possibility that our competitors may achieve regulatory approval before us or develop therapies that are safer or more advanced or effective than ours, which may harm our financial condition and our ability to successfully market or commercialize our product candidates, if approved.
- Adverse public perception of genetic medicines, and of genome engineering in particular, including as a result of other trials out of our control, such as the VCAR33^{AUTO} trial currently sponsored by the NMDP, may negatively impact regulatory approval of, and/or demand for, our potential products.
- Genome engineering technology is subject to a number of challenges and risks. Because genome engineering technology is novel and the regulatory landscape that will govern our product candidates is uncertain and may change, we cannot predict the time and cost of obtaining regulatory approval, if we receive it at all, for our product candidates.
- Because we are developing product candidates using new technologies, as well as potential mechanisms of action for which there are few precedents, there is increased risk that the U.S. Food and Drug Administration, the European Medicines Agency or other regulatory authorities may not consider the endpoints of our clinical trials to provide clinically meaningful results and that these results may be difficult to analyze.
- We have initiated manufacturing at our in-house facility, but until and unless we complete the total transfer of our manufacturing capabilities in-house, we will continue to contract with third parties for the manufacture and supply of materials for development of our product candidates and advancement of our current clinical trial, as well as our research

programs and preclinical studies, and we expect to continue to do so for future clinical trials and for commercialization of our product candidates. This reliance on third parties increases the risk that we will not have sufficient quantities of such materials, product candidates or any products that we may develop and commercialize, or that such supply will not be available to us at an acceptable cost, which could delay, prevent or impair our development or commercialization efforts.

- We are highly dependent on intellectual property licensed from third parties and termination of any of these licenses could result in the loss of significant rights, which would harm our business.
- We may not be successful in acquiring or in-licensing necessary rights to key technologies underlying our product candidates.
- Third-party claims of intellectual property infringement, misappropriation or other violations may prevent or delay our product discovery and development efforts and have a material adverse effect on our business.
- The COVID-19 pandemic has caused, and could continue to cause, severe disruptions in the United States, regional and global economies and could seriously harm our development efforts, increase our costs and expenses and have a material adverse effect on our business, financial condition and results of operations.
- Success in preclinical studies or clinical trials may not be indicative of results in future clinical trials, particularly for our clinical trials that involve only a small number of patients.
- If we experience significant delays or difficulties in the enrollment of patients in clinical trials, including with respect to completing a complex donor identification and screening process, the cost of developing product candidates could increase and our receipt of necessary regulatory approvals could be delayed or prevented.
- If we are unable to successfully identify patients who are likely to benefit from our product candidates or eligible donors, or experience significant delays in doing so, we may not realize the full commercial potential of our product candidates.
- Interim “top-line” and preliminary results from our clinical trials that we may announce or publish from time to time may change as more patient data become available and are subject to audit and verification procedures that could result in material changes in the final data. Investors and analysts may have difficulty analyzing our interim and preliminary results or may not consider them to be meaningful.

Overview

We are a clinical-stage cell and genome engineering company with a vision to cure blood cancers through cell and genome engineering. Our mission is to change the standard of care for patients with blood cancer by engineering hematopoietic stem cells (“HSCs”) to enable the use of targeted therapies post-transplant. Leveraging our expertise in HSC biology and genome engineering, we genetically modify HSCs to remove surface targets and then provide these cells as hematopoietic stem cell transplants to patients. Once these cells engraft into bone marrow, the patient’s healthy cells are protected because they no longer express the surface target, leaving only the cancerous cells exposed. We believe this will unlock the potential of targeted therapies to selectively destroy cancerous cells while sparing healthy cells. As a result, our eHSCs are designed to limit the on-target toxicities associated with these targeted therapies, thereby enhancing their utility, and broadening their applicability. We intend to pair future eHSC product candidates with targeted therapeutics such as our VCAR33 programs, chimeric antigen receptor (“CAR”)-T therapies designed to target CD33, as well as with potentially best-in-class targeted therapies from collaborators, to bring potentially transformative outcomes to patients and establish new standard of care Treatment Systems for blood cancers.

We are developing our lead eHSC product candidate, VOR33, which we believe has the potential to transform the treatment for acute myeloid leukemia (“AML”) and other blood cancers. VOR33 is created by genetically modifying healthy donor HSCs in order to remove the CD33 surface target. We intend to develop VOR33 as a hematopoietic stem cell transplant product candidate to replace the standard of care in transplant settings. Our investigational new drug (“IND”) application for VOR33 in patients with AML was accepted by the U.S. Food and Drug Administration (“FDA”) in January 2021, and we have initiated and are actively recruiting for VBP101, our first-in-human Phase 1/2a trial of VOR33 in combination with Mylotarg. We anticipate initial clinical data for this trial during the fourth quarter of 2022, and expect additional engraftment and hematologic protection data updates in 2023. If successful, this trial will provide important validating evidence of the potential of VOR33 and our broader eHSC approach.

The VCAR33 programs are CAR-T therapy candidates designed to target CD33, a clinically-validated target for AML that we have licensed from the National Institutes of Health (“NIH”). VCAR33 is made up of two programs with different cell sources. The first uses autologous cells from each patient and is being studied in an ongoing Phase 1/2 clinical trial sponsored by the National Marrow Donor Program (“NMDP”) in young adult and pediatric patients with relapsed/refractory AML in a bridge-to-transplant study, which we refer to as VCAR33^{AUTO}. The second uses allogeneic healthy donor-derived cells that we refer to as VCAR33^{ALLO}. We plan to submit an IND for our VCAR33^{ALLO} program in the first half of 2023 to support a Phase 1/2 clinical trial for patients with relapsed/refractory AML. The NMDP is currently evaluating VCAR33^{AUTO} in a multi-site Phase 1/2 clinical trial in young adult and pediatric patients with relapsed/refractory AML. We no longer expect data from this Phase 1/2 clinical trial to be reported in 2022 and

the timing of the data release is dependent on the investigators conducting the trial. The NMDP is responsible for all aspects of the VCAR33^{AUTO} trial, including the design of the trial, the manufacture of study product, the enrollment, dosing and follow-up of patients, the recording of trial data and the analysis of results. We did not control the preclinical development of VCAR33^{AUTO}, which was conducted by the NIH, and we do not have rights under the license agreement to certain intellectual property, such as know-how, employed by the NMDP in manufacturing study product or conducting its clinical trial; however, the NMDP has permitted us to cross-reference its IND for this trial in future IND applications that we may submit with the FDA.

We believe that the combination of VOR33 followed by treatment with VCAR33^{ALLO} in the post-transplant setting, which we refer to as the VOR33 + VCAR33 Treatment System, may transform patient outcomes and offer the potential for cures for patients that have limited treatment options. The VOR33 + VCAR33 Treatment System would utilize the same healthy donor allogenic cell source for both VOR33 and VCAR33^{ALLO}. Following ongoing discussions with the FDA and alongside improved scientific understanding of the differences in T-cell sources, we plan to collect initial data on VOR33 from the VBP101 clinical trial and initial clinical data from the VCAR33^{ALLO} program prior to IND submission for the Treatment System. We believe this approach allows for a more methodical development pathway for this novel-novel treatment combination.

Since our inception in December 2015, we have devoted substantially all of our resources to raising capital, organizing and staffing our company, business and scientific planning, conducting discovery and research activities, acquiring or discovering product candidates, establishing and protecting our intellectual property portfolio, developing and progressing our product candidates and preparing for clinical trials, establishing arrangements with third parties for the manufacture of our product candidates and component materials, building out our internal clinical manufacturing facility, and providing general and administrative support for these operations. We do not have any product candidates approved for sale and have not generated any revenue from product sales. Through September 30, 2022, we funded our operations primarily through the sale of equity securities and debt financings and have received aggregate net proceeds from these transactions of $348.4 million.

We have incurred significant operating losses since inception, including net losses of $23.8 million and $68.2 million for the three and nine months ended September 30, 2022, respectively, and $68.9 million for the year ended December 31, 2021. As of September 30, 2022, we had an accumulated deficit of $198.3 million.

As of September 30, 2022, we had cash, cash equivalents and marketable securities of $136.1 million. We expect that our existing cash, cash equivalents and marketable securities at September 30, 2022 will enable us to fund our operating expenses and capital expenditure requirements into the first quarter of 2024.

Business Impact of the COVID-19 Pandemic

The global COVID-19 pandemic continues to rapidly evolve, including with respect to the variants of the virus, and we will continue to monitor the COVID-19 situation closely. To date our financial condition and operations have not been significantly impacted by the COVID-19 pandemic, including resulting adverse macroeconomic conditions, but we have experienced delays in our Phase 1/2a trial for VOR33 in part due to the COVID-19 pandemic, including site activation and readiness delays, which has resulted in enrollment delays. We cannot, at this time, predict the specific extent, duration or full impact that these uncertainties will have on our financial condition and operations, including our ongoing and planned preclinical and clinical trials. The extent of the impact of the COVID-19 on our business, operations and clinical development timelines and plans remains uncertain and will depend on certain developments, including the duration and subsequent waves of the outbreak, such as those related to variants of the virus, and its impact on our clinical trial enrollment, trial sites, contract research organizations (“CROs”), third-party manufacturers, and other third parties with whom we do business, as well as its impact on regulatory authorities and our key scientific and management personnel. To the extent possible, we are conducting business as usual, with necessary or advisable modifications to employee travel. We will continue to actively monitor the rapidly evolving situation related to COVID-19 and may take further actions that alter our operations, including those that may be required by federal, state or local authorities, or that we determine are in the best interests of our employees and other third parties with whom we do business. The development of our product candidates could be disrupted and materially adversely affected in the future by the COVID-19 pandemic, including due to the ongoing global supply chain issues that may limit our ability and service providers' ability to acquire the raw materials necessary to conduct our research, development, manufacturing and clinical activities. Our clinical trials also could be delayed due to government orders and site policies on account of the pandemic, and some patients may be unwilling or unable to travel to study sites, enroll in our trials or be unable to comply with clinical trial protocols if quarantines impede patient movement or interrupt healthcare services, which would delay our ability to conduct clinical trials or release clinical trial results and could delay our ability to obtain regulatory approval and commercialize our product candidates. Furthermore, COVID-19 could affect our employees or the employees of research sites and service providers on whom we rely, including CROs, as well as those of companies with which we do business, including our suppliers and contract manufacturing organizations (“CMOs”), thereby disrupting our business operations. Quarantines and travel restrictions imposed by governments in the jurisdictions in which we and the companies with which we do business operate could materially impact the ability of employees to access preclinical and clinical sites, laboratories, manufacturing site and office. These and other events resulting from the COVID-19 pandemic could disrupt, delay, or otherwise adversely impact our business.

Critical Accounting Estimates

Our management's discussion and analysis of our financial condition and results of operations is based on our condensed consolidated financial statements, which have been prepared in accordance with United States generally accepted accounting principles. The preparation of our condensed consolidated financial statements requires us to make judgments and estimates that affect the reported amounts of assets, liabilities, costs, and expenses, and the disclosure of contingent assets and liabilities in our condensed consolidated financial statements. We base our estimates on historical experience, known trends and events, and various other factors that we believe to be reasonable under the circumstances. Actual results may differ from these estimates under different assumptions or conditions. On an ongoing basis, we evaluate our judgments and estimates in light of changes in circumstances, facts, and experience. The effects of material revisions in estimates, if any, will be reflected in the condensed consolidated financial statements prospectively from the date of change in estimates. There have been no material changes to our critical accounting estimates from those described in "Management's Discussion and Analysis of Financial Condition and Results of Operations" in our 2021 Annual Report other than those described in Note 2 of the unaudited condensed consolidated financial statements included elsewhere in this Quarterly Report on Form 10-Q.

Financial Operations Overview

Revenue

We have not generated any revenue since our inception and do not expect to generate any revenue from the sale of products in the near future, if at all. If our development efforts for our product candidates are successful and result in marketing approval, or if we enter into collaboration or license agreements with third parties, we may generate revenue in the future from a combination of product sales or payments from such agreements.

Expenses

Research and Development Expenses

Research and development expenses consist primarily of external and internal expenses incurred in connection with our research and development activities, including our drug discovery efforts and the development of our product candidates.

External expenses include:

- research and development expenses incurred under agreements with CROs and other scientific development services;
- costs of consultants, including their fees and related travel expenses;
- costs related to compliance with quality and regulatory requirements;
- costs of laboratory supplies and acquiring and developing preclinical and clinical trial materials, including expenses associated with our CMOs; and
- payments made under third party licensing agreements.

Internal expenses include:

- personnel-related expenses, including salaries, bonuses, benefits and stock-based compensation expenses, for employees involved in research and development activities; and
- facilities, depreciation and other allocated expenses, which include direct and allocated expenses for rent, insurance and other internal operating costs.

We expense research and development costs as incurred. We recognize external development costs based on an evaluation of the progress to completion of specific tasks using information provided to us by our vendors. Payments for these activities are based on the terms of the individual agreements, which may differ from the pattern of costs incurred, and are reflected in our condensed consolidated financial statements as prepaid expenses or accrued research and development expenses. Nonrefundable advance payments for goods or services to be received in the future for use in research and development activities are deferred and capitalized, even when there is no alternative future use for the research and development. The capitalized amounts are expensed as the related goods are delivered or the services are performed.

A significant portion of our research and development costs have been external costs, which we track by stage of development, preclinical or clinical. However, we do not track our internal research and development expenses on a program specific basis because these costs are deployed across multiple projects and, as such, are not separately classified.

Research and development activities are central to our business model. We expect that our research and development expenses will increase significantly for the foreseeable future as we continue to identify and develop product candidates, particularly as more of

our product candidates move into clinical development and later stages of clinical development, and as we continue to invest in our laboratory and manufacturing facilities.

The successful development of our product candidates in the future is highly uncertain. Therefore, we cannot reasonably estimate or know the nature, timing and estimated costs of the efforts that will be necessary to complete the development and commercialization of any of our product candidates. We are also unable to predict when, if ever, material net cash inflows will commence from the sale of our product candidates, if approved. This is due to the numerous risks and uncertainties associated with developing product candidates, many of which are outside of our control, including the uncertainty of:

- the timing and progress of preclinical and clinical development activities;
- the number and scope of preclinical and clinical programs we decide to pursue;
- our ability to maintain our current research and development programs and to establish new ones;
- establishing an appropriate safety profile with IND-enabling studies;
- the number of sites and patients included in the clinical trials;
- the countries in which the clinical trials are conducted;
- per patient trial costs;
- successful patient enrollment in, and the initiation of, clinical trials, as well as drop out or discontinuation rates, particularly in light of the current COVID-19 pandemic environment;
- the successful completion of clinical trials with safety, tolerability and efficacy profiles that are satisfactory to the FDA or any comparable foreign regulatory authority;
- the number of trials required for regulatory approval;
- the timing, receipt and terms of any regulatory approvals from applicable regulatory authorities;
- our ability to establish new licensing or collaboration arrangements;
- the performance of our current and future collaborators, if any;
- establishing commercial manufacturing capabilities or making arrangements with third-party manufacturers;
- significant and changing government regulation and regulatory guidance;
- the impact of any business interruptions to our operations or to those of the third parties with whom we work, particularly in light of the current COVID-19 pandemic environment;
- obtaining, maintaining, defending and enforcing patent claims and other intellectual property rights;
- launching commercial sales of our product candidates, if approved, whether alone or in collaboration with others; and
- maintaining a continued acceptable safety profile of the product candidates following approval.

Any changes in the outcome of any of these variables could mean a significant change in the costs and timing associated with the development of our product candidates.

General and Administrative Expenses

General and administrative expenses consist primarily of personnel-related costs, including salaries, bonuses, benefits and stock-based compensation expenses, for employees involved in our executive, finance, corporate, business development and administrative functions, as well as expenses for outside professional services, including legal, audit, accounting and tax-related services and other consulting fees, facility-related expenses, which include depreciation costs and other allocated expenses for rent and maintenance of facilities, insurance costs, recruiting costs, travel expenses and other general administrative expenses.

We expect that our general and administrative expenses will increase as our business expands and we hire additional personnel to support our continued research and development activities, including our clinical programs. We also anticipate continued increased expenses associated with being a public company, including costs for legal, audit, accounting, investor and public relations, regulatory and tax-related services related to compliance with the rules and regulations of the Securities and Exchange Commission (the “SEC”), Nasdaq listing standards and director and officer insurance premiums.

Other Income

Interest Income

Interest income consists of interest income earned on our cash, cash equivalents and marketable securities held at financial institutions.

Results of Operations

Comparison of Three and Nine Months Ended September 30, 2022 and 2021

The following table summarizes our results of operations for the periods indicated (amounts in thousands):

	Three Months Ended September 30,		
	2022	2021	Change
Operating expenses:			
Research and development	$ 16,875	$ 12,925	$ 3,950
General and administrative	7,226	5,677	1,549
Total operating expenses	24,101	18,602	5,499
Loss from operations	(24,101)	(18,602)	(5,499)
Other income:			
Interest income	313	48	265
Total other income	313	48	265
Net loss	$ (23,788)	$ (18,554)	$ (5,234)

	Nine Months Ended September 30,		
	2022	2021	Change
Operating expenses:			
Research and development	$ 47,488	$ 34,836	$ 12,652
General and administrative	21,205	15,876	5,329
Total operating expenses	68,693	50,712	17,981
Loss from operations	(68,693)	(50,712)	(17,981)
Other income:			
Interest income	509	65	444
Total other income	509	65	444
Net loss	$ (68,184)	$ (50,647)	$ (17,537)

Research and Development Expenses

The following table summarizes our research and development expenses incurred for the periods indicated (amounts in thousands):

	Three Months Ended September 30,		
	2022	2021	Change
External expenses	$ 6,172	$ 5,475	$ 697
Internal expenses:			
Personnel expenses (including stock-based compensation)	7,226	6,045	1,181
Facilities and other expenses	3,477	1,405	2,072
Total research and development expenses	$ 16,875	$ 12,925	$ 3,950

	Nine Months Ended September 30,		
	2022	2021	Change
External expenses	$ 18,695	$ 15,470	$ 3,225
Internal expenses:			
Personnel expenses (including stock-based compensation)	21,113	15,429	5,684
Facilities and other expenses	7,680	3,937	3,743
Total research and development expenses	$ 47,488	$ 34,836	$ 12,652

Research and development expenses were $16.9 million for the three months ended September 30, 2022, compared to $12.9 million for the three months ended September 30, 2021. The increase of $4.0 million was primarily due to increased personnel expenses including an increase in stock compensation expense, facility costs from our laboratory and Good Manufacturing Practices ("cGMP") manufacturing facility expansion, and clinical and manufacturing expenses as a result of the ongoing VOR33 clinical trial.

Research and development expenses were $47.5 million for the nine months ended September 30, 2022, compared to $34.8 million for the nine months ended September 30, 2021. The increase of $12.7 million was primarily due to increased personnel expenses including an increase in stock compensation expense, facility costs from our laboratory and cGMP manufacturing facility expansion, and clinical and manufacturing expenses as a result of the ongoing VOR33 clinical trial.

General and Administrative Expenses

General and administrative expenses were $7.2 million for the three months ended September 30, 2022, compared to $5.7 million for the three months ended September 30, 2021. The increase of $1.5 million was primarily due to increased personnel expenses, including an increase in stock compensation expense.

General and administrative expenses were $21.2 million for the nine months ended September 30, 2022, compared to $15.9 million for the nine months ended September 30, 2021. The increase of $5.3 million was primarily due to increased personnel expenses, including an increase in stock compensation expense, and increases in facilities and other expenses, as a result of our corporate headquarters office expansion.

Other Income

Other income increased by $265 thousand for the three months ended September 30, 2022, compared to the three months ended September 30, 2021. Other income increased by $444 thousand for the nine months ended September 30, 2022, compared to the nine months ended September 30, 2021. The increase in other income was due to increases in interest received from our cash, cash equivalents and marketable securities.

Liquidity and Capital Resources

Sources of Liquidity

Since our inception, we have not recognized any revenue and have incurred operating losses and negative cash flows from our operations. We have not yet commercialized any product and we do not expect to generate revenue from sales of any products for several years, if at all. We have funded our operations primarily through the sale of equity securities and debt financings and have received aggregate net proceeds from these transactions of $348.4 million as of September 30, 2022.

In order to fund our future operations, including our planned clinical trials, on March 14, 2022, we filed a universal shelf registration statement (the "Shelf Registration Statement"), to provide for aggregate offerings of up to $350.0 million of common stock, preferred stock, debt securities, warrants or any combination thereof. The Shelf Registration Statement was declared effective by the SEC on March 18, 2022. We believe that our Shelf Registration Statement will provide us with the flexibility to raise additional capital to finance our operations as needed. We may offer additional securities under our Shelf Registration Statement from time to time in response to market conditions or other circumstances if we believe such a plan of financing is in the best interests of our stockholders. In March 2022, we entered into an open market sale agreement (the "Sale Agreement"), with Jefferies LLC ("Jefferies"), as the sales agent, pursuant to which we may from time to time, issue and sell common stock with an aggregate value of up to $125.0 million in one or more at-the-market offerings (the "ATM Facility"). Jefferies is acting as the sole sales agent for any sales made under the Sale Agreement for a commission up to 3% on gross proceeds. The common stock will be sold at prevailing market prices at the time of the sale, and, as a result, prices may vary. Unless otherwise terminated earlier, the Sale Agreement will continue until all shares available under the Sale Agreement have been sold.

We sold 760,466 and 856,030 shares of our common stock under the ATM Facility during the three and nine months ended September 30, 2022, respectively. The shares sold during the nine months ended September 30, 2022 were sold at a weighted average

price per share of $5.23 for aggregate year to date net proceeds of $4.3 million, after deducting commissions. As of September 30, 2022, $120.5 million remained available to be sold under the ATM Facility.

Cash Requirements

As of September 30, 2022, there was no material changes in our short-term and long-term cash requirements from those disclosed in the "Management's Discussion and Analysis of Financial Condition and Results of Operations" included in our 2021 Annual Report, except for those described below in "Contractual Obligations and Other Commitments".

As of September 30, 2022, we had cash, cash equivalents and marketable securities of $136.1 million. We will need to raise additional capital in the future to fund our future operations. However, we cannot guarantee that we will be able to obtain sufficient additional funding or that if we do obtain additional funding, that such funding will be obtainable on terms satisfactory to us. In the event that we are unable to obtain sufficient additional funding, there can be no assurance that we will be able to continue as a going concern.

We expect that our existing cash, cash equivalents and marketable securities at September 30, 2022 will enable us to fund our operating expenses and capital expenditure requirements into the first quarter of 2024. We have based this estimate on assumptions that may prove to be wrong and we could exhaust our capital resources sooner than we expect.

We expect our expenses to increase substantially if, and as, we:

- continue research and preclinical and clinical development of our product candidates, including in particular the expenses associated with our clinical trials;
- incur third party manufacturing costs to support our preclinical studies and clinical trials of our product candidates and, if approved, their commercialization;
- seek to identify and develop additional product candidates;
- make investments in our platform, including the costs of developing internal manufacturing capabilities;
- seek regulatory and marketing approvals for our product candidates;
- establish a sales, marketing and distribution infrastructure to commercialize any approved product candidates;
- adapt our regulatory compliance efforts to incorporate requirements to applicable marketed products;
- acquire or in-license products, product candidates, technologies;
- maintain, expand, enforce, defend and protect our intellectual property;
- hire additional clinical, quality control, manufacturing and other scientific personnel;
- add operational, financial and management information systems and personnel;
- expand our office, laboratory and manufacturing facility; and
- experience any delays or encounter any issues with any of the above, including as a result of the ongoing COVID-19 pandemic.

In addition, we expect to continue to incur additional costs associated with operating as a public company, including significant legal, audit, accounting, investor and public relations, regulatory, tax-related, director and officer insurance premiums, investor relations and other expenses that we did not incur as a private company. Developing pharmaceutical products, including conducting preclinical studies and clinical trials, is a time-consuming, expensive and uncertain process that takes years to complete, and we may never generate the necessary data or results required to obtain marketing approval for any product candidates or generate revenue from the sale of any product candidate for which we may obtain marketing approval. In addition, our product candidates, if approved, may not achieve commercial success. Our commercial revenues, if any, will be derived from sales of products that we do not expect to be commercially available for at least several years, if ever.

As a result, we will need substantial additional funding to support our continuing operations and pursue our growth strategy. Until such time as we can generate significant revenue from product sales, if ever, we expect to finance our operations through the public or private sale of our equity, government or private party grants, debt financings or other capital sources, including potential collaborations with other companies or other strategic transactions. To the extent that we raise additional capital through the sale of our equity or convertible debt securities, including through the use of our ATM Facility, the ownership interest of our shareholders will be or could be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect the rights of our stockholders. Debt financing and equity financing, if available, may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures or declaring dividends.

If we are unable to obtain additional funding, we could be forced to delay, reduce or eliminate some or all of our research and development programs, product portfolio expansion or any commercialization efforts, which could adversely affect our business prospects, or we may be unable to continue operations. If we raise funds through strategic collaborations or other similar arrangements with third parties, we may have to relinquish valuable rights to our platform technology, future revenue streams, research programs or product candidates or may have to grant licenses on terms that may not be favorable to us and/or may reduce the value of our common stock. Our ability to raise additional funds may be adversely impacted by worsening global economic conditions and disruptions to and volatility in the credit and financial markets in the United States and worldwide resulting from the ongoing COVID-19 pandemic, geopolitical tensions and adverse macroeconomic conditions or otherwise. Because of the numerous risks and uncertainties associated with product development, we cannot predict the timing or amount of increased expenses, and there is no assurance that we will ever be profitable or generate positive cash flow from operating activities.

We did not have during the periods presented, and we do not currently have, any off-balance sheet arrangements that, have or are reasonably likely to have a material current or future effect on our financial condition, changes in financial condition, revenues or expenses, results of operations, liquidity, cash requirements or capital resources.

Cash Flows

The following table provides information regarding our cash flows for the periods presented (in thousands):

	Nine Months Ended September 30,	
	2022	2021
Net cash used in operating activities	$ (66,798)	$ (51,557)
Net cash provided by (used in) investing activities	2,945	(85,698)
Net cash provided by financing activities	4,879	232,604
Net (decrease) increase in cash, cash equivalents and restricted cash equivalents	$ (58,974)	$ 95,349

Operating Activities

Net cash used in operating activities was $66.8 million for the nine months ended September 30, 2022, reflecting a net loss of $68.2 million and net cash used of $11.5 million for operating assets and liabilities, that were partially offset by non-cash charges of $12.9 million. The change in our net operating assets and liabilities was due to decreases in operating lease liabilities of $10.6 million, in accounts payable and accrued expense of $0.5 million, and in other assets of $0.7 million, and increases in prepaid expenses and other current assets of $0.3 million. The non-cash charges primarily consisted of stock-based compensation expense of $6.8 million, non-cash lease expense of $4.0 million and depreciation expense of $1.9 million.

Net cash used in operating activities was $51.6 million for the nine months ended September 30, 2021, reflecting a net loss of $50.6 million and net cash used of $7.4 million for operating assets and liabilities, that were partially offset by non-cash charges of $6.4 million. The change in our net operating assets and liabilities was primarily due to decreases in operating lease liabilities of $1.8 million, in prepaid expenses and other current assets of $5.6 million and in other assets of $0.3 million, and increases in accounts payable and accrued expenses of $0.3 million. The non-cash charges primarily consisted of stock-based compensation expense of $3.1 million, non-cash lease expense of $2.3 million and depreciation expense of $1.0 million.

The $15.2 million increase in net cash used in operating activities for the nine months ended September 30, 2022 compared to the nine months ended September 30, 2021 was primarily due to an increase in operating expenses as a result of our increased efforts identifying product candidates and advancing the development of VOR33, increased personnel costs related to our increased employee headcount and an increase in facility costs relating to our laboratory, cGMP manufacturing facility and headquarters office expansion.

Investing Activities

Net cash provided by investing activities was $2.9 million for the nine months ended September 30, 2022, which consisted of purchases of $5.1 million of marketable securities and $8.1 million of property and equipment offset by proceeds of $16.1 million from the maturity of marketable securities. Net cash used in investing activities was $85.7 million for the nine months ended September 30, 2021, which consisted of purchases of $83.0 million of marketable securities and $2.7 million of purchases of property and equipment.

Financing Activities

Net cash provided by financing activities was $4.9 million for the nine months ended September 30, 2022, which consisted of proceeds from issuance of common stock from our ATM Facility of $4.3 million and stock option exercises of $0.5 million. Net cash provided by financing activities was $232.6 million for the nine months ended September 30, 2021, which consisted of proceeds of $45.4 million received from the sale and issuance of shares of our preferred stock and net proceeds of $187.0 million from our initial public offering.

Contractual Obligations and Other Commitments

During the nine months ended September 30, 2022, there was an increase of $31.5 million in contractual obligations and commitments from that described under the heading “Management’s Discussion and Analysis of Financial Condition and Results of Operations—Contractual Obligations and Commitments” in our 2021 Annual Report relating to commencement of the Lease Amendments and a certain other lease of which $1.4 million is due during the next 12 months. For further information on these Lease Amendments, please see Note 8 to the unaudited condensed consolidated financial statements included elsewhere in this Quarterly Report on Form 10-Q.

Recent Accounting Pronouncements

There are no new significant recent accounting pronouncements which may materially impact our financial statements.

Item 3. Quantitative and Qualitative Disclosures About Market Risk.

Interest Rate Risk

Our primary exposure to market risk is interest rate sensitivity, which is affected by changes in the general level of U.S. interest rates, particularly because our exposure to money market funds, corporate debt and U.S. Treasury securities in our cash equivalents and marketable security balances. Interest income is sensitive to changes in the general level of interest rates. However, due to the short-term maturities of our cash equivalents and marketable securities, we believe a hypothetical 100 basis point increase or decrease in interest rates during any of the periods presented would not have had a material impact on our financial statements.

As of September 30, 2022 and December 31, 2021, we had no debt outstanding and therefore were not exposed to related interest rate risk.

Foreign Currency Exchange Risk

All of our employees and our operations are currently located in the United States and our expenses are generally denominated in U.S. dollars. We therefore are not currently exposed to significant market risk related to changes in foreign currency exchange rates. However, we have contracted with and may continue to contract with non-U.S. vendors who we may pay in local currency. Our operations may be subject to fluctuations in foreign currency exchange rates in the future. To date, foreign currency transaction gains and losses have not been material to our financial statements, and we have not had a formal hedging program with respect to foreign currency. We believe a hypothetical 100 basis point increase or decrease in exchange rates during any of the periods presented would not have a material effect on our financial statements.

Effects of Inflation

Inflation generally affects us by increasing our cost of labor and clinical trial costs. We believe that inflation has not had a material effect on our financial statements included elsewhere in this Quarterly Report on Form 10-Q.

Item 4. Controls and Procedures.

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, evaluated, as of the end of the period covered by this Quarterly Report on Form 10-Q, the effectiveness of our disclosure controls and procedures. The term “disclosure controls and procedures,” as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (the “Exchange Act”), means controls and other procedures of a company that are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the SEC’s rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the company’s management, including its principal executive and principal financial officers, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosure. Our management recognizes that any controls and procedures, no matter how well designed and

operated, can provide only reasonable assurance of achieving their objectives and our management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures.

Based on the evaluation of our disclosure controls and procedures as of September 30, 2022, our Chief Executive Officer and Chief Financial Officer concluded that our disclosure controls and procedures as of such date were effective at the reasonable assurance level.

Changes in Internal Control over Financial Reporting

There were no changes in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) during the quarter ended September 30, 2022 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

PART II—OTHER INFORMATION

Item 1. Legal Proceedings.

We are not currently a party to any material legal proceedings. From time to time, we may become involved in other litigation or legal proceedings relating to claims arising from the ordinary course of business.

Item 1A. Risk Factors.

Except to the extent additional factual information disclosed elsewhere in this Quarterly Report relates to such risk factors (including, without limitation, the matters discussed in "Part I. Item 2, Management's Discussion and Analysis of Financial Condition and Results of Operations") there were no material changes to the risk factors disclosed in "Part I. Item 1A. Risk Factors" in our 2021 Annual Report.

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

Use of Proceeds from Registered Securities

On February 9, 2021, we closed our initial public offering of 11,302,219 shares of our common stock, including 1,474,202 shares of our common stock pursuant to the full exercise by the underwriters of an option to purchase additional shares, at a public offering price of $18.00 per share for aggregate offering proceeds of approximately $203.4 million (the "IPO"). The offer and sale of all of the shares in the offering were registered under the Securities Act pursuant to a registration statement on Form S-1 (File No. 333-252175), which was declared effective by the SEC on February 4, 2021, and a registration statement on Form S-1 (File No. 333-252766), which was deemed effective on February 5, 2021. Goldman Sachs & Co. LLC, Evercore Group L.L.C., Barclays Capital Inc. and Stifel, Nicolaus & Company, Incorporated acted as the lead book-running managers and representatives of the underwriters. The offering commenced on February 5, 2021 and did not terminate until the sale of all of the shares offered.

We received aggregate net proceeds from the IPO of $186.3 million, after deducting underwriting discounts and commissions and other offering expenses payable by us. None of the underwriting discounts and commissions or other offering expenses were incurred or paid to directors or officers of ours or their associates or to persons owning 10% or more of our common stock or to any affiliates of ours.

As of September 30, 2022, we have used $54.1 million of the net proceeds from our IPO primarily to fund the development of VOR33, the development of VCAR33^{ALLO}, VCAR33^{AUTO} and VOR33 + VCAR33 Treatment System, and continued expansion of our platform technology, including to advance the research and development of additional eHSC and internal CAR-T programs, as well as for working capital and general corporate purposes.

We have invested the remaining net proceeds from the offering in a variety of capital preservation investments, including short-term investment grade interest bearing instruments and U.S. government securities. There has been no material change in our planned use of the net proceeds from the offering as described in the final prospectus for our IPO filed with the SEC pursuant to Rule 424(b) under the Securities Act.

Item 6. Exhibits.

Exhibit Number	Description	Incorporated by Reference				Filed Herewith
		Form	File No.	Exhibit Number	Filing Date	
31.1	Certification of Principal Executive Officer pursuant to Rules 13a-14(a)/15d-14(a) under the Securities Exchange Act of 1934, as amended, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002					X
31.2	Certification of Principal Financial Officer pursuant to Rules 13a-14(a)/15d-14(a) under the Securities Exchange Act of 1934, as amended, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002					X
32.1†	Certification of Principal Executive Officer and Principal Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002					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 September 30, 2022, formatted in Inline XBRL.					

† The certifications furnished in Exhibit 32.1 hereto are deemed to be furnished with this Quarterly Report on Form 10-Q and will not be deemed to be "filed" for purposes of Section 18 of the Exchange Act. Such certifications will not be deemed to be incorporated by reference into any filing under the Securities Act of 1933, as amended, or the Exchange Act, except to the extent that the Registrant specifically incorporates it by reference.

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.

VOR BIOPHARMA INC.

Date: November 10, 2022

By: /s/ Robert Ang
Robert Ang
President and Chief Executive Officer (Principal Executive Officer)

Date: November 10, 2022

By: /s/ Nathan Jorgensen
Nathan Jorgensen
Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)

Exhibit 31.1

CERTIFICATIONS

I, Robert Ang, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Vor Biopharma Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

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

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

Date: November 10, 2022

By: /s/ Robert Ang
Robert Ang
President and Chief Executive Officer
(*Principal Executive Officer*)

Exhibit 31.2

CERTIFICATIONS

I, Nathan Jorgensen, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Vor Biopharma Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

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

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

Date: November 10, 2022

By: /s/ Nathan Jorgensen
Nathan Jorgensen
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 Vor Biopharma Inc. (the "Company") for the period ended September 30, 2022, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), each of the undersigned officers of the Company hereby certifies, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that to his knowledge:

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

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

Date: November 10, 2022

By: /s/ Robert Ang
Robert Ang
President and Chief Executive Officer
(*Principal Executive Officer*)

Date: November 10, 2022

By: /s/ Nathan Jorgensen
Nathan Jorgensen
Chief Financial Officer
(*Principal Financial Officer*)