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

FORM 10-Q

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

For the quarterly period ended March 31, 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 No. 001-36517

Minerva Neurosciences, Inc.

(Exact Name of Registrant as Specified in its Charter)

Delaware	**26-0784194**
(State or Other Jurisdiction of Incorporation or Organization)	**(I.R.S. Employer Identification No.)**
1601 Trapelo Road, Suite 286 Waltham, MA	**02451**
(Address of Principal Executive Offices)	**(Zip Code)**

Registrant's telephone number, including area code: (617) 600-7373

(Former Name, Former Address and Former Fiscal Year, if Changed Since Last Report)

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	NERV	The Nasdaq Global 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, a smaller reporting company or an emerging growth company. See the definitions of "large accelerated filer," accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☐	Accelerated filer	☐
Non-accelerated filer	☒	Smaller reporting company	☒
Emerging growth company	☐		

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

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). YES ☐ NO ☒

The number of shares of Registrant's Common Stock, $0.0001 par value per share, outstanding as of April 29, 2022 was 42,721,566.

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Unless the context suggests otherwise, references in this Quarterly Report on Form 10-Q, or Quarterly Report, to "Minerva," "the Company," "we," "us," and "our" refer to Minerva Neurosciences, Inc. and, where appropriate, its subsidiaries.

This Quarterly Report on Form 10-Q contains forward-looking statements. These forward-looking statements reflect our plans, estimates and beliefs. These statements involve known and unknown risks, uncertainties and other factors that may cause our actual results, performance or achievements to be materially different from any future results, performances or achievements expressed or implied by the forward-looking statements. In some cases, you can identify forward-looking statements by terms such as "anticipates," "believes," "could," "estimates," "expects," "intends," "may," "plans," "potential," "predicts," "projects," "should," "would" and similar expressions intended to identify forward-looking statements. Forward-looking statements reflect our current views with respect to future events and are based on assumptions and subject to risks and uncertainties. Because of these risks and uncertainties, the forward-looking events and circumstances discussed in this report may not transpire. These risks and uncertainties include, but are not limited to, the risks included in this Quarterly Report on Form 10-Q under Part II, Item IA, "Risk Factors" and in our Annual Report on Form 10-K for the year ended December 31, 2021 under Part I, Item IA, "Risk Factors."

Given these uncertainties, you should not place undue reliance on these forward-looking statements. Also, forward-looking statements represent our estimates and assumptions only as of the date of this document. You should read this document with the understanding that our actual future results may be materially different from what we expect. Except as required by law, we do not undertake any obligation to publicly update or revise any forward-looking statements contained in this report, whether as a result of new information, future events or otherwise.

All trademarks, trade names and service marks appearing in this Quarterly Report on Form 10-Q are the property of their respective owners.

PART I – Financial Information
Item 1 – Financial Statements

MINERVA NEUROSCIENCES, INC.

Condensed Consolidated Balance Sheets
(Unaudited)

	March 31, 2022	December 31, 2021
Assets		
Current assets		
Cash and cash equivalents	$ 54,946,711	$ 60,755,080
Restricted cash	100,000	100,000
Prepaid expenses and other current assets	650,481	1,346,359
Total current assets	55,697,192	62,201,439
Capitalized software, net	51,080	51,080
Goodwill	14,869,399	14,869,399
Total assets	**$ 70,617,671**	**$ 77,121,918**
Liabilities and Stockholders' Equity		
Current liabilities		
Accounts payable	$ 1,586,168	$ 1,853,215
Accrued expenses and other current liabilities	1,661,518	965,739
Total current liabilities	3,247,686	2,818,954
Liability related to the sale of future royalties	68,106,115	66,327,321
Total liabilities	71,353,801	69,146,275
Commitments and contingencies (Note 8)		
Stockholders' equity		
Preferred stock; $0.0001 par value; 100,000,000 shares authorized; none issued or outstanding as of March 31, 2022 and December 31, 2021, respectively	—	—
Common stock; $0.0001 par value; 125,000,000 shares authorized; 42,721,566 shares issued and outstanding as of March 31, 2022 and December 31, 2021, respectively	4,272	4,272
Additional paid-in capital	343,725,426	342,672,770
Accumulated deficit	(344,465,828)	(334,701,399)
Total stockholders' equity	(736,130)	7,975,643
Total liabilities and stockholders' equity	**$ 70,617,671**	**$ 77,121,918**

See accompanying notes to condensed consolidated financial statements

MINERVA NEUROSCIENCES, INC.

Condensed Consolidated Statements of Operations
(Unaudited)

	Three Months Ended March 31,	
	2022	2021
Expenses		
Research and development	4,959,863	$ 3,258,707
General and administrative	3,029,395	4,248,814
Total expenses	7,989,258	7,507,521
Loss from operations	(7,989,258)	(7,507,521)
Foreign exchange losses	(3,794)	(4,856)
Investment income	7,417	4,100
Non-cash interest expense for the sale of future royalties	(1,778,794)	(1,296,456)
Net loss	$ (9,764,429)	$ (8,804,733)
Net loss per share, basic and diluted	$ (0.23)	$ (0.21)
Weighted average shares outstanding, basic and diluted	42,721,566	42,721,566

See accompanying notes to condensed consolidated financial statements.

MINERVA NEUROSCIENCES, INC.

Condensed Consolidated Statements of Stockholders' Equity
(Unaudited)

	Common Stock		Additional	Accumulated	
	Shares	Amount	Paid-In Capital	Deficit	Total
Balances at January 1, 2021	**42,721,566**	**$ 4,272**	**$ 337,453,776**	**$ (284,795,447)**	**$ 52,662,601**
Stock-based compensation	—	—	1,516,064	—	1,516,064
Net loss	—	—	—	(8,804,733)	(8,804,733)
Balances at March 31, 2021	**42,721,566**	**$ 4,272**	**$ 338,969,840**	**$ (293,600,180)**	**$ 45,373,932**
Balances at January 1, 2022	**42,721,566**	**$ 4,272**	**$ 342,672,770**	**$ (334,701,399)**	**$ 7,975,643**
Stock-based compensation	—	—	1,052,656	—	1,052,656
Net loss	—	—	—	(9,764,429)	(9,764,429)
Balances at March 31, 2022	**42,721,566**	**$ 4,272**	**$ 343,725,426**	**$ (344,465,828)**	**$ (736,130)**

See accompanying notes to condensed consolidated financial statements.

MINERVA NEUROSCIENCES, INC.

Condensed Consolidated Statements of Cash Flows
(Unaudited)

	Three Months Ended March 31,	
	2022	**2021**
Cash flows from operating activities:		
Net loss	$ (9,764,429)	$ (8,804,733)
Adjustments to reconcile net loss to net cash used in operating activities:		
Amortization of right-of-use assets	—	42,833
Stock-based compensation expense	1,052,656	1,516,064
Non-cash interest expense associated with the sale of future royalties	1,778,794	1,296,456
Changes in operating assets and liabilities		
Prepaid expenses and other current assets	695,878	533,639
Accounts payable	(267,047)	134,013
Accrued expenses and other current liabilities	695,779	111,248
Operating lease liabilities, current	—	(46,879)
Net cash used in operating activities	(5,808,369)	(5,217,359)
Cash flows from investing activities:		
Net cash provided by investing activities	—	—
Cash flows from financing activities:		
Proceeds from the sale of future royalties	—	60,000,000
Net cash provided by financing activities	—	60,000,000
Net (decrease) increase in cash, cash equivalents and restricted cash	(5,808,369)	54,782,641
Cash, cash equivalents and restricted cash		
Beginning of period	60,855,080	25,456,952
End of period	$ 55,046,711	$ 80,239,593
Reconciliation of the Condensed Consolidated Statements of Cash Flows to the Condensed Consolidated Balance Sheets		
Cash and cash equivalents	$ 54,946,711	$ 80,139,593
Restricted cash	100,000	100,000
Total cash, cash equivalents and restricted cash	$ 55,046,711	$ 80,239,593

See accompanying notes to condensed consolidated financial statements.

NOTE 1 — NATURE OF OPERATIONS AND LIQUIDITY

Nature of Operations

Minerva Neurosciences, Inc. ("Minerva" or the "Company") is a clinical-stage biopharmaceutical company focused on the development and commercialization of product candidates to treat patients suffering from central nervous system ("CNS") diseases. The Company's lead product candidate is roluperidone (f/k/a MIN-101), a compound the Company is developing for the treatment of negative symptoms in patients with schizophrenia. The Company holds the license to roluperidone from Mitsubishi Tanabe Pharma Corporation ("MTPC") with the rights to develop, sell and import roluperidone globally, excluding most of Asia. The Company also has exclusive rights to develop and commercialize MIN-301, a compound for the treatment of Parkinson's disease. In addition, Minerva previously co-developed seltorexant (f/k/a MIN-202 or JNJ-42847922) with Janssen Pharmaceutica NV ("Janssen") for the treatment of insomnia disorder and adjunctive treatment of Major Depressive Disorder ("MDD"). During 2020 Minerva exercised its right to opt out of the joint development agreement with Janssen for the future development of seltorexant. As a result, the Company was entitled to collect royalties in the mid-single digits on potential future worldwide sales of seltorexant in certain indications, with no further financial obligations to Janssen. In January 2021, the Company sold its rights to these potential royalties to Royalty Pharma plc ("Royalty Pharma"). For further discussion of the joint development agreement with Janssen and the sale of future royalties, please refer to Note 5, Sale of Future Royalties.

Liquidity

The accompanying interim condensed consolidated financial statements have been prepared as though the Company will continue as a going concern, which contemplates the realization of assets and satisfaction of liabilities in the normal course of business. The Company has limited capital resources and has incurred recurring operating losses and negative cash flows from operations since inception. As of March 31, 2022, the Company had an accumulated deficit of approximately $344.5 million and net cash used in operating activities was approximately $5.8 million during the three months ended March 31, 2022. Management expects to continue to incur operating losses and negative cash flows from operations in the future. The Company has financed its operations to date from proceeds from the sale of common stock, warrants, loans, convertible promissory notes, collaboration agreements and royalty sales.

As of March 31, 2022, the Company had cash, cash equivalents, and restricted cash of $55.0 million. The Company believes that its existing cash, cash equivalents, and restricted cash will be sufficient to meet its cash commitments for at least the next 12 months after the date that the interim condensed consolidated financial statements are issued. The process of drug development can be costly and the timing and outcomes of clinical trials is uncertain. The assumptions upon which the Company has based its estimates are routinely evaluated and may be subject to change. The actual amount of the Company's expenditures will vary depending upon a number of factors including but not limited to the design, timing and duration of future clinical trials, the progress of the Company's research and development programs, the infrastructure to support a commercial enterprise, the cost of a commercial product launch, and the level of financial resources available. The Company has the ability to adjust its operating plan spending levels based on the timing of future clinical trials, which will be predicated upon adequate funding to complete the trials.

The Company will need to raise additional capital in order to continue to fund operations and fully fund any potential later stage clinical development programs. The Company believes that it will be able to obtain additional working capital through equity financings or other arrangements to fund future operations; however, there can be no assurance that such additional financing, if available, can be obtained on terms acceptable to the Company. If the Company is unable to obtain such additional financing, future operations would need to be scaled back or discontinued.

Significant Risks and Uncertainties

COVID-19 Pandemic

The Company's business could be adversely affected by the effects of the ongoing COVID-19 pandemic. Beginning in late 2019 and continuing into 2022, the outbreak of COVID-19 has resulted in the declaration of a global pandemic and adversely affected economic activity across virtually all sectors and industries on a local, national, and global scale. While global vaccination efforts are underway and certain jurisdictions, including Massachusetts, have reopened businesses and governmental agencies, there remain limitations on the physical operations of businesses and prohibitions on certain non-essential gatherings, and we are unable to accurately predict the

full impact that COVID-19 will have due to numerous uncertainties, including the duration of the outbreak, the result of vaccination efforts, resurgence of the virus, actions that may be taken by governmental authorities, the impact on our business including our clinical programs and timelines, and the impact to the business of our service providers and partners.

While the COVID-19 pandemic has not had a material adverse impact on the Company's operations to date, this disruption, if sustained or recurrent, could have a material adverse effect on the Company's operating results, its ability to raise capital needed to develop and commercialize products and the Company's overall financial condition. In addition, a recession or market correction resulting from the spread of the coronavirus could materially affect the value of the Company's common stock. The impact of the COVID-19 pandemic may also exacerbate other risks discussed in this Quarterly Report on Form 10-Q. Refer to Item 1A. "Risk Factors" in this Quarterly Report on Form 10-Q for a complete description of the material risks that the Company currently faces.

NOTE 2 — SIGNIFICANT ACCOUNTING POLICIES

Basis of presentation

The interim condensed consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America ("GAAP") for interim reporting and the requirements of the Securities and Exchange Commission ("SEC") in accordance with Regulation S-X, Rule 8-03. Under those rules, certain notes and financial information that are normally required for annual financial statements can be condensed or omitted. In the opinion of the Company's management, the accompanying financial statements contain all adjustments (consisting of items of a normal and recurring nature) necessary to present fairly the financial position as of March 31, 2022, the results of operations for the three months ended March 31, 2022 and 2021 and cash flows for the three months ended March 31, 2022 and 2021. The results of operations for the three months ended March 31, 2022 are not necessarily indicative of the results to be expected for the full year. The consolidated balance sheet as of December 31, 2021 was derived from the audited annual financial statements. The accompanying unaudited condensed consolidated financial statements and notes thereto should be read in conjunction with the audited consolidated financial statements for the year ended December 31, 2021 included in the Company's Annual Report on Form 10-K filed with the SEC on March 1, 2022.

Consolidation

The accompanying consolidated financial statements include the results of the Company and its wholly-owned subsidiaries, Mind-NRG Sarl and Minerva Neurosciences Securities Corporation. Intercompany transactions have been eliminated.

Significant risks and uncertainties

The Company's operations are subject to a number of factors that can affect its operating results and financial condition. Such factors include, but are not limited to: the results of clinical testing and trial activities of the Company's products, the Company's ability to obtain regulatory approval to market its products, competition from products manufactured and sold or being developed by other companies, the price of, and demand for, Company products, the Company's ability to negotiate favorable licensing or other manufacturing and marketing agreements for its products, and the Company's ability to raise capital.

The Company currently has no commercially approved products and there can be no assurance that the Company's research and development will be successfully commercialized. Developing and commercializing a product requires significant time and capital and is subject to regulatory review and approval as well as competition from other biotechnology and pharmaceutical companies. The Company operates in an environment of rapid change and is dependent upon the continued services of its employees and consultants and obtaining and protecting intellectual property.

Use of estimates

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosures of contingent assets and liabilities at the date of the financial statements and the reported amounts of expenses during the reporting period. Actual results could differ from those estimates.

Cash and cash equivalents

Cash equivalents include short-term, highly-liquid instruments, consisting of money market accounts and short-term investments with maturities from the date of purchase of 90 days or less. The majority of cash and cash equivalents are maintained with major financial institutions in North America. Deposits with these financial institutions may exceed the amount of insurance provided on such deposits. These deposits may be redeemed upon demand which reduces counterparty performance risk.

Restricted cash

Cash accounts with any type of restriction are classified as restricted. The Company maintained restricted cash balances as collateral for corporate credit cards in the amount of $0.1 million at each of March 31, 2022 and December 31, 2021.

Recent accounting pronouncements

From time to time, new accounting pronouncements are issued by the FASB and are adopted by the Company as of the specified effective date. The Company believes that the impact of recently issued, but not yet adopted, accounting pronouncements will not have a material impact on the condensed consolidated financial statements or do not apply to the Company.

NOTE 3 — ACCRUED EXPENSES AND OTHER LIABILITIES

Accrued expenses and other liabilities consist of the following:

	March 31, 2022	December 31, 2021
Research and development costs and other accrued expenses	$ 1,116,122	$ 902,803
Accrued bonus	381,500	—
Professional fees	115,912	62,936
Vacation pay	47,984	—
Total	$ 1,661,518	$ 965,739

NOTE 4 — NET LOSS PER SHARE OF COMMON STOCK

Diluted loss per share is the same as basic loss per share for all periods presented as the effects of potentially dilutive items were anti-dilutive given the Company's net loss. Basic loss per share is computed by dividing net loss by the weighted average number of shares of common stock outstanding, plus potential outstanding common stock for the period. Potential outstanding common stock includes stock options and shares underlying RSUs, but only to the extent that their inclusion is dilutive. The following table sets forth the computation of basic and diluted loss per share for common stockholders:

	Three Months Ended March 31,	
	2022	2021
Net loss	$ (9,764,429)	$ (8,804,733)
Weighted average shares of common stock outstanding	42,721,566	42,721,566
Net loss per share of common stock – basic and diluted	$ (0.23)	$ (0.21)

The following securities outstanding at March 31, 2022 and 2021 have been excluded from the calculation of weighted average shares outstanding as their effect on the calculation of loss per share is antidilutive:

	Three Months Ended March 31,	
	2022	2021
Common stock options	3,619,467	9,921,311
Performance-based restricted stock units	3,651,403	—
Common stock warrants	40,790	40,790

NOTE 5 — SALE OF FUTURE ROYALTIES

The Company had previously co-developed seltorexant with Janssen for the treatment of insomnia disorder and adjunctive treatment of MDD. During 2020, the Company exercised its right to opt out of the joint development agreement with Janssen for the future development of seltorexant and, as a result, the Company was entitled to collect royalties in the mid-single digits on potential future sales of seltorexant worldwide in certain indications, with no further financial obligations to Janssen.

On January 19, 2021, the Company entered into an agreement with Royalty Pharma under which Royalty Pharma acquired the Company's royalty interest in seltorexant for an upfront payment of $60 million and up to an additional $95 million in potential milestone payments. These milestone payments are contingent upon the achievement of certain clinical, regulatory and commercial milestones for seltorexant by Janssen or any other party in the event that Janssen sells seltorexant. Under the terms of the agreement, the Company has significant continuing involvement in facilitating the transfer of royalties to Royalty Pharma and Royalty Pharma has recourse against the Company relating to the payments due from Janssen. As such, the Company applied the debt recognition guidance under ASC 470, *Debt*, and recorded the upfront payment of $60 million as a liability related to the sale of future royalties ("Royalty Obligation"), which will be amortized under the interest method over the estimated life of the agreement. Under the terms of the agreement, all payments from Royalty Pharma to the Company, including the initial upfront payment of $60 million as well as amortized interest expense and potential milestone payments, are not repayable to Royalty Pharma in the event that Janssen discontinues the clinical development of seltorexant or ceases to pursue its commercialization at a future date for any reason. In addition, in accordance with ASC 470, Debt, the Company will account for any royalties received in the future as non-cash royalty revenue.

As royalties are remitted to the Company from Janssen and subsequently passed onto Royalty Pharma, the balance of the Royalty Obligation will be effectively repaid over the life of the co-development and license agreement (the "Agreement") with Janssen. In order to determine the amortization of the Royalty Obligation, the Company is required to estimate the total amount of future royalty payments to Royalty Pharma over the life of the Agreement. In addition to the $60 million upfront payment, up to an additional $95 million in potential milestone payments will also be recorded as a liability related to the sale of future royalties and amortized as interest expense over the estimated remaining life of the agreement. At execution, the Company's estimate of this total interest expense resulted in an effective annual interest rate of approximately 10.5%. As of March 31, 2022, the Company estimated the effective annual interest rate to be approximately 10.7%. This estimate contains significant assumptions, which are considered Level 3 fair value inputs, regarding the timing and amount of expected royalty and milestone payments that impact the interest expense that will be recognized over the royalty period. The Company will periodically assess the estimated royalty payments to Royalty Payments from Janssen and to the extent the amount or timing of such payments is materially different than the original estimates, an adjustment will be recorded prospectively to increase or decrease interest expense. There are a number of factors that could materially affect the amount and timing of royalty payments to Royalty Pharma from Janssen, and correspondingly, the amount of interest expense recorded by the Company, most of which are not within the Company's control. Such factors include, but are not limited to, delays or discontinuation of development of seltorexant, regulatory approval, changing standards of care, the introduction of competing products, manufacturing or other delays, generic competition, intellectual property matters, adverse events that result in governmental health authority imposed restrictions on the use of the drug products, significant changes in foreign exchange rates as the royalties remitted to Royalty Pharma are made in U.S. dollars ("USD") while the underlying sales of seltorexant will be made in currencies other than USD, the ongoing COVID-19 pandemic, and other events or circumstances that are not currently foreseen. Changes to any of these factors could result in increases or decreases to both royalty revenues and interest expense.

The following table shows the activity of the Royalty Obligation since the transaction inception through March 31, 2022:

	March 31, 2022
Upfront payment from the sale of future royalties	$ 60,000,000
Non-cash interest expense associated with the sale of future royalties	8,106,115
Liability related to the sale of future royalties	$ 68,106,115

NOTE 6 — STOCKHOLDERS' EQUITY

At-the-Market Equity Offering Program

On August 10, 2018, the Company entered into the Sales Agreement with Jefferies pursuant to which the Company may offer and sell, from time to time, through Jefferies, up to $50.0 million in shares of the Company's common stock, by any method permitted by law deemed to be an "at-the-market" offering as defined in Rule 415 promulgated under the Securities Act of 1933, as amended. During the year ended December 31, 2020, the Company issued and sold 3,381,608 shares of the Company's common stock under the Sales Agreement. The shares were sold at an average price of $3.7113 per share for aggregate net proceeds to the Company of approximately $12.1 million, after deducting sales commissions and offering costs payable by the Company. During the three months ended March 31, 2022, no shares of our common stock were issued or sold under the Sales Agreement.

Term Loan Warrants

In connection with the Company's former Loan and Security Agreement with Oxford Finance LLC and Silicon Valley Bank (the "Lenders"), which provided for term loans to the Company in an aggregate principal amount of up to $15 million in two tranches on January 15, 2016, the Company issued the Lenders warrants to purchase 40,790 shares of common stock at a per share exercise price of $5.516. The warrants were immediately exercisable upon issuance, and other than in connection with certain mergers or acquisitions, will expire on the ten-year anniversary of the date of issuance. The fair value of the warrants was estimated at $0.2 million using a Black-Scholes model and assuming: (i) expected volatility of 100.8%, (ii) risk free interest rate of 1.83%, (iii) an expected life of 10 years and (iv) no dividend payments. The fair value of the warrants was included as a discount to the term loans

drawn at such time and also as a component of additional paid-in capital and were amortized to interest expense over the term of the loan. Although the term loans were repaid in August 2018, all related warrants were outstanding and exercisable as of March 31, 2022.

NOTE 7 — STOCK AWARD PLAN AND STOCK-BASED COMPENSATION

In December 2013, the Company adopted the 2013 Equity Incentive Plan (as subsequently amended and restated, the "Plan"), which provides for the issuance of options, stock appreciation rights, stock awards and stock units. Pursuant to Nasdaq listing rules, the Company issued inducement awards in December 2017 to the Company's President outside of the Plan in the form of an option to purchase 775,000 shares of the Company's common stock and a RSU award to purchase 40,000 shares of the Company's common stock. As of September 30, 2020, all remaining inducement awards have been canceled or expired. In June 2020, the Company increased the aggregate number of shares of common stock authorized for issuance under the Plan by 2,000,000 shares.

Option Exchange Program

On June 11, 2021, the Company's stockholders, upon recommendation of the board of directors of the Company, approved a one-time stock option exchange program (the "Exchange Program") for certain employee option holders (including its named executive officers) (the "Eligible Participants") who remained employed by the Company through the completion of the Exchange Program. The Exchange Program permitted Eligible Participants to surrender stock options issued and outstanding under the Plan granted before July 1, 2020, with a per-share exercise price of $4.47 or greater (the "Eligible Options"), in exchange for a grant of performance-based restricted stock units ("PRSUs") that will settle in shares of the Company's common stock upon vesting. 50% of the new PRSUs will vest upon the U.S. Food and Drug Administration's ("FDA") acceptance of a new drug application for roluperidone, provided that such acceptance is not "over protest" and occurs within three years after the grant date. The remaining new PRSUs will vest upon roluperidone receiving FDA marketing approval provided that such approval occurs within five years after the grant date.

On July 6, 2021, the Company filed with the SEC a Tender Offer Statement on Schedule TO disclosing the terms and conditions of the Exchange Program. The Exchange Program closed on August 3, 2021. On August 6, 2021, options to purchase 7,631,844 shares of the Company's common stock were exchanged for 3,813,150 PRSUs. Options surrendered in the Exchange Program were cancelled and shares subject to the cancelled options again became available for issuance under the Plan.

The non-cash incremental stock-based compensation cost associated with the Exchange Program was $0.5 million. This incremental cost was measured as the excess of the fair value of each new PRSU, measured as of the date the new PRSUs were granted, over the fair value of the stock options surrendered in exchange for the new PRSU, measured immediately prior to the cancellation. This incremental compensation cost will be recognized when it is deemed probable that the two vesting conditions of the PRSUs will be achieved.

Stock Option Awards

Stock option activity for employees and non-employees for the three months ended March 31, 2022 is as follows:

	Shares Issuable Pursuant to Stock Options	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Terms (years)	Total Intrinsic Value (in thousands)
Outstanding January 1, 2022	2,119,467	$ 4.26	7.9	$ —
Granted	1,500,000	$ 0.79		
Exercised	—	$ —		
Forfeited	—	$ —		
Outstanding March 31, 2022	3,619,467	$ 2.82	8.6	$ 58.8
Exercisable March 31, 2022	1,244,466	$ 5.32	6.8	$ —
Available for future grant	2,937,269			

The weighted average grant-date fair value of stock options outstanding on March 31, 2022 was $1.92 per share. Total unrecognized compensation costs related to non-vested stock options at March 31, 2022 were approximately $2.16 million and are expected to be recognized within future operating results over a weighted-average period of 2.14 years. The total intrinsic value of the options exercised during the three months ended March 31, 2022, and 2021 was zero.

The expected term of the employee-related options was estimated using the "simplified" method as defined by the SEC's Staff Accounting Bulletin No. 107, *Share-Based Payment*. The volatility assumption was determined by examining the historical volatilities for industry peer companies, as the Company did not have sufficient trading history for its common stock. The risk-free interest rate assumption is based on the U.S. Treasury instruments, the term of which was consistent with the expected term of the options. The dividend assumption is based on the Company's history and expectation of dividend payouts. The Company has never paid dividends on its common stock and does not anticipate paying dividends on its common stock in the foreseeable future. Accordingly, the Company has assumed no dividend yield for purposes of estimating the fair value of the options.

The Company uses the Black-Scholes model to estimate the fair value of stock options granted. There were no stock options granted during the three months ended March 31, 2021. For stock options granted during the three months ended March 31, 2022, the Company utilized the following assumptions:

	Three Months Ended March 31, 2022
Expected term (years)	6.25
Risk free interest rate	1.96%
Volatility	97.18%
Dividend yield	0.00%
Weighted average grant date fair value per share of common stock	$0.62

Performance-Based Restricted Stock Units

On August 6, 2021, the Company granted 3,813,150 PRSUs through the Exchange Program. The Exchange Program was treated as a Type II modification (Probable-to improbable) under ASC 718. The total PRSUs outstanding at March 31, 2022 was 3,651,403. The Company will recognize the unrecognized grant-date fair value of the pre-modification stock options as well as any incremental non-cash compensation cost of the PRSUs granted in the Exchange Program, if the vesting conditions of the PRSUs are achieved or if they become probable. The Company is using the pre-modification stock options for determining the compensation cost related to the PRSUs as the vesting conditions remain uncertain for the new PRSUs. The total unrecognized compensation costs related to non-vested stock options at March 31, 2022 were approximately $2.89 million and are expected to be recognized within future operating results over a weighted-average period of 1.25 years. As of March 31, 2022, no PRSUs have vested and 161,747 have been cancelled.

The following table presents stock-based compensation expense included in the Company's consolidated statements of operations:

	Three Months Ended March 31,	
	2022	2021
Research and development	$ 501,173	$ 644,176
General and administrative	551,483	871,888
Total	$ 1,052,656	$ 1,516,064

NOTE 8 — COMMITMENTS AND CONTINGENCIES

Legal Proceedings

On December 8, 2020 and January 11, 2021, purported stockholders of the Company filed two putative securities class action complaints in the United States District Court for the District of Massachusetts, entitled *McCoy v. Minerva Neurosciences, Inc., et al., No. 1:20-cv-12176* and *Ao v. Minerva Neurosciences, Inc. et al., No. 1:21-cv-10051*, respectively, against the Company and the Company's Chairman and Chief Executive Officer (collectively, the "Defendants"). The complaints are nearly identical and allege that the Defendants made material false and/or misleading statements regarding the development of the Company's drug candidate roluperidone purportedly causing losses to investors who acquired the Company's common stock between May 15, 2017 and November 30, 2020. The complaints do not quantify any alleged damages but, in addition to attorneys' fees and costs, plaintiffs seek to recover damages on behalf of themselves and others who acquired the Company's stock during the putative class period at allegedly inflated prices and purportedly suffered financial harm as a result. On March 5, 2021, the Court entered an order consolidating the actions into a case captioned *In re Minerva Neurosciences, Inc. Securities Litigation, No. 1:20-cv-12176* and appointing lead plaintiffs and their counsel. On March 19, 2021, the parties filed a stipulated proposed order with the Court staying the Defendants' response to the complaint until after plaintiffs file an amended complaint. On May 5, 2021, the parties filed a stipulation and proposed order voluntarily dismissing the lawsuit on behalf of the appointed lead plaintiffs. Also on May 5, 2021, a second plaintiff filed a motion for appointment as lead plaintiff, which the Court granted on May 21, 2021. On June 9, 2021, before the lead plaintiff's deadline to amend the complaint and before defendants filed any response to the complaint, the parties stipulated to voluntary dismissal of the

lawsuit on behalf of the appointed lead plaintiff. The Court entered the parties' stipulation of dismissal on July 9, 2021 and closed the case.

Leases

Please refer to Note 9 for the Company's current lease commitments.

NOTE 9 — LEASES

Operating leases

On May 5, 2021, the Company entered into an office lease agreement with BP Reservoir Place to lease approximately 5,923 rentable square feet of office space located at 1601 Trapelo Road, Waltham, MA 02451. The term of the lease agreement began on August 1, 2021 and will expire on July 31, 2022, with an annual rate of $239,881.50 payable in equal monthly installments. The Company has elected to not recognize the lease agreement on the balance sheet as the term of the agreement is 12 months or less. The total operating lease costs during the three months ended March 31, 2022 were $59,970.

Future minimum lease payments under the Company's non-cancelable operating lease as of March 31, 2022 were as follows:

Future Operating Lease Payments		Three Months Ended March 31, 2022
2022	$	79,960
Thereafter		—
Total operating lease liabilities at March 31, 2022	$	79,960

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

You should read the following discussion of our financial condition and results of operations in conjunction with our condensed consolidated financial statements and the notes thereto included elsewhere in this Quarterly Report on Form 10-Q and with our annual audited consolidated financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2021 as filed with the Securities and Exchange Commission on March 1, 2022.

Overview

We are a clinical-stage biopharmaceutical company focused on the development and commercialization of proprietary product candidates to treat patients suffering from central nervous system ("CNS") diseases. Leveraging our scientific insights and clinical experience, we have acquired or in-licensed compounds that we believe have innovative mechanisms of actions and therapeutic profiles that potentially address the unmet needs of patients with these diseases.

We are developing roluperidone for the treatment of negative symptoms in patients with schizophrenia and have exclusive rights to develop and commercialize MIN-301 for the treatment of Parkinson's disease. In addition, we previously co-developed seltorexant with Janssen Pharmaceutica NV ("Janssen") for the treatment of insomnia disorder and adjunctive treatment of Major Depressive Disorder ("MDD"). During 2020, we exercised our right to opt out of a joint development agreement with Janssen for the future development of seltorexant. As a result, we were entitled to collect royalties in the mid-single digits on potential future sales of seltorexant worldwide in certain indications, with no further financial obligations to Janssen. In January 2021, we sold our rights to these potential royalties to Royalty Pharma plc ("Royalty Pharma").

We have not received regulatory approvals to commercialize any of our product candidates, and we have not generated any revenue from the sales or license of our product candidates. We have incurred significant operating losses every year since inception. We expect to incur net losses and negative cash flow from operating activities for the foreseeable future in connection with the clinical development and the potential regulatory approval, infrastructure development and potential commercialization of our product candidates.

Clinical and Regulatory Updates

On April 7, 2022 we announced the results from the Type C meeting held on March 2, 2022 with the U.S. Food and Drug Administration's ("FDA") Division of Psychiatry (the "Division") of the Office of Neuroscience regarding roluperidone's use as a monotherapy for negative symptoms.

The Division agreed that there is an unmet need for negative symptom treatments and restated its position following the November 2020 Type C meeting in which they indicated a marketing application was highly unlikely to be filed. The Division also stated at the November 2020 meeting that, at a minimum, there would be substantial review issues due to the lack of two adequate and well-controlled trials to support efficacy claims for this novel indication. The Division acknowledged at the time that the studies appear to show promising signals and encouraged us to continue the drug development program for this indication. Since the Type C meeting in November 2020, we have completed the Open-label extension of the Phase 3 study and have continued to develop roluperidone as a monotherapy specifically for the treatment of negative symptoms of schizophrenia in the subgroup of patients with moderate to severe negative symptoms and stable positive symptoms. The Division advised that several important and substantial concerns remain, including:

- the applicability of the results of the Phase 2b study (conducted in Europe) to the U.S. population. We presented data in the briefing document sent to the Division in advance of the meeting showing comparable baseline data and efficacy across both U.S. and ex-U.S. patients in the Phase 3 study.
- the proposed use of post hoc analyses for the primary endpoint results of the Phase 3 study. The Division added that even with the exclusion of one trial site that we believe to be subject to potential data integrity issues, the overall study remains negative. For the Phase 3 study to be positive, where the truncated Hochberg procedure was used to control the overall Type I error, both roluperidone doses must be statistically significant versus placebo, which was not the case for the 32 mg dose. We confirmed in post-meeting follow-up that the exclusion of one site had been prespecified in the SAP submitted to the Division in May 2020 before the unblinding of the double-blind data. Excluding the trial site with data integrity issues resulted in a nominal p-value of 0.044 on the primary endpoint for the 64 mg dose. In the Phase 2b study the 64 mg and the 32 mg doses of roluperidone achieved statistical significance versus placebo.

The Division sought reassurance that we could reliably identify patients who do not need antipsychotics and how to evaluate the stability of those patients, and potential recurrence of positive symptoms of those patients, what would be considered a significant change in symptoms, how much time patients should be monitored to evaluate whether positive symptoms will recur, and what should

be done if positive symptoms recur. We informed the Division that we believe this patient population can be readily identified by clinicians, that this patient population presents commonly in clinical practice, that there is an unmet need for treatments for these patients and that we expect that the population could be clearly characterized in product labelling.

The Division pointed out that prescribers are likely to use roluperidone in a way that differs significantly from the intended monotherapy use, noting that at this time, there are no data to show that roluperidone does not interfere with the safety or efficacy of antipsychotic medications. We stated that we believe that findings from the completed Phase 2b (MIN101-C03) and Phase 3 (MIN101-C07) studies, (in which roluperidone was administered in monotherapy without concomitant use of antipsychotic medications), demonstrate continued stability of positive symptoms in patients over time. We stated that the relapse rate in these trials was less than 15% of the treated population compared to relapse rates of more than 25% in other trials in which patients were treated with antipsychotics. Following the meeting, we submitted additional data to the Division from the Phase 2b and Phase 3 studies demonstrating that roluperidone does not interfere with the efficacy of antipsychotics in patients who suffered relapse and withdrew from the studies.

The Division confirmed that results from the pivotal bridging Bioequivalence study appear to be adequate for a future acceptable New Drug Application ("NDA") submission but advised that final confirmation of this would be a matter of review and also acknowledged that our initial pediatric study plan ("iPSP") dated November 28, 2017, remains in force.

We continue to believe that we have conducted two adequate and well controlled studies for the intended indication, and that the data from these studies are sufficient to support a marketing application. We view the concerns raised regarding the data from the Phase 2b and Phase 3 studies as those that FDA would ordinarily consider during its review of an NDA.

At the end of the meeting, the Division suggested that there may be a way to address its concerns, whether the completed studies provide substantial evidence that negative symptoms are responsive to roluperidone, concurrently with the questions about positive symptoms and coadministration with antipsychotic medication through the acquisition of additional data. The Division advised that collection of additional data could begin in parallel with our preparations for a potential marketing application and need not be deferred until a determination about submission or filing of the application has been made.

Subject to the timing and feedback from the FDA, we continue to prepare for a potential submission of an NDA for roluperidone during the third quarter of 2022.

Financial Overview

Revenue. None of our product candidates have been approved for commercialization and we have not received any revenue in connection with the sale or license of our product candidates.

Research and Development Expenses. Research and development costs are expensed as they are incurred and consist principally of costs incurred in connection with the development of our product candidates including: fees paid to consultants and clinical research organizations ("CROs"), investigator grants, patient screening, lab work, database management, material management, statistical analysis, license fees, regulatory compliance, and costs related to salaries, benefits, bonuses and stock-based compensation granted to employees in research and development functions.

Completion dates and costs can vary significantly by product candidate and are difficult to predict. We anticipate making determinations as to which programs to pursue and the level of funding to direct to each program on an ongoing basis in response to the scientific and clinical success or failure of each product candidate, the estimated costs to continue the development program relative to our available resources, as well as an ongoing assessment of each product candidate's commercial potential. We will need to raise additional capital or may seek additional product collaborations in the future to complete the development and commercialization of our product candidates.

General and Administrative Expenses. General and administrative costs are expensed as they are incurred and consist principally of costs for facility and information systems, professional fees for auditing, consulting and legal services and costs related to salaries, benefits, bonuses and stock-based compensation granted to employees in administrative functions. General and administrative expenses also include costs for maintaining a publicly listed company including increased audit and legal fees, compliance with securities laws, corporate governance and investor relations.

Foreign Exchange (Losses) Gains. Foreign exchange (losses) gains are comprised primarily of losses and gains on foreign currency transactions primarily related to research and development expenses. We incur certain expenses, primarily in Euros, and record these expenses in United States Dollars at the time the liability is incurred. Changes in the applicable foreign currency rate between the date that an expense is recorded and the payment date is recorded as a foreign currency loss or gain.

Investment Income. Investment income consists of income earned on our cash equivalents and marketable securities.

Non-cash interest expense for the sale of future royalties. Non-cash interest expense for the sale of future royalties consists of the non-cash interest expense associated with the Royalty Pharma agreement.

Results of Operations

Comparison of Three Months Ended March 31, 2022 versus March 31, 2021

Research and Development Expenses

Research and development expenses were $5.0 million and $3.3 million for the three months ended March 31, 2022 and 2021, respectively, an increase of approximately $1.7 million. The increase in research and development expenses was primarily due to higher consulting fees related to NDA support activities. Non-cash stock compensation expense included in research and development expenses was $0.5 million and $0.6 million for the three months ended March 31, 2022 and 2021, respectively.

General and Administrative Expenses

General and administrative expenses were $3.0 million and $4.2 million for the three months ended March 31, 2022 and 2021, respectively, a decrease of approximately $1.2 million. The decrease in general and administrative expenses was primarily due to lower staffing related expenses, non-cash stock compensation expense, lower legal and insurance costs. Non-cash stock compensation expense included in general and administrative expenses was $0.6 million and $0.9 million for the three months ended March 31, 2022 and 2021, respectively.

Foreign Exchange Losses

Foreign exchange losses were $4,000 and $5,000 for the three months ended March 31, 2022 and 2021, respectively, a decrease of $1,000 primarily due to fewer negative currency movements.

Investment Income

Investment income was $7,000 and $4,000 for the three months ended March 31, 2022 and 2021, respectively, an increase of $3,000 primarily due to slightly higher interest rates.

Non-cash interest expense for the sale of future royalties

Non-cash interest expense for the sale of future royalties was $1.8 million and $1.3 million for the three months ended March 31, 2022 and 2021, respectively, an increase of $0.5 million. The increase was primarily due to the higher effective interest rate during 2022 and the increase in the carrying value of the liability related to the sale of future royalties for seltorexant to Royalty Pharma in accordance with ASC 470, Debt.

Liquidity and Capital Resources

Sources of Liquidity

As of March 31, 2022, we had an accumulated deficit of approximately $344.5 million. We anticipate that we will continue to incur net losses for the foreseeable future as we continue the development and potential commercialization of our product candidates and to support our operations as a public company. At March 31, 2022, we had approximately $55.0 million in cash, cash equivalents, and restricted cash. In January 2021 Royalty Pharma acquired our royalty interest in seltorexant for an upfront payment of $60 million and up to an additional $95 million in potential milestone payments. The potential future milestone payments to us will be contingent on the achievement of certain clinical, regulatory and commercialization milestones for seltorexant by Janssen. Seltorexant is currently in Phase 3 development for the treatment of MDD with insomnia symptoms by Janssen. We believe that our existing cash, cash equivalents and restricted cash will be sufficient to meet our cash commitments for at least the next 12 months after the date that the financial statements are issued. Our material cash requirements primarily relate to expenditures for the continued development of roluperidone and NDA preparation activities.

Sources of Funds

At-the-Market Equity Offering Program

In August 2018 we entered into the Sales Agreement with Jefferies LLC pursuant to which we may offer and sell, from time to time, through Jefferies, up to $50.0 million in shares of our common stock, by any method permitted by law deemed to be an "at-the-market" offering as defined in Rule 415 promulgated under the Securities Act of 1933, as amended. During the year ended December 31, 2020, we issued and sold 3,381,608 shares of our common stock under the Sales Agreement. The shares were sold at an average price of $3.7113 per share for aggregate net proceeds to us of approximately $12.1 million, after deducting sales commissions and offering costs payable by us. During the three months ended March 31, 2022, no shares of our common stock were issued or sold under the Sales Agreement.

Seltorexant Royalties

We previously co-developed seltorexant with Janssen for the treatment of insomnia disorder and adjunctive treatment of MDD. During 2020, we exercised our right to opt out of a joint development agreement with Janssen for the future development of seltorexant. As a result, we were entitled to collect royalties in the mid-single digits on potential future sales of seltorexant worldwide in certain indications, with no further financial obligations to Janssen.

On January 19, 2021 we entered into an agreement under which Royalty Pharma acquired our royalty interest in seltorexant for an upfront payment of $60 million and up to an additional $95 million in potential milestone payments, contingent upon the achievement of certain clinical, regulatory and commercial milestones for seltorexant by Janssen.

Uses of Funds

To date, we have not generated any revenue from sales of products. We have only generated collaborative revenue due to opting out of our license and co-development agreement with Janssen. Furthermore, the $60 million payment received from Royalty Pharma for the sale of our royalty interests in seltorexant has been included on our balance sheet under Liability related to the sale of future royalties We do not know when, or if, we will generate any revenue from sales of our products, or from the potential future non-cash royalty revenue associated with the sale of our royalty interests in seltorexant to Royalty Pharma. We do not expect to generate significant revenue from product sales unless and until we obtain regulatory approval of and commercialize any of our product candidates. At the same time, we expect our expenses to increase in connection with our ongoing development activities, particularly as we continue the research, development and clinical trials of, and seek regulatory approval for, our product candidates. We also expect to continue to incur costs associated with operating as a public company. In addition, subject to obtaining regulatory approval of any of our product candidates, we expect to incur significant commercialization expenses for product sales, marketing, manufacturing and distribution.

Until such time, if ever, as we can generate substantial revenue from product sales, we expect to finance our cash needs through a combination of equity offerings, debt financings, government or other third-party funding, commercialization, marketing and distribution arrangements and other collaborations, strategic alliances and licensing arrangements. To the extent that we raise additional capital through the sale of equity or convertible debt securities, the ownership interests of our common stockholders will be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect the rights of our common stockholders. Additional debt 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 raise additional funds through government or other third-party funding, commercialization, marketing and distribution arrangements or other collaborations, strategic alliances or licensing arrangements with third parties, we may have to relinquish valuable rights to our technologies, future revenue streams, research programs or product candidates or to grant licenses on terms that may not be favorable to us. There can be no assurance that such additional funding, if available, can be obtained on terms acceptable to us, and the uncertainty and volatility in the capital markets caused by the continuing COVID-19 pandemic may negatively impact the availability and cost of capital. If we are unable to obtain additional financing, future operations would need to be scaled back or discontinued. We believe that our existing cash, cash equivalents, and restricted cash will be sufficient to meet our cash commitments for at least the next 12 months after the date that the interim condensed consolidated financial statements are issued. The timing of future capital requirements depends upon many factors including the size and timing of future clinical trials, the timing and scope of any strategic partnering activity and the progress of other research and development activities.

Cash Flows

The tables below set forth our significant sources and uses of cash for the periods.

	Three Months Ended March 31,	
	2022	2021
	(dollars in millions)	
Net cash (used in) provided by:		
Operating activities	$ (5.8)	$ (5.2)
Investing activities	—	—
Financing activities	—	60.0
Net (decrease) increase in cash	$ (5.8)	$ 54.8

Net Cash Used in Operating Activities

Net cash used in operating activities of approximately $5.8 million during the three months ended March 31, 2022 was primarily due our net loss of $9.8 million and a $0.3 million decrease in accounts payable, partially offset by non-cash interest expense for the sale of future royalties of $1.8 million, stock-based compensation expense of $1.1 million, a $0.7 million decrease in prepaid expense, and an increase in accrued expenses of $0.7 million.

Net cash used in operating activities of approximately $5.2 million during the three months ended March 31, 2021 was primarily due our net loss of $8.8 million, partially offset by stock-based compensation expense of $1.5 million, non-cash interest expense for the sale of future royalties of $1.3 million, a $0.5 million decrease in prepaid expense, a $0.1 million increase in accounts payable, and an increase in accrued expenses of approximately $0.2 million.

Net Cash Provided by Investing Activities

Net cash provided by investing activities was zero during the three months ended March 31, 2022 and 2021.

Net Cash Provided by Financing Activities

Net cash provided by financing activities was zero during the three months ended March 31, 2022.

Net cash provided by financing activities of $60 million during the three months ended March 31, 2021 was due to the proceeds from the sale of future royalties of $60 million.

Critical Accounting Policies and Estimates

In our Annual Report on Form 10-K for the fiscal year ended December 31, 2021, our most critical accounting policies and estimates upon which our financial status depends were identified as those relating to research and development costs; in-process research and development; goodwill; income taxes; and the liability related to the sale of future royalties. We reviewed our policies and determined that those policies were our most critical accounting policies for the three months ended March 31, 2022.

Recent Accounting Pronouncements

From time to time, new accounting pronouncements are issued by the Financial Accounting Standards Board and are adopted by us as of the specified effective date. See Note 2 of our Annual Report on Form 10-K for the fiscal year ended December 31, 2021 and Note 2 in our condensed consolidated financial statements appearing elsewhere in this Form 10-Q for a description of recent accounting pronouncements applicable to our financial statements. We believe that the impact of recently issued, but not yet adopted, accounting pronouncements will not have a material impact on the condensed consolidated financial statements or do not apply to our operations.

Item 3. ***Quantitative and Qualitative Disclosures about Market Risk***

Not applicable.

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

Evaluation of Disclosure Controls and Procedures

We maintain "disclosure controls and procedures," as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934 ("Exchange Act"), 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 our management, including our principal executive and principal financial officers, as appropriate to allow timely decisions regarding required disclosure.

Our management, with the participation of our Chief Executive Officer (principal executive officer) and Chief Financial Officer (principal financial officer), evaluated the effectiveness of our disclosure controls and procedures as of March 31, 2022. Based on the evaluation of our disclosure controls and procedures as of March 31, 2022, our Chief Executive Officer and Chief Financial Officer concluded that, as of such date, our disclosure controls and procedures were effective at a reasonable assurance level.

Changes in Internal Control over Financial Reporting

There were no changes in internal control over financial reporting during our latest fiscal quarter that would have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

PART II

Item 1. ***Legal Proceedings***

On December 8, 2020 and January 11, 2021, purported stockholders of the Company filed two putative securities class action complaints in the United States District Court for the District of Massachusetts, entitled *McCoy v. Minerva Neurosciences, Inc., et al., No. 1:20-cv-12176* and *Ao v. Minerva Neurosciences, Inc. et al., No. 1:21-cv-10051*, respectively, against the Company and the Company's Chairman and Chief Executive Officer (collectively, the "Defendants"). The complaints are nearly identical and allege that the Defendants made material false and/or misleading statements regarding the development of the Company's drug candidate roluperidone purportedly causing losses to investors who acquired the Company's common stock between May 15, 2017 and November 30, 2020. The complaints do not quantify any alleged damages but, in addition to attorneys' fees and costs, plaintiffs seek to recover damages on behalf of themselves and others who acquired the Company's stock during the putative class period at allegedly inflated prices and purportedly suffered financial harm as a result. On March 5, 2021, the Court entered an order consolidating the actions into a case captioned *In re Minerva Neurosciences, Inc. Securities Litigation, No. 1:20-cv-12176* and appointing lead plaintiffs and their counsel. On March 19, 2021, the parties filed a stipulated proposed order with the Court staying the Defendants' response to the complaint until after plaintiffs file an amended complaint. On May 5, 2021, the parties filed a stipulation and proposed order voluntarily dismissing the lawsuit on behalf of the appointed lead plaintiffs. Also on May 5, 2021, a second plaintiff filed a motion for appointment as lead plaintiff, which the Court granted on May 21, 2021. On June 9, 2021, before the lead plaintiff's deadline to amend the complaint and before defendants filed any response to the complaint, the parties stipulated to voluntary dismissal of the lawsuit on behalf of the appointed lead plaintiff. The Court entered the parties' stipulation of dismissal on July 9, 2021 and closed the case.

Item 1A. ***Risk Factors***

We operate in a rapidly changing environment that involves a number of risks which could materially affect our business, financial condition or future results, some of which are beyond our control. In addition to the other information set forth in this Quarterly Report on Form 10-Q, the risks and uncertainties that we believe are most important for you to consider are discussed in Part I-Item 1A under the heading "Risk Factors" in our Annual Report on Form 10-K for the year ended December 31, 2021, as filed with the SEC on March 1, 2022. The risk factors set forth below are risk factors containing changes, which may be material, from the risk factors previously disclosed in Item 1A of our Annual Report on Form 10-K for the fiscal year ended December 31, 2021, as filed with the SEC.

We have incurred significant losses since our inception. We expect to continue to incur losses over the next several years and may never achieve or maintain profitability.

We are a clinical development-stage biopharmaceutical company. In November 2013, we merged with Sonkei Pharmaceuticals, Inc. ("Sonkei"), and, in February 2014, we acquired Mind-NRG, which were also clinical development-stage biopharmaceutical companies. Investment in biopharmaceutical product development is highly speculative because it entails substantial upfront capital expenditures and significant risk that any potential product candidate will fail to demonstrate adequate effect or an acceptable safety profile, gain regulatory approval or become commercially viable. As an early stage company, we have limited experience and have not yet demonstrated an ability to successfully overcome many of the risks and uncertainties frequently encountered by companies in new and rapidly evolving fields, particularly the biopharmaceutical area. We have no products approved for commercial sale and have not generated any revenue from product sales to date, and we continue to incur significant research and development and other expenses related to our ongoing operations. Our recent collaborative revenue was due to the recognition of deferred revenue as a result of opting out of an agreement, and is not a recurring source of revenue.

As of March 31, 2022, we had an accumulated deficit of $344.5 million.

We expect to continue to incur significant losses for the foreseeable future, and we expect these losses to increase as we continue our research and development of, and seek regulatory approvals for, our product candidates. If any of our product candidates fail in clinical trials or do not gain regulatory approval, or if any of our product candidates, if approved, fail to achieve market acceptance, we may never generate revenue or become profitable. Even if we achieve profitability in the future, we may not be able to sustain profitability in subsequent periods. We may encounter unforeseen expenses, difficulties, complications, delays and other unknown factors that may adversely affect our business. The size of our future net losses will depend, in part, on the rate of future growth of our expenses and our ability to generate revenues. Our prior losses and expected future losses have had and will continue to have an adverse effect on our stockholders' equity and working capital.

We will require additional capital to finance our operations, which may not be available to us on acceptable terms, or at all. As a result, we may not complete the development and commercialization of our product candidates or develop new product candidates.

Our operations and the historic operations of Sonkei and Mind-NRG have consumed substantial amounts of cash since inception. As of March 31, 2022, we had cash, cash equivalents, and restricted cash of $55.0 million. We believe that our existing cash, cash equivalents, and restricted cash will be sufficient to meet our cash commitments for at least the next 12 months after the date that our interim condensed financial statements are issued. The process of drug development can be costly and the timing and outcomes of clinical trials is uncertain. The assumptions upon which we have based our estimates are routinely evaluated and may be subject to change. The actual amount of our expenditures will vary depending upon a number of factors including but not limited to the design, timing and duration of future clinical trials, the progress of our research and development programs, the infrastructure to support a commercial enterprise, the cost of a commercial product launch and the level of financial resources available.

Our future funding requirements, both short and long-term, will depend on many factors, including:

- the initiation, progress, timing, costs and results of pre-clinical studies and clinical trials for our product candidates and future product candidates we may develop;
- the outcome, timing and cost of seeking and obtaining regulatory approvals from the EMA, FDA, and comparable foreign regulatory authorities, including the potential for such authorities to require that we perform more studies than those that we currently expect;
- the cost to establish, maintain, expand and defend the scope of our intellectual property portfolio, including the amount and timing of any payments we may be required to make, or that we may receive, in connection with licensing, preparing, filing, prosecution, defense and enforcement of any patents or other intellectual property rights;
- the effect of competing technological and market developments;
- market acceptance of any approved product candidates;
- the costs of acquiring, licensing or investing in additional businesses, products, product candidates and technologies; and
- the cost of establishing sales, marketing and distribution capabilities for our product candidates for which we may receive regulatory approval and that we determine to commercialize ourselves or in collaboration with our partners.

When we need to secure additional financing, such additional fundraising efforts may divert our management from our day-to-day activities, which may adversely affect our ability to develop and commercialize our product candidates. In addition, we cannot guarantee that future financing will be available in sufficient amounts or on terms acceptable to us, if at all. If we raise additional equity financing, our stockholders may experience significant dilution of their ownership interests, and the per-share value of our common stock could decline. If we engage in debt financing, we may be required to accept terms that restrict our ability to incur additional indebtedness and force us to maintain specified liquidity or other ratios. Further, the evolving and volatile global economic climate and global financial market conditions could limit our ability to raise funding and otherwise adversely impact our business or those of our collaborators and providers. If we are unable to raise additional capital in sufficient amounts or on terms acceptable to us we may have to significantly delay, scale back or discontinue the development or commercialization of one or more of our product candidates. Any of these events could significantly harm our business, financial condition and prospects.

We are subject to risks and uncertainties as a result of the ongoing COVID-19 pandemic, and could be subject to risks from further health pandemics or epidemics, as well as uncertainty regarding returning to work and phased re-openings.

Our business could be adversely affected by the effects of health pandemics or epidemics, including the ongoing COVID-19 pandemic. Beginning in late 2019 and continuing into 2022, the outbreak of COVID-19 has resulted in the declaration of a global pandemic and adversely affected economic activity across virtually all sectors and industries on a local, national, and global scale. While global vaccination efforts are underway and certain jurisdictions, including Massachusetts, where our headquarters are located, have reopened businesses and governmental agencies, there remain limitations on the physical operations of businesses and prohibitions on certain non-essential gatherings, and we are unable to accurately predict the full impact that COVID-19 will have due to numerous uncertainties, including the duration of the outbreak, the result of vaccination efforts, resurgence of the virus including any new variants, actions that may be taken by governmental authorities, the impact on our business including our clinical programs and timelines, and the impact to the business of our service providers and partners. The magnitude of the negative effects of COVID-19 will depend, in part, on the length and severity of the restrictions and other limitations on our ability to conduct our business in the ordinary course, and our ability to respond with minimal disruptions to the evolving restrictions, reopenings, and any future curtailment. These and similar, and perhaps more severe, disruptions in our operations in response to the ongoing COVID-19 pandemic and any future health pandemics or epidemics could negatively impact our business, operating results and financial condition.

In addition, our clinical trials may be affected by the COVID-19 pandemic. We may face difficulties enrolling or retaining patients in future clinical trials if patients are affected by the COVID-19 virus or are unable to travel to the clinical trial sites or obtain study medication. Our clinical trials may further be delayed due to prioritization of hospital resources toward the COVID-19 pandemic, and some patients may not be able to comply with clinical trial protocols if quarantines impede patient movement or interrupt healthcare services. Similarly, our ability to recruit and retain principal investigators and site staff who, as healthcare providers, may have heightened exposure to the COVID-19 virus, could be delayed or disrupted, which would adversely impact our clinical trial operations. As a result, we could experience delays in the completion of our trials, which could result in a material adverse impact on our clinical trial plans and timelines.

Furthermore, the COVID-19 pandemic has caused a broad negative impact globally on capital markets and economies worldwide, which could have a negative impact on us economically. While the potential economic impact brought by, and the duration of, the COVID-19 pandemic, may be difficult to assess or predict, it is currently resulting in significant disruption of global financial markets. This disruption, if sustained or recurrent, could have a material adverse effect on our operating results, our ability to raise capital needed to develop and commercialize products and our overall financial condition. In addition, a recession or market correction resulting from the spread of the coronavirus could materially affect the value of our common stock.

The extent of the impact of the COVID-19 pandemic on our business is uncertain and difficult to predict, as the pandemic continues to rapidly evolve. The ultimate impact of the COVID-19 pandemic or a similar health pandemic or epidemic is highly uncertain and subject to change. We do not yet know the extent of potential delays or impacts on our business, our clinical trials, healthcare systems or the global economy as a whole. These effects could have a material impact on our operations, and we will continue to monitor the COVID-19 pandemic closely.

A variety of risks associated with international operations could materially adversely affect our business.

We own one Swiss subsidiary, expect to engage in significant cross-border activities, and we will be subject to risks related to international operations, including:

- different regulatory requirements for maintaining approval of drugs in foreign countries;
- reduced protection for contractual and intellectual property rights in certain countries;
- unexpected changes in tariffs, trade barriers and regulatory requirements;
- economic weakness, including inflation, political instability in particular foreign economies and markets, such as the instability caused by Russia's invasion of Ukraine, or public health issues or pandemics, such as the coronavirus;
- compliance with tax, employment, immigration and labor laws for employees living or traveling abroad;
- compliance with tax laws of various jurisdictions, including with respect to intercompany transfer pricing arrangements and taxable nexus;
- foreign currency fluctuations, which could result in increased operating expenses and reduced revenue, and other obligations incident to doing business in another country;
- workforce uncertainty in countries where labor unrest is more common than in North America;
- tighter restrictions on privacy and the collection and use of patient data; and
- business interruptions resulting from geopolitical actions, including political instability, hostilities, war and terrorism, such as the military conflict involving Russia and Ukraine, or natural disasters including pandemics, earthquakes, typhoons, floods and fires.

If any of these issues were to occur, our business could be materially harmed.

We are subject to U.S. and certain foreign export and import controls, sanctions, embargoes, anti-corruption laws, and anti-money laundering laws and regulations. Compliance with these legal standards could impair our ability to compete in domestic and international markets. We can face criminal liability and other serious consequences for violations, which can harm our business.

We are subject to export control and import laws and regulations, including the U.S. Export Administration Regulations, U.S. Customs regulations, various economic and trade sanctions regulations administered by the U.S. Treasury Department's Office of Foreign Assets Controls, the U.S. Foreign Corrupt Practices Act of 1977, as amended, or FCPA, the U.S. domestic bribery statute contained in 18 U.S.C. § 201, the U.S. Travel Act, the USA PATRIOT Act, and other state and national anti-bribery and anti-money laundering laws in the countries in which we conduct activities. Anti-corruption laws are interpreted broadly and prohibit companies

and their employees, agents, contractors, and other collaborators from authorizing, promising, offering, or providing, directly or indirectly, improper payments or anything else of value to recipients in the public or private sector. The Foreign Corrupt Practices Act ("FCPA"), prohibits any U.S. individual or business from paying, offering, or authorizing payment or offering of anything of value, directly or indirectly, to any foreign official, political party or candidate for the purpose of influencing any act or decision of the foreign entity in order to assist the individual or business in obtaining or retaining business. The FCPA also obligates companies whose securities are listed in the United States to comply with accounting provisions requiring the company to maintain books and records that accurately and fairly reflect all transactions of the corporation, including international subsidiaries, and to devise and maintain an adequate system of internal accounting controls for international operations. Activities that violate the FCPA, even if they occur wholly outside the United States, can result in criminal and civil fines, imprisonment, disgorgement, oversight, and debarment from government contracts.

We have direct or indirect interactions with officials and employees of government agencies or government-affiliated hospitals, universities, and other organizations. We can be held liable for the corrupt or other illegal activities of our employees, agents, contractors, and other collaborators, even if we do not explicitly authorize or have actual knowledge of such activities. Any violations of the laws and regulations described above may result in substantial civil and criminal fines and penalties, imprisonment, the loss of export or import privileges, debarment, tax reassessments, breach of contract and fraud litigation, reputational harm, and other consequences.

We are subject to stringent and evolving U.S. and foreign laws, regulations, rules, contractual obligations, policies and other obligations related to data privacy and security. Our actual or perceived failure to comply with such obligations could lead to regulatory investigations or actions; litigation; fines and penalties; disruptions of our business operations; reputational harm; loss of revenue or profits; and other adverse business consequences.

In the ordinary course of business, we collect, receive, store, process, generate, use, transfer, disclose, make accessible, protect, secure, dispose of, transmit, and share (collectively, processing) personal data and other sensitive data, including proprietary and confidential business data, trade secrets, intellectual property, data we collect about trial participants in connection with clinical trials, sensitive third-party data, and employee data. Our data processing activities may subject us to numerous data privacy and security obligations, such as various laws, regulations, guidance, industry standards, external and internal privacy and security policies, contracts, and other obligations that govern the processing of personal data by us and on our behalf.

In the United States, federal, state, and local governments have enacted numerous data privacy and security laws, including data breach notification laws, personal data privacy laws, and consumer protection laws (e.g. Section 5 of the Federal Trade Commission Act). For example, the federal Health Insurance Portability and Accountability Act of 1996 ("HIPAA"), as amended by the Health Information Technology for Economic and Clinical Health Act ("HITECH"), imposes specific requirements relating to the privacy, security, and transmission of individually identifiable health information. In addition, the California Consumer Privacy Act of 2018 ("CCPA") imposes obligations on covered businesses. These obligations include, but are not limited to, providing specific disclosures in privacy notices and affording California residents certain rights related to their personal data. The CCPA allows for statutory fines for noncompliance (up to $7,500 per violation). Although the CCPA exempts some data processed in the context of clinical trials, the CCPA may increase compliance costs and potential liability with respect to other personal data maintained about California residents. In addition, it is anticipated that the California Privacy Rights Act of 2020 ("CPRA"), effective January 1, 2023, will expand the CCPA. The CPRA establishes a new California Privacy Protection Agency to implement and enforce the CPRA, which could increase the risk of enforcement. Other states have enacted data privacy laws. For example, Virginia passed the Consumer Data Protection Act, Colorado passed the Colorado Privacy Act, and Utah passed the Consumer Privacy Act, all of which become effective in 2023. In addition, data privacy and security laws have been proposed at the federal, state, and local levels in recent years, which could further complicate compliance efforts.

Outside the United States, an increasing number of laws, regulations, and industry standards apply to data privacy and security. For example, the European Union's General Data Protection Regulation ("EU GDPR"), and the United Kingdom's GDPR ("UK GDPR") impose strict requirements for processing personal data. For example, under the EU GDPR, government regulators may impose temporary or definitive bans on data processing, as well as fines of up to 20 million euros or 4% of annual global revenue, whichever is greater. Further, individuals may initiate litigation related to processing of their personal data.

Certain jurisdictions have enacted data localization laws and cross-border personal data transfer laws, which could make it more difficult to transfer information across jurisdictions (such as transferring or receiving personal data that originates in the EU or in other foreign jurisdictions). Existing mechanisms that facilitate cross-border personal data transfers may change or be invalidated. For example, absent appropriate safeguards or other circumstances, the EU GDPR generally restricts the transfer of personal data to countries outside of the European Economic Area ("EEA") that the European Commission does not consider to provide an adequate level of data privacy and security, such as the United States. The European Commission released a set of "Standard Contractual Clauses" ("SCCs") that are designed to be a valid mechanism to facilitate personal data transfers out of the EEA to these jurisdictions.

Currently, these SCCs are a valid mechanism to transfer personal data outside of the EEA, but there exists some uncertainty regarding whether the SCCs will remain a valid mechanism. Additionally, the SCCs impose additional compliance burdens, such as conducting transfer impact assessments to determine whether additional security measures are necessary to protect the at-issue personal data. In addition, the UK similarly restrict personal data transfers outside of those jurisdictions to countries such as the United States that do not provide an adequate level of personal data protection, and certain countries outside Europe (e.g. China) have also passed or are considering laws requiring local data residency or otherwise impeding the transfer of personal data across borders, any of which could increase the cost and complexity of doing business. If we cannot implement a valid compliance mechanism for cross-border data transfers, we may face increased exposure to regulatory actions, substantial fines, and injunctions against processing or transferring personal data from Europe or other foreign jurisdictions. The inability to import personal data to the United States could significantly and negatively impact our business operations, including by limiting our ability to conduct clinical trial activities in Europe and elsewhere; limiting our ability to collaborate with parties that are subject to such cross-border data transfer or localization laws; or requiring us to increase our personal data processing capabilities and infrastructure in foreign jurisdictions at significant expense.

In addition to data privacy and security laws, we may be contractually subject to data privacy and security obligations, including industry standards adopted by industry groups and may become subject to new data privacy and security obligations in the future. For example, certain privacy laws require our customers to impose specific contractual restrictions on their service providers.

Obligations related to data privacy and security are quickly changing in an increasingly stringent fashion, creating some uncertainty as to the effective future legal framework. Additionally, these obligations may be subject to differing applications and interpretations, which may be inconsistent or conflict among jurisdictions. Preparing for and complying with these obligations requires significant resources and may necessitate changes to our information technologies, systems, and practices and to those of any third parties that process personal data on our behalf.

Although we endeavor to comply with all applicable data privacy and security obligations, we may at times fail (or be perceived to have failed) to do so. Moreover, despite our efforts, our personnel or third parties upon whom we rely may fail to comply with such obligations, which could negatively impact our business operations and compliance posture. For example, any failure by a third-party processor to comply with applicable law, regulations, or contractual obligations could result in adverse effects, including proceedings against us by governmental entities or others.

If we fail, or are perceived to have failed, to address or comply with data privacy and security obligations, we could face significant consequences. These consequences may include, but are not limited to, government enforcement actions (e.g., investigations, fines, penalties, audits, inspections, and similar); litigation (including class-related claims); additional reporting requirements and/or oversight; bans on processing personal data; orders to destroy or not use personal data; and imprisonment of company officials. Any of these events could have a material adverse effect on our reputation, business, or financial condition, including but not limited to: loss of customers; interruptions or stoppages in our business operations (including, as relevant, clinical trials); inability to process personal data or to operate in certain jurisdictions; limited ability to develop or commercialize our products; expenditure of time and resources to defend any claim or inquiry; adverse publicity; or revision or restructuring of our operations.

If our information technology systems or data, or those of third parties upon which we rely, are or were compromised, we could experience adverse consequences resulting from such compromise, including but not limited to regulatory investigations or actions; litigation; fines and penalties; disruptions of our business operations; reputational harm; loss of revenue or profits; and other adverse consequences.

In the ordinary course of our business, we may process proprietary, confidential, and sensitive data, including personal data (such as health-related data), intellectual property, and trade secrets (collectively, sensitive information). We may rely upon third-party service providers and technologies to operate critical business systems to process sensitive information in a variety of contexts, including, without limitation, third-party providers of cloud-based infrastructure, encryption and authentication technology, employee email, content delivery to customers, and other functions. Our ability to monitor these third parties' information security practices is limited, and these third parties may not have adequate information security measures in place. We may share or receive sensitive information with or from third parties.

Cyberattacks, malicious internet-based activity, and online and offline fraud are prevalent and continue to increase. These threats are becoming increasingly difficult to detect. These threats come from a variety of sources, including traditional computer "hackers," threat actors, personnel (such as through theft or misuse), sophisticated nation states, and nation-state-supported actors. Some actors now engage and are expected to continue to engage in cyber-attacks, including without limitation nation-state actors for geopolitical reasons and in conjunction with military conflicts and defense activities. During times of war and other major conflicts, we and the third parties upon which we rely may be vulnerable to a heightened risk of these attacks, including cyber-attacks, that could materially disrupt our systems and operations, supply chain, and ability to produce, sell and distribute our goods and services. We and the third parties upon which we rely may be subject to a variety of evolving threats, including but not limited to social-engineering attacks

(including through phishing attacks), malicious code (such as viruses and worms), malware (including as a result of advanced persistent threat intrusions), denial-of-service attacks (such as credential stuffing), personnel misconduct or error, ransomware attacks, supply-chain attacks, software bugs, server malfunctions, software or hardware failures, loss of data or other information technology assets, adware, telecommunications failures, earthquakes, fires, floods, and other similar threats.

Ransomware attacks, including by organized criminal threat actors, nation-states, and nation-state-supported actors, are becoming increasingly prevalent and severe and can lead to significant interruptions in our operations, loss of data and income, reputational harm, and diversion of funds. Extortion payments may alleviate the negative impact of a ransomware attack, but we may be unwilling or unable to make such payments due to, for example, applicable laws or regulations prohibiting such payments. Similarly, supply-chain attacks have increased in frequency and severity, and we cannot guarantee that third parties and infrastructure in our supply chain or our third-party partners' supply chains have not been compromised or that they do not contain exploitable defects or bugs that could result in a breach of or disruption to our information technology systems or the third-party information technology systems that support us and our services. Future or past business transactions (such as acquisitions or integrations) could expose us to additional cybersecurity risks and vulnerabilities, as our systems could be negatively affected by vulnerabilities present in acquired or integrated entities' systems and technologies. The COVID-19 pandemic and our remote workforce also poses increased risks to our information technology systems and data, as more of our employees work from home, utilizing network connections outside our premises.

Any of the previously identified or similar threats could cause a security incident or other interruption. A security incident or other interruption could result in unauthorized, unlawful, or accidental acquisition, modification, destruction, loss, alteration, encryption, disclosure of, or access to our sensitive information. A security incident or other interruption could disrupt our ability (and that of third parties upon whom we rely) to provide our services. We may expend significant resources or modify our business activities (including our clinical trial activities) to try to protect against security incidents. Certain data privacy and security obligations may require us to implement and maintain specific security measures, industry-standard or reasonable security measures to protect our information technology systems and sensitive information.

While we have implemented security measures designed to protect against security incidents, there can be no assurance that these measures, or those of a third party upon whom we rely, will be effective. For example, an external contractor experienced a cyberattack in 2019, which resulted in a disruption to patient recruitment in our Phase 3 clinical trial of roluperidone. We may be unable in the future to detect vulnerabilities in our information technology systems because such threats and techniques change frequently, are often sophisticated in nature, and may not be detected until after a security incident has occurred. Despite our efforts to identify and address vulnerabilities, if any, in our information technology systems, our efforts may not be successful. Further, we may experience delays in developing and deploying remedial measures designed to address any such identified vulnerabilities.

Applicable data privacy and security obligations may require us to notify relevant stakeholders of security incidents. Such disclosures are costly, and the disclosure or the failure to comply with such requirements could lead to adverse consequences. If we (or a third party upon whom we rely) experience a security incident or are perceived to have experienced a security incident, we may experience adverse consequences. These consequences may include: government enforcement actions (for example, investigations, fines, penalties, audits, and inspections); additional reporting requirements and/or oversight; restrictions on processing sensitive information (including personal data); litigation (including class claims); indemnification obligations; negative publicity; reputational harm; monetary fund diversions; interruptions in our operations (including availability of data); financial loss; and other similar harms. Security incidents and attendant consequences may negatively impact our ability to grow and operate our business.

Our contracts may not contain limitations of liability, and even where they do, there can be no assurance that limitations of liability in our contracts are sufficient to protect us from liabilities, damages, or claims related to our data privacy and security obligations. We cannot be sure that our insurance coverage will be adequate or sufficient to protect us from or to mitigate liabilities arising out of our privacy and security practices, that such coverage will continue to be available on commercially reasonable terms or at all, or that such coverage will pay future claims.

Our common stock may be delisted from Nasdaq if we fail to comply with continued listing standards.

If we fail to meet any of the continued listing standards of Nasdaq, our common stock could be delisted from The Nasdaq Global Market. These continued listing standards include, among other things, a $1.00 minimum closing bid price and shareholders' equity of $10 million.

On January 12, 2022, we received a deficiency letter from Nasdaq notifying us that, for the previous 30 consecutive business days, the closing bid price of our shares of common stock has not been maintained at the minimum required closing bid price of at least $1.00 per share, as required for continued listing on the Nasdaq Global Market. In accordance with the listing rules of Nasdaq, we have been given 180 calendar days, or until July 11, 2022, to regain compliance with the minimum bid price requirement. If at any time before July 11, 2022, the closing bid price of our common stock is at least $1.00 per share for a minimum of ten consecutive business days,

Nasdaq will provide written notification to us that the Company complies with the minimum bid price requirement. We intend to monitor the closing bid price of our common stock and may, if appropriate, consider implementing available options, including a reverse stock split, to regain compliance with the minimum closing bid price requirement. We are seeking stockholder approval of a reverse stock split at our 2022 annual meeting of stockholders.

On March 8, 2022, we received a second deficiency letter from Nasdaq that our stockholders' equity as reported in our Annual Report on Form 10-K for the year ended December 31, 2021 does not satisfy the Nasdaq Global Market continued listing requirement of $10 million as set forth in Nasdaq Stock Market Rule 5450(b)(1). We have 45 calendar days from the date of this letter to submit to Nasdaq a plan to regain compliance with such requirement. Nasdaq subsequently extended the deadline for such submission, and we currently anticipate timely submitting such a plan to Nasdaq by the extended deadline. If the plan is accepted, Nasdaq may grant an extension of up to 180 calendar days from the date of the deficiency letter for us to provide evidence of compliance. If the plan is not accepted or we are not granted an extension, we will then consider actions appropriate to the circumstances, which may include applicable appeals to a Nasdaq Hearings Panel.

There can be no assurance that we will be able to regain or maintain compliance and remain in compliance in the future. In particular, our share price may continue to decline for a number of reasons, including many that are beyond our control. See the risk factor captioned "The market price of our stock may be volatile, and you could lose all or part of your investment" described in our Annual Report on Form 10-K for the year ended December 31, 2021.

If we fail to comply with the continued listing standards of the Nasdaq Global Market, we may seek to list our common stock on the Nasdaq Capital Market, the NYSE American or on a regional stock exchange or, if one or more broker-dealer market makers comply with applicable requirements, the over-the-counter ("OTC") market. Listing on such other market or exchange could reduce the liquidity of our common stock. If our common stock were to trade in the OTC market, an investor would find it more difficult to dispose of, or to obtain accurate quotations for the price of, the common stock. Delisting of the common stock could depress our stock price, substantially limit liquidity of our common stock and materially adversely affect our ability to raise capital on terms acceptable to us, or at all. Further, delisting of the common stock would likely result in the common stock becoming a "penny stock" under the Exchange Act.

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

None.

Item 3. Defaults upon Senior Securities

Not applicable.

Item 4. Mine Safety Disclosures

Not applicable.

Item 5. Other Information

Not applicable.

Item 6. Exhibits

The following exhibits are incorporated by reference or filed as part of this report.

Exhibit Number	Description
3.1	Amended and Restated Certificate of Incorporation of the Registrant (incorporated by reference to Exhibit 3.1 to the Registrant's registration statement on Form S-1/A (File No. 333-195169) filed with the SEC on June 10, 2014)
3.2	Amended and Restated Bylaws of the Registrant (incorporated by reference to Exhibit 3.2 to the Registrant's quarterly report on Form 10-Q (File No. 001-36517) filed with the SEC on November 4, 2019)
31.1	Certification of Chief Executive Officer (Principal Executive Officer) pursuant to Section 302 of Sarbanes-Oxley Act of 2002
31.2	Certification of Chief Financial Officer (Principal Financial Officer) pursuant to Section 302 of Sarbanes-Oxley Act of 2002
32.1+	Certification of Chief Executive Officer (Principal Executive Officer) and Chief Financial Officer (Principal Financial Officer) pursuant to Section 906 of Sarbanes-Oxley Act of 2002
101.INS	Inline XBRL Instance Document
101.SCH	Inline XBRL Taxonomy Extension Schema Document
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document
104	Cover Page Interactive Data file (formatted as inline XBRL with applicable taxonomy extension information contained in Exhibits 101)

+ These certifications are being furnished solely to accompany this quarterly report pursuant to 18 U.S.C. Section 1350, and are not being filed for purposes of Section 18 of the Securities Exchange Act of 1934 and are not to be incorporated by reference into any filing of the registrant, whether made before or after the date hereof, regardless of any general incorporation language in such filing.

SIGNATURE

Pursuant to the requirements of Section 13 or 15(d) 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.

MINERVA NEUROSCIENCES, INC.

By:

/s/ Frederick Ahlholm

Frederick Ahlholm
Chief Financial Officer
(Principal Financial Officer)
(On behalf of the Registrant)

Date: May 4, 2022

EXHIBIT 31.1

CERTIFICATION

I, Remy Luthringer, certify that:

1. I have reviewed this Form 10-Q of Minerva Neurosciences, 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: May 4, 2022

/s/ Remy Luthringer Ph.D.
Remy Luthringer Ph.D.
Executive Chairman and
Chief Executive Officer
(Principal Executive Officer)

EXHIBIT 31.2

CERTIFICATION

I, Frederick Ahlholm, certify that:

1. I have reviewed this Form 10-Q of Minerva Neurosciences, Inc.;

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

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

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

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

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

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

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

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

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

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

Date: May 4, 2022

/s/ Frederick Ahlholm
Frederick Ahlholm
Chief Financial Officer
(Principal Financial Officer)

EXHIBIT 32.1

STATEMENT PURSUANT TO 18 U.S.C. § 1350

Pursuant to the requirement set forth in Rule 13a-14(b) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and Section 1350 of Chapter 63 of Title 18 of the United States Code (18 U.S.C. §1350), Remy Luthringer, Executive Chairman and Chief Executive Officer (Principal Executive Officer) of Minerva Neurosciences, Inc. (the "Company") and Frederick Ahlholm, Chief Financial Officer (Principal Financial Officer) of the Company, each hereby certifies that, to the best of his knowledge:

(1) The Company's Quarterly Report on Form 10-Q for the period ended March 31, 2022, to which this Certification is attached as Exhibit 32.1 (the "Quarterly Report") fully complies with the requirements of Section 13(a) or Section 15(d) of the Exchange Act; and

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

/s/ Remy Luthringer, Ph.D.

Date: May 4, 2022

Remy Luthringer, Ph.D.
Executive Chairman and
Chief Executive Officer
(Principal Executive Officer)

/s/ Frederick Ahlholm

Date: May 4, 2022

Frederick Ahlholm
Chief Financial Officer
(Principal Financial Officer)

This certification accompanies the Form 10-Q to which it relates, is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference into any filing of Minerva Neurosciences, Inc. under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended (whether made before or after the date of the Form 10-Q), irrespective of any general incorporation language contained in such filing.