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 June 30, 2022

OR

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

For the transition period from to

Commission File Number: 001-38022

MATINAS BIOPHARMA HOLDINGS, INC.
(Exact name of registrant as specified in its charter)

Delaware	**No. 46-3011414**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**

1545 Route 206 South, Suite 302
Bedminster, New Jersey 07921
(Address of principal executive offices) (Zip Code)

908-484-8805
(Registrant's telephone number, including area code)

(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	MTNB	NYSE American

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files).

Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

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

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

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

As of August 8, 2022, there were 216,864,526 shares of the registrant's common stock, $0.0001 par value, outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

None.

MATINAS BIOPHARMA HOLDINGS, INC.
Form 10-Q
Quarter Ended June 30, 2022

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Matinas BioPharma Holdings, Inc.
Condensed Consolidated Balance Sheets

	June 30, 2022 (Unaudited)	December 31, 2021 (Audited)
ASSETS:		
Current assets:		
Cash and cash equivalents	$ 10,398,544	$ 21,029,806
Marketable securities	28,104,146	28,592,049
Restricted cash – security deposit	50,000	50,000
Prepaid expenses and other current assets	3,371,538	1,321,466
Total current assets	41,924,228	50,993,321
Non-current assets:		
Leasehold improvements and equipment - net	1,982,975	1,537,728
Operating lease right-of-use assets - net	3,944,158	4,218,890
Finance lease right-of-use assets - net	10,415	22,270
In-process research and development	3,017,377	3,017,377
Goodwill	1,336,488	1,336,488
Restricted cash - security deposit	200,000	200,000
Total non-current assets	10,491,413	10,332,753
Total assets	$ 52,415,641	$ 61,326,074
LIABILITIES AND STOCKHOLDERS' EQUITY:		
Current liabilities:		
Accounts payable	$ 497,151	$ 938,270
Accrued expenses	4,294,396	2,850,888
Operating lease liabilities - current	579,260	538,546
Financing lease liabilities - current	11,508	21,039
Total current liabilities	5,382,315	4,348,743
Non-current liabilities:		
Deferred tax liability	341,265	341,265
Operating lease liabilities - net of current portion	3,843,524	4,140,387
Financing lease liabilities - net of current portion	-	2,621
Total non-current liabilities	4,184,789	4,484,273
Total liabilities	9,567,104	8,833,016
Stockholders' equity:		

Common stock par value $0.0001 per share, 500,000,000 shares authorized at June 30, 2022 and December 31, 2021; 216,864,526 and 216,269,450 issued and outstanding as of June 30, 2022 and December 31, 2021, respectively	21,685	21,627
Additional paid-in capital	187,116,333	184,251,138
Accumulated deficit	(143,535,065)	(131,634,208)
Accumulated other comprehensive loss	(754,416)	(145,499)
Total stockholders' equity	42,848,537	52,493,058
Total liabilities and stockholders' equity	$ 52,415,641	$ 61,326,074

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

Matinas BioPharma Holdings, Inc.
Condensed Consolidated Statements of Operations and Comprehensive Loss
Unaudited

	Three Months Ended June 30,		Six Months Ended June 30,	
	2022	2021	2022	2021
Revenue:				
Research and development	$ 1,062,500	$ -	$ 1,062,500	$ 33,333
Costs and expenses:				
Research and development	4,126,529	2,480,764	9,104,634	5,722,196
General and administrative	2,861,421	2,308,926	5,605,616	5,453,936
Total costs and expenses	6,987,950	4,789,690	14,710,250	11,176,132
Loss from operations	(5,925,450)	(4,789,690)	(13,647,750)	(11,142,799)
Sale of New Jersey net operating loss & tax credits	-	-	1,734,133	1,328,470
Other income/(loss), net	2,866	(1,415)	12,760	66,904
Net loss	$ (5,922,584)	$ (4,791,105)	$ (11,900,857)	$ (9,747,425)
Preferred stock series B accumulated dividends	-	(184,899)	-	(395,799)
Net loss attributable to common shareholders	$ (5,922,584)	$ (4,976,004)	$ (11,900,857)	$ (10,143,224)
Net loss available for common shareholders per share – basic and diluted	$ (0.03)	$ (0.02)	$ (0.05)	$ (0.05)
Weighted average common shares outstanding:				
Basic and diluted	216,864,526	205,215,259	216,755,261	204,547,251
Other comprehensive loss, net of tax				
Unrealized loss on securities available-for-sale	(125,242)	(85,163)	(608,917)	(176,929)
Other comprehensive loss, net of tax	(125,242)	(85,163)	(608,917)	(176,929)
Comprehensive loss attributable to shareholders	$ (6,047,826)	$ (4,876,268)	$ (12,509,774)	$ (9,924,354)

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

Matinas BioPharma Holdings, Inc.
Condensed Consolidated Statements of Stockholders' Equity
Unaudited

	Common Stock		Additional Paid - in	Accumulated	Accumulated Other Comprehensive	Total Stockholders'
	Shares	Amount	Capital	Deficit	Loss	Equity
Balance, December 31, 2021	216,269,450	$ 21,627	$ 184,251,138	$ (131,634,208)	$ (145,499)	$ 52,493,058
Stock-based compensation	-	-	2,474,612	-	-	2,474,612
Issuance of common stock in exchange for Options	195,076	18	99,423	-	-	99,441
Issuance of common stock pursuant to license agreement amendment	400,000	40	291,160	-	-	291,200
Other comprehensive loss	-	-	-	-	(608,917)	(608,917)
Net loss	-	-	-	(11,900,857)	-	(11,900,857)
Balance, June 30, 2022	216,864,526	$ 21,685	$ 187,116,333	$ (143,535,065)	$ (754,416)	$ 42,848,537

	Common Stock		Additional Paid – in	Accumulated	Accumulated Other Comprehensive	Total Stockholders'
	Shares	Amount	Capital	Deficit	Loss	Equity
Balance, March 31, 2022	216,864,526	$ 21,685	$ 185,901,685	$ (137,612,481)	$ (629,174)	$ 47,681,715
Stock-based compensation	-	-	1,214,648	-	-	1,214,648
Other comprehensive loss	-	-	-	-	(125,242)	(125,242)
Net loss	-	-	-	(5,922,584)	-	(5,922,584)
Balance, June 30, 2022	216,864,526	$ 21,685	$ 187,116,333	$ (143,535,065)	$ (754,416)	$ 42,848,537

	Redeemable Convertible Preferred Stock B		Common Stock		Additional Paid - in	Accumulated	Accumulated Other Comprehensive	Total Stockholders'
	Shares	Amount	Shares	Amount	Capital	Deficit	Income (loss)	Equity
Balance, December 31, 2020	4,361	$ 3,797,705	200,113,431	$ 20,010	$ 167,192,003	$ (107,507,193)	$ 228,172	$ 63,730,697

Stock-based compensation	-	-	-	-	2,100,402	-	-	2,100,402
Issuance of common stock as compensation for services	-	-	17,804	2	15,874	-	-	15,876
Issuance of common stock in exchange for preferred stock	(4,361)	(3,797,705)	8,722,000	873	3,796,832	-	-	-
Issuance of common stock in public offering, net of stock issuance costs ($172,592)	-	-	3,023,147	302	5,580,169	-	-	5,580,471
Issuance of common stock in exchange for Options	-	-	1,062,883	106	1,400,552	-	-	1,400,658
Issuance of common stock in exchange for Warrants	-	-	1,057	-	-	-	-	-
Stock dividend	-	-	1,687,200	169	843,431	(843,600)	-	-
Other comprehensive loss	-	-	-	-	-	-	(176,929)	(176,929)
Net loss	-	-	-	-	-	(9,747,425)	-	(9,747,425)
Balance, June 30, 2021	-	$ -	214,627,522	$ 21,462	$ 180,929,263	$ (118,098,218)	$ 51,243	$ 62,903,750

	Redeemable Convertible Preferred Stock B		Common Stock		Additional Paid - in	Accumulated	Accumulated Other Comprehensive	Total Stockholders'
	Shares	Amount	Shares	Amount	Capital	Deficit	Income (loss)	Equity
Balance, March 31, 2021	4,218	$ 3,673,176	204,283,972	$ 20,427	$ 175,189,608	$ (112,463,513)	$ 136,406	$ 66,556,104
Stock-based compensation	-	-	-	-	1,027,345	-	-	1,027,345
Issuance of common stock as compensation for services	-	-	10,244	1	7,937	-	-	7,938
Issuance of common stock in exchange for preferred stock	(4,218)	(3,673,176)	8,436,000	844	3,672,332	-	-	-
Issuance of common stock in exchange for Options	-	-	210,106	21	188,610	-	-	188,631
Stock dividend	-	-	1,687,200	169	843,431	(843,600)	-	-
Other comprehensive loss	-	-	-	-	-	-	(85,163)	(85,163)
Net loss	-	-	-	-	-	(4,791,105)	-	(4,791,105)
Balance, June 30, 2021	-	$ -	214,627,522	$ 21,462	$ 180,929,263	$ (118,098,218)	$ 51,243	$ 62,903,750

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

Matinas BioPharma Holdings, Inc.
Condensed Consolidated Statements of Cash Flow
Unaudited

	Six Months Ended June 30,	
	2022	2021
Cash flows from operating activities:		
Net loss	$ (11,900,857)	$ (9,747,425)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	154,804	117,202
Stock based compensation expense	2,474,612	2,156,941
Amortization of operating lease right-of-use assets	274,733	242,485
Amortization of finance lease right-of-use assets	11,854	20,656
Amortization of bond discount	109,574	108,562
Stock issued pursuant to license agreement amendment	291,200	-
Changes in operating assets and liabilities:		
Operating lease liabilities	(256,149)	(220,822)
Prepaid expenses and other current assets	(2,050,072)	1,738,706
Accounts payable	(441,119)	100,520
Accrued expenses and other liabilities	1,443,508	(32,593)
Net cash used in operating activities	(9,887,912)	(5,515,768)
Cash flows from investing activities:		
Purchase of marketable securities	(9,480,588)	(7,129,348)
Proceeds from sales of marketable securities	9,250,000	23,600,000
Purchases of leasehold improvements and equipment	(600,051)	-
Net cash (used in) provided by investing activities	(830,639)	16,470,652
Cash flows from financing activities:		
Net proceeds from public offering of common stock	-	5,580,472
Proceeds from exercise of options	99,441	1,400,658
Payments of capital lease liability – principal	(12,152)	(16,135)
Net cash provided by financing activities	87,289	6,964,994
Net (decrease)/increase in cash, cash equivalents and restricted cash	(10,631,262)	17,919,878
Cash, cash equivalents and restricted cash at beginning of period	21,279,806	12,768,481
Cash, cash equivalents and restricted cash at end of period	$ 10,648,544	$ 30,688,359
Supplemental non-cash financing and investing activities:		
Unrealized loss on securities for sale	$ (608,917)	$ (176,929)
Preferred stock conversion into common stock - Series B	$ -	$ 3,797,705

Unearned restricted stock grants	$ -	$ 27,858
Stock dividends issued	$ -	$ 843,600

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

MATINAS BIOPHARMA HOLDINGS, INC.
Notes to Unaudited Condensed Consolidated Financial Statements
(Tabular dollars and shares in thousands, except per share data)

Note 1 – Description of Business

Matinas BioPharma Holdings Inc. ("Holdings") is a Delaware corporation formed in 2013. Holdings is the parent company of Matinas BioPharma, Inc. ("BioPharma"), and Matinas BioPharma Nanotechnologies, Inc. ("Nanotechnologies," formerly known as Aquarius Biotechnologies, Inc.), its operating subsidiaries ("Nanotechnologies", and together with "Holdings" and "BioPharma", "the Company"). The Company is a clinical-stage biopharmaceutical company with a focus on identifying and developing novel pharmaceutical products.

Note 2 – Liquidity and Plan of Operations

The Company has experienced net losses and negative cash flows from operations each period since its inception. Through June 30, 2022, the Company had an accumulated deficit of approximately $143.5 million. The Company's net loss was approximately $11.9 million and $9.7 million for the six-month periods ended June 30, 2022 and 2021, respectively.

The Company has been engaged in developing its lipid nanocrystal ("LNC") platform delivery technology and a pipeline of associated product candidates, including MAT2203 and MAT2501, since 2011. To date, the Company has not obtained regulatory approval for any of its product candidates nor generated any revenue from product sales, and the Company expects to incur significant expenses to complete development of its product candidates. The Company may never be able to obtain regulatory approval for the marketing of any of its product candidates in any indication in the United States or internationally and there can be no assurance that the Company will generate revenues or ever achieve profitability.

If the Company obtains Food and Drug Administration ("FDA") approval for one or more of its product candidates, the Company expects that its expenses will continue to increase once the Company reaches commercial launch. The Company also expects that its research and development expenses will continue to increase as it moves forward with additional clinical studies for its current product candidates and development of additional product candidates. As a result, the Company expects to continue to incur substantial losses for the foreseeable future, and that these losses will be increasing.

As of June 30, 2022, the Company had cash and cash equivalents of approximately $10.4 million, marketable securities of approximately $28.1 million and restricted cash of approximately $0.3 million. The Company believes the cash and cash equivalents and marketable securities on hand are sufficient to fund planned operations through 2023.

Note 3 – Summary of Significant Accounting Policies

Basis of presentation and principles of consolidation

The accompanying unaudited condensed consolidated financial statements include the consolidated accounts of Holdings and its wholly owned subsidiaries, BioPharma, and Nanotechnologies. The accompanying unaudited condensed consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States ("U.S. GAAP") and reflect the operations of the Company and its wholly owned subsidiaries. All intercompany transactions have been eliminated in consolidation.

The Company's significant accounting policies are described in Note 3 within the Company's Notes to Consolidated Financial Statements included in the Company's 2021 Form 10-K.

The Company's management has considered all recent accounting pronouncements issued and believes that these recent pronouncements will not have a material effect on the Company's financial statements.

COVID-19

Since its emergence in 2019, COVID-19 has continued to spread and has adversely affected workforces, economies, and financial markets globally, and has and may continue to cause economic downturns.

The Company's financial results for the three and six months ended June 30, 2022 were not significantly impacted by COVID-19. However, the Company cannot predict the impact of the progression of COVID-19 on future results or the Company's ability to raise capital due to a variety of factors, including but not limited to the continued good health of Company employees, the ability of suppliers to continue to operate and deliver, the ability of the Company to maintain operations, and any further government and/or public actions taken in response to COVID-19.

Note 4 – Cash, Cash Equivalents, Restricted Cash and Marketable Securities

The Company considers all highly liquid financial instruments with original maturities of three months or less when purchased to be cash and cash equivalents and all investments with maturities of greater than three months from date of purchase are classified as marketable securities. Cash and cash equivalents consisted of cash in bank checking and savings accounts, money market funds and short-term U.S. treasury bonds that mature within three months of settlement date.

Cash, Cash Equivalents and Restricted Cash

The Company presents restricted cash with cash and cash equivalents in the Condensed Consolidated Statements of Cash Flows. Restricted cash at both June 30, 2022 and December 31, 2021 of $250 thousand represents funds the Company is required to set aside as collateral primarily for the Company's lab operating lease and other purposes.

The following table provides a reconciliation of cash, cash equivalents and restricted cash reported in the Condensed Consolidated Balance Sheets to the total of the amounts in the Condensed Consolidated Statements of Cash Flows as of June 30, 2022, December 31, 2021, June 30, 2021 and December 31, 2020:

	June 30, 2022	December 31, 2021	June 30, 2021	December 31, 2020

Cash and cash equivalents	$ 10,399	$ 21,030	$ 30,352	$ 12,432
Restricted cash included in current/long term assets	250	250	336	336
Cash, cash equivalents and restricted cash in the statement of cash flows	$ 10,649	$ 21,280	$ 30,688	$ 12,768

Marketable Securities

The Company has classified its investments in marketable securities as available-for-sale and as a current asset. The Company's investments in marketable securities are carried at fair value, with unrealized gains and losses included as a separate component of stockholders' equity. Unrealized losses and gains are classified as other comprehensive (loss)/income and costs are determined on a specific identification basis. Realized gains and losses from our marketable securities are recorded in other income, net. For the three and six months ended June 30, 2022, the Company recorded unrealized losses of $125 thousand and $609 thousand, respectively. For the three and six months ended June 30, 2021, the Company recorded unrealized losses of $85 thousand and $177 thousand, respectively. As of June 30, 2022 and December 31, 2021, the Company had net accumulated unrealized losses of $754 thousand and $145 thousand, respectively.

The following tables summarizes the Company's marketable securities as of June 30, 2022:

	Amortized Cost	Unrealized Gain	Unrealized (Loss)	Fair Value
U.S. Treasury Bonds	$ 6,982	$ —	$ (25)	$ 6,957
U.S. Government Notes	16,360	—	(617)	15,743
Corporate Debt Securities	5,516	—	(112)	5,404
Total marketable securities	$ 28,858	$ —	$ (754)	$ 28,104

Maturities of debt securities classified as available-for-sale were as follows at June 30, 2022:

	Fair Value
Due within one year	$ 15,319
Due after one year through five years	12,785
	$ 28,104

The following tables summarizes the Company's marketable securities for the year ended December 31, 2021 consisted of the following:

	Amortized Cost	Unrealized Gain	Unrealized (Loss)	Fair Value
U.S. Government Notes	$ 19,395	$ 2	$ (120)	$ 19,277
Corporate Debt Securities	9,092	—	(27)	9,065
State and Municipal Bonds	250	—	—	250
Total marketable securities	$ 28,737	$ 2	$ (147)	$ 28,592

Maturities of debt securities classified as available-for-sale were as follows at December 31, 2021:

	Fair Value
Due within one year	$ 8,257
Due after one year through five years	20,335
	$ 28,592

Note 5 - Fair Value Measurements

The Company uses the fair value hierarchy to measure the value of its financial instruments. The fair value hierarchy is based on inputs to valuation techniques that are used to measure fair value that are either observable or unobservable. Observable inputs reflect assumptions market participants would use in pricing an asset or liability based on market data obtained from independent sources, while unobservable inputs reflect a reporting entity's pricing based upon its own market assumptions. The basis for fair value measurements for each level within the hierarchy is described below:

- Level 1 – Quoted prices for identical assets or liabilities in active markets.
- Level 2 – Quoted prices for identical or similar assets and liabilities in markets that are not active; or other model-derived valuations whose inputs are directly or indirectly observable or whose significant value drivers are observable.
- Level 3 – Valuations derived from valuation techniques in which one or more significant inputs to the valuation model are unobservable and for which assumptions are used based on management estimates.

The Company utilizes valuation techniques that maximize the use of observable inputs and minimize the use of unobservable inputs to the extent possible as well as considers counterparty credit risk in its assessment of fair value.

The carrying amounts of cash equivalents, current portion of restricted cash, marketable securities, prepaid expenses and other current assets, accounts payable, current portion of lease liabilities and accrued expenses approximate fair value due to the short-term nature of these instruments.

A summary of the assets and liabilities carried at fair value in accordance with the hierarchy defined above is as follows:

	Fair Value Hierarchy

June 30, 2022	Total	Fair Value Hierarchy (Level 1)	(Level 2)	(Level 3)
Assets				
Marketable Securities:				
U.S. Treasury Bonds	$ 6,957	$ 6,957	$ —	$ —
U.S. Government Notes	15,743	—	15,743	—
Corporate Debt Securities	5,404	—	5,404	—
Total	$ 28,104	$ 6,957	$ 21,147	$ —

December 31, 2021	Total	Fair Value Hierarchy (Level 1)	(Level 2)	(Level 3)
Assets				
Marketable Securities:				
U.S. Government Notes	$ 19,277	$ —	$ 19,277	$ —
Corporate Debt Securities	9,065	—	9,065	—
State and Municipal Bonds	250	—	250	—
Total	$ 28,592	$ —	$ 28,592	$ —

U.S. treasury bonds are classified within Level 1 of the fair value hierarchy because they are valued using quoted market prices for identical assets in active markets. Marketable securities consisting of U.S. government notes, corporate debt securities and state and municipal bonds are classified as Level 2 and are valued using quoted market prices in markets that are not active.

Note 6 – Leasehold Improvements and Equipment

Leasehold improvements and equipment, summarized by major category, consist of the following as of June 30, 2022 and December 31, 2021:

	June 30, 2022	December 31, 2021
Equipment	$ 2,020	$ 1,640
Leasehold improvements	1,155	935
Total	3,175	2,575
Less: accumulated depreciation and amortization	1,192	1,037
Leasehold improvements and equipment, net	$ 1,983	$ 1,538

Depreciation and amortization expense for the three and six months ended June 30, 2022 was $86 thousand and $155 thousand, respectively, and for the three and six months ended June 30, 2021 was $59 thousand and $117 thousand, respectively. During the six months ended June 30, 2022 the Company purchased leasehold improvements of $220 thousand, and equipment of $380 thousand. The Company did not purchase any leasehold improvements and equipment during the three and six months ended June 30, 2021.

Note 7 – Accrued Expenses and Other Liabilities

Accrued Expenses, summarized by major category, as of June 30, 2022 and December 31, 2021 consist of the following:

	June 30, 2022	December 31, 2021
Payroll and incentives	$ 974	$ 1,343
General and administrative expenses	404	195
Research and development expenses	376	381
Deferred revenue *	2,096	33
Other deferred liabilities **	444	899
Total	$ 4,294	$ 2,851

* At June 30, 2022, the balance included $2,063 thousand related to the BioNTech Agreement and $33 thousand is related to the Genentech Agreement. At December 31, 2021, the balance of $33 thousand of deferred revenue was related to the Genentech Agreement. The balance of the BioNTech Agreement will be recognized evenly over the next nine months. (See Note 9 – Revenue Recognition, Collaboration Agreements and Other).

** At June 30, 2022, the balance of $444 thousand is related to the CFF Agreement's deferred liability. At December 31, 2021, the balance of $ 899 thousand was related to the CFF Agreement's deferred liability. (See Note 9 – Revenue Recognition, Collaboration Agreements and Other).

Note 8 – Leases

The Company has various lease agreements , including leases of office space, a laboratory and manufacturing facility, and various equipment.Some leases include purchase, termination or extension options for one or more years. These options are included in the lease term when it is reasonably certain that the option will be exercised.

The assets and liabilities from operating and finance leases are recognized at the lease commencement date based on the present value of remaining lease payments over the lease term using the Company's incremental borrowing rates or implicit rates, when readily determinable. Short-term leases, which have an initial term of 12 months or less, are not recorded on the balance sheet. The Company's operating leases do not provide implicit rates, therefore the Company utilized a discount rate based on its incremental borrowing rate to record the lease obligations. The Company's finance leases provide readily determinable implicit rates.

Operating lease obligations

The Company incurred lease expense for its operating leases of $226 thousand and $452 thousand for the three and six months ended June 30, 2022, respectively, and $204 thousand and $407 thousand for the three and six months ended June 30, 2021, respectively. The Company incurred amortization expense on its operating lease right-of-use assets of $139 thousand and $275 thousand for the three and six months ended June 30, 2022, respectively, and $116 thousand and $242 thousand for the three and six months ended June 30, 2021, respectively.

Finance Leases

The Company incurred interest expense on its finance leases of $0 and $1 thousand for the three and six months ended June 30, 2022, respectively, and $1 thousand and $2 thousand for the three and six months ended June 30, 2021, respectively. The Company incurred amortization expense on its finance lease right-of-use assets of $6 thousand and $12 thousand for the three and six months ended June 30, 2022, respectively, and $9 thousand and $21 thousand for the three and six months ended June 30, 2021, respectively.

The following table presents information about the amount and timing of liabilities arising from the Company's operating leases and finance leases as of June 30, 2022:

Maturity of Lease Liabilities	Operating Lease Liabilities	Finance Lease Liabilities
Remainder of 2022	$ 450	$ 10
2023	922	2
2024	962	-
2025	1,004	-
2026	1,046	-
Thereafter	1,112	-
Total undiscounted operating lease payments	$ 5,496	$ 12
Less: Imputed interest	1,073	-
Present value of operating lease liabilities	$ 4,423	$ 12
Weighted average remaining lease term in years	5.6	0.7
Weighted average discount rate	7.8%	7.3%

The following table presents information about the amount and timing of liabilities arising from the Company's operating leases and finance leases as of December 31, 2021:

Maturity of Lease Liabilities	Operating Lease Liabilities	Finance Lease Liabilities
2022	$ 883	$ 22
2023	922	2
2024	962	-
2025	1,004	-
2026	1,046	-
Thereafter	1,112	-
Total undiscounted operating lease payments	$ 5,929	$ 24
Less: Imputed interest	1,250	-
Present value of operating lease liabilities	$ 4,679	$ 24
Weighted average remaining lease term in years	6.1	0.9
Weighted average discount rate	7.8%	7.8%

Note 9 – Revenue Recognition, Collaboration Agreements and Other

BioNTech Research Collaboration

On April 8, 2022, the Company entered into an exclusive research collaboration with BioNTech SE (the "BioNTech Agreement") to evaluate the combination of mRNA formats utilizing the Company's proprietary LNC platform technology. Under the terms of the BioNTech Agreement, the Company received an exclusivity fee in the amount of $2.75 million, and BioNTech SE will fund certain of the Company's research expenses to be incurred under the agreement. The parties have also commenced discussions on a potential option to license ("OTL") agreement for the Company's LNC platform technology. The term of the agreement begins on the effective date and ends on the earlier of the execution of an OTL agreement by the parties, 12-months after the effective date and termination of the agreement.

The Company assessed the BioNTech Agreement under ASC 808 *Collaboration Arrangements* and ASC 606 *Revenue form Contracts with Customers* ("ASC 606") and concluded that the contract counterparty, BioNTech SE, is a customer based on the arrangement structure. The Company identified two material promises to deliver under the contract: (1) grant of an exclusive research license and (2) clinical research services. However, given the nature of the promises, the license and research services are not considered to be distinct from each other within the context of the contract. The Company therefore concluded that there is one combined performance obligation for both the license and research services.

The $2.75 million license fee has been recorded as deferred revenue and will be recognized over the term of the contract performance obligation period, which the Company has concluded to be 12 months after the execution of the contract. The clinical research services will be invoiced as service revenue is earned on a monthly basis during the term of the contract.

As of June 30, 2022, the Company recognized approximately $1.1 million of contract research revenue from the BioNTech Agreement in the Company's Statement of Operations and Comprehensive Loss. For the three and six months ended June 30, 2022, $688 thousand of the contract research revenue was recognized from the license fee and $375 thousand was earned from the monthly clinical research services performed by the Company. As of June 30, 2022, approximately $2.1 million of the license fee is included in deferred revenue within accrued expenses and other current liabilities in the Company's Balance Sheet.

Cystic Fibrosis Foundation Therapeutics Development Award

On November 19, 2020, the Company entered into an award agreement (the "CFF Agreement") with the Cystic Fibrosis Foundation ("CFF"), pursuant to which it received a Therapeutics Development Award of up to $4.2 million (the "Award") (of which $484 thousand had been previously received) to support the preclinical development (the "Development Program") of the Company's MAT2501 product candidate. On November 19, 2021, the Company and CFF entered into an Amendment to the CFF Agreement which added an additional milestone payment in the amount of $321 thousand, which was received in the fourth quarter of 2021.

As of June 30, 2022, the Company has received approximately $3.6 million of the $4.5 million commitment, including the Amendment's additional milestone payment, and a related deferred liability balance of $444 thousand and $899 thousand is included in accrued expense and other current liabilities at June 30, 2022 and December 31, 2021, respectively. The remainder of the Award will be paid to the Company upon the achievement of certain milestones related to progress of the Development Program, as set forth in the CFF Agreement.

Genentech Feasibility Study Agreement

On December 12, 2019, the Company entered into a feasibility study agreement (the "Genentech Agreement") with Genentech, Inc. ("Genentech"). The Genentech Agreement involves the development of oral formulations using the Company's LNC platform delivery technology. Under the terms of the Genentech Agreement, Genentech paid the

Company a total of $100 thousand for the development of three molecules, or $33 thousand per molecule, which is being recognized upon the Company fulfilling its obligations for each molecule under the Genentech Agreement. The Company recorded the upfront consideration as deferred revenue, which is included in accrued expenses on the consolidated balance sheets. As of December 31, 2021, the Company completed its obligations related to the first and second of the three molecules. During the three and six months ended June 30, 2022, the Company did not complete its obligations related to the remaining molecule.

Note 10 – Income Taxes

Sale of net operating losses (NOLs) & tax credits

The Company recognized approximately $1.7 million and $1.3 million for the six months ended June 30, 2022 and 2021 in connection with the sale of certain State of New Jersey Net Operating Losses ("NOL") and Research and Development ("R&D") tax credits to a third party under the New Jersey Technology Business Tax Certificate Transfer Program.

Note 11 – Stockholders' Equity

Common Stock

On February 8, 2022, the Company issued 400,000 unregistered shares of its common stock to Rutgers, The State University of New Jersey ("Rutgers"), as partial consideration pursuant to the Second Amended and Restated Exclusive License Agreement between the Company and Rutgers. The agreement provides for (1) royalties on a tiered basis between low single digits and the mid-single digits of net sales of products using such licensed technology, (2) a one-time sales milestone fee of $100,000 when and if sales of products using the licensed technology reach the specified sales threshold and (3) an annual license fee of $50,000 over the term of the license agreement. There was also a reduction in the consideration paid to Rutgers in the event of a sublicense to a third party of the exclusive patent rights granted pursuant to the Agreement. The Company recorded a $291 thousand research and development expense related to the issuance of the 400,000 shares based on the closing price of the Company's common stock of $0.728 on the date of issuance.

For the six months ended June 31, 2021, the Company sold 3,023,147 shares of its common stock under its At-The-Market Sales Agreement with BTIG, LLC, at an average price of $1.90, generating gross proceeds of approximately $5.8 million and net proceeds of approximately $5.6 million. No sales of the Company's common stock occurred during the six months ended June 30, 2022.

Warrants

All warrants issued by the Company are exercisable immediately upon issuance and have a five-year term. The warrants may be exercised at any time in whole or in part upon payment of the applicable exercise price until expiration. No fractional shares will be issued upon the exercise of the warrants. The exercise price and the number of shares purchasable upon the exercise of the warrants are subject to adjustment upon the occurrence of certain events, which include stock dividends, stock splits, combinations and reclassifications of the Company's capital stock or other similar changes to the equity structure of the Company. The warrants do not have a redemption feature. They may be exercised on a cashless basis at the holder's option. The warrants are classified as equity instruments.

As of June 30, 2022, the Company had outstanding warrants to purchase an aggregate of 988,000 shares of common stock at exercise prices ranging from $0.50 to $0.75 per share, all of which are fully vested and with expiration dates between December 31, 2022 and June 21, 2023. The following table summarizes the changes in warrants outstanding during 2021 and for the six months ended June 30, 2022:

	Shares
Outstanding at December 31, 2020	1,328
Issued	-
Exercised	(320)
Tendered	-
Expired	(20)
Outstanding at December 31, 2021	988
Issued	-
Exercised	-
Tendered	-
Expired	-
Outstanding at June 30, 2022	988*

* Weighted average exercise price for outstanding warrants is $0.56.

Basic and diluted net loss per common share

During the three and six months ended June 30, 2022 and 2021, diluted loss per common share is the same as basic loss per common share because, as the Company incurred a net loss during each period presented, the potentially dilutive securities from the assumed exercise of all outstanding stock options and warrants, would have an anti-dilutive effect. The following outstanding shares of potentially dilutive securities were excluded from the computation of diluted net loss per share attributable to common shareholders because including them would have been anti-dilutive as of June 30, 2022 and 2021:

	As of June 30,	
	2022	2021
Stock options	27,729	22,162
Warrants	988	1,326
Total	28,717	23,488

Note 12 – Accumulated Other Comprehensive (Loss)/Income

The following table summarizes the changes in accumulated other comprehensive (loss)/income by component during the six months ended June 30, 2022 and 2021:

	Net Unrealized (Losses)/Gains on Available-for-Sale Securities	Accumulated Other Comprehensive (Loss)/Income
Balance, December 31, 2021	$ (145)	$ (145)
Net unrealized loss on securities available-for-sale	(609)	(609)
Net current period other comprehensive loss	(609)	(609)
Balance, June 30, 2022	$ (754)	$ (754)
Balance, December 31, 2020	$ 228	$ 228
Net unrealized loss on securities available-for-sale	(177)	(177)
Net current period other comprehensive income	(177)	(177)
Balance, June 30, 2021	$ 51	$ 51

All components of accumulated other comprehensive income are net of tax.

Note 13 – Stock-based Compensation

The Company's Amended and Restated 2013 Equity Compensation Plan (the "Plan") provides for the granting of incentive stock options, nonqualified stock options, restricted stock units, performance units, and stock purchase rights. There were no significant modifications to the Plan during the six months ended June 30, 2022 and 2021.

The following table contains information about the Company's stock plan at June 30, 2022:

	Awards Reserved for Issuance	Awards Issued & Exercised	Awards Available for Grant
2013 Equity Compensation Plan	45,603*	32,429**	13,174

* Increased by 8,651 thousand on January 1, 2022 representing 4% of the total number of shares of common stock outstanding on December 31, 2021.
** Includes both restricted stock grants and option grants

The Company recognized stock-based compensation expense (options and restricted share grants) in its condensed consolidated statements of operations as follows:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2022	2021	2022	2021
Research and Development	$ 555	$ 460	$ 1,105	$ 945
General and Administrative	660	596	1,370	1,212
Total	$ 1,215	$ 1,056	$ 2,475	$ 2,157

As of June 30, 2022, total compensation costs related to unvested awards not yet recognized was approximately $9.3 million and the weighted-average periods over which the awards are expected to be recognized was 2.5 years.

Stock Options

The following table summarizes the activity for Company' stock options for the six months ended June 30, 2022:

	Stock Options
Outstanding at December 31, 2021	28,184
Granted	260
Exercised	(195)
Forfeited	(154)
Cancelled	-
Expired	(366)
Outstanding at June 30, 2022	27,729

Restricted Stock Awards

During the six months ended June 30, 2022 and 2021, the Company granted restricted stock awards for 0 and 8 thousand shares of common stock, respectively. These awards are typically granted to members of the Board of Directors as payment in lieu of cash fees or as payment to a vendor pursuant to a consulting agreement. The Company values restricted stock awards at the fair market value on the date of grant. The Company recorded the value of the 2021 restricted awards as general and administrative expense of $28 thousand and $57 thousand for the three and six months ended June 30, 2021, respectively, in the Condensed Consolidated Statement of Operations. As of June 30, 2022, there was no unrecognized compensation costs related to restricted stock grants.

Note 14 – Commitments and Contingencies

On March 7, 2022, the Company entered into an agreement with Thermo Fisher Scientific to provide scale-up and commercial manufacturing capabilities for MAT2203. The estimated fees under the agreement, including capital equipment requirements, are approximately $7.7 million. The fees are expected to be incurred over a two-year period beginning in March 2022 through the first quarter of 2024. For the three and six months ended June 30, 2022, the Company prepaid $2.0 million to Thermo Fisher Scientific for expenses to be incurred during beginning phases of the agreement activities. During the three and six months ended June 30, 2022, the Company expensed $20 thousand and $38 thousand, respectively. At June 30, 2022, $1,962 thousand is included in prepaid expenses and other current assets.

Item 2. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following discussion and analysis of our financial condition and results of operations should be read together with our financial statements and the related notes and the other financial information included elsewhere in this Quarterly Report on Form 10-Q. This discussion contains forward-looking statements that involve risks and uncertainties.

Our actual results could differ materially from those anticipated in these forward-looking statements as a result of various factors, including those discussed below and elsewhere in this Quarterly Report on Form 10-Q, in our Annual Report on Form 10-K for the year ended December 31, 2021 and in other reports we file with the Securities and Exchange Commission, particularly those under "Risk Factors." Dollars in tabular format are presented in thousands, except per share data, or otherwise indicated.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This report on Form 10-Q contains forward-looking statements made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995 under Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. Forward-looking statements include statements with respect to our beliefs, plans, objectives, goals, expectations, anticipations, assumptions, estimates, intentions and future performance, and involve known and unknown risks, uncertainties and other factors, which may be beyond our control, including risks and uncertainties related to the impact of COVID-19, and which may cause our actual results, performance or achievements to be materially different from future results, performance or achievements expressed or implied by such forward-looking statements. All statements other than statements of historical fact are statements that could be forward-looking statements. You can identify these forward-looking statements through our use of words such as "may," "can," "anticipate," "assume," "should," "indicate," "would," "believe," "contemplate," "expect," "seek," "estimate," "continue," "plan," "point to," "project," "predict," "could," "intend," "target," "potential" and other similar words and expressions of the future.

There are a number of important factors that could cause the actual results to differ materially from those expressed in any forward-looking statement made by us. These factors include, but are not limited to:

- our ability to raise additional capital to fund our operations and to develop our product candidates;
- our anticipated timing for preclinical development, regulatory submissions, commencement and completion of clinical trials and product approvals;
- our history of operating losses in each year since inception and the expectation that we will continue to incur operating losses for the foreseeable future;
- our dependence on product candidates which are still in an early development stage;
- our reliance on our proprietary lipid nanocrystal (LNC) platform delivery technology, which is licensed to us by Rutgers University;
- our ability to manufacture GMP batches of our product candidates which are required for preclinical and clinical trials and, subsequently, if regulatory approval is obtained for any of our products, our ability to manufacture commercial quantities;
- our ability to complete required clinical trials for our lead product candidate and other product candidates and obtain approval from the FDA or other regulatory agents in different jurisdictions;
- our dependence on third parties, including third parties to manufacture our intermediates and final product formulations and third-party contract research organizations to conduct our clinical trials;
- our ability to maintain or protect the validity of our patents and other intellectual property;
- our ability to retain and recruit key personnel;
- our ability to internally develop new inventions and intellectual property;
- interpretations of current laws and the passages of future laws;
- our lack of a sales and marketing organization and our ability to commercialize products, if we obtain regulatory approval, whether alone or through potential future collaborators;
- our ability to successfully commercialize, and our expectations regarding future therapeutic and commercial potential with respect to, our product candidates;
- the accuracy of our estimates regarding expenses, ongoing losses, future revenue, capital requirements and our needs for or ability to obtain additional financing;
- developments and projections relating to our competitors or our industry;
- our operations, business and financial results may be adversely impacted by COVID-19; and
- the factors listed under the heading "Risk Factors" in our Annual Report on Form 10-K for the year ended December 31, 2021, elsewhere in this report and other reports that we file with the Securities and Exchange Commission.

All forward-looking statements are expressly qualified in their entirety by this cautionary notice. You are cautioned not to place undue reliance on any forward-looking statements, which speak only as of the date of this report or the date of the document incorporated by reference into this report. We have no obligation, and expressly disclaim any obligation, to update, revise or correct any of the forward- looking statements, whether as a result of new information, future events or otherwise. We have expressed our expectations, beliefs and projections in good faith, and we believe they have a reasonable basis. However, we cannot assure you that our expectations, beliefs or projections will result or be achieved or accomplished.

Overview

We are a clinical-stage biopharmaceutical company focused on redefining the intracellular delivery of nucleic acids and small molecules through our lipid nanocrystal (LNC) delivery platform technology. Our current pipeline consists of two potent anti-infective small molecules, MAT2203 (oral amphotericin B) and MAT2501 (oral amikacin). We are also expanding the application of our LNC platform through collaborations with well-respected pharmaceutical companies whose molecules and compounds benefit from the unique capabilities of our delivery technology, which can provide oral bioavailability and facilitate non-toxic and efficient intracellular delivery. We are intent on further expansion of our LNC platform, both internally and through external partnerships, into the field of nucleic acids where delivery into cells remains a critical element of therapeutic effect.

Key elements of our strategy include:

- Advancing our clinical stage assets based on our LNC platform delivery technology and continuing to expand utilization of this promising technology into areas of innovative medicine beyond small molecules, including nucleic acids (e.g. mRNA, DNA, ASOs) and proteins, both internally and through additional external collaborations and partnerships, including our feasibility study agreement with Genentech and exclusive research collaboration with BioNTech SE.

- Advancing MAT2203 toward NDA filing through the ongoing EnACT study for the treatment of cryptococcal meningitis, which highlights the safety and efficacy of this promising drug candidate, while also demonstrating the ability of our LNC platform technology to deliver potent medicines across the blood-brain barrier with oral administration.

- Progressing the development of MAT2501 through extensive preclinical toxicology and efficacy studies in NTM infections and completing a single ascending dose (SAD) pharmacokinetic study in healthy volunteers later in 2022, all with the financial support of the CFF.

We have incurred losses for each period from our inception. For the six months ended June 30, 2022 and 2021, our net loss was approximately $11.9 million and $9.7 million, respectively. We expect to incur significant expenses and operating losses over the next several years. Accordingly, we will need additional financing to support our continuing operations. We will seek to fund our operations through public or private equity offerings, debt financings, government or other third-party funding, collaborations and licensing arrangements. Adequate additional financing may not be available to us on acceptable terms, or at all. Our failure to raise capital as and when needed would impact our going concern and would have a negative impact on our financial condition and our ability to pursue our business strategy and continue as a going concern. We will need to generate significant revenues to achieve profitability, and we may never do so.

Financial Operations Overview

Revenue

During the three and six months ended June 30, 2022, we generated approximately $1.1 million in contract research revenue resulting from the research collaboration with BioNTech SE and $0 and $33 thousand during the three and six months ended June 30, 2021, respectively, resulting from the feasibility study agreement with Genentech Inc. Our ability to generate product revenue, which we do not expect to occur for many years, if ever, will depend heavily on the successful development and eventual commercialization of our early-stage product candidates.

Research and Development Expenses

Research and development expenses consist of costs incurred for the development of product candidates MAT2203 and MAT2501, and advancement of our LNC delivery technology platform, which include:

- the cost of conducting pre-clinical work;

- the cost of acquiring, developing and manufacturing pre-clinical and human clinical trial materials;

- costs for consultants and contractors associated with Chemistry and Manufacturing Controls (CMC), pre-clinical and clinical activities and regulatory operations;

- expenses incurred under agreements with contract research organizations, or CROs, including the NIH, that conduct our pre-clinical or clinical trials;

- employee-related expenses, including salaries and stock-based compensation expense for those employees involved in the research and development process; and

- the reimbursement of certain expenses related to the CFF award agreement.

The table below summarizes our direct research and development expenses for our product candidates and development platform for the three and six months ended June 30, 2022 and 2021. Our direct research and development expenses consist principally of external costs, such as fees paid to contractors, consultants, analytical laboratories and CROs and/or the NIH, in connection with our development work. We typically use our employee and infrastructure resources for manufacturing clinical trial materials, conducting product analysis, study protocol development and overseeing outside vendors. Included in "Internal staffing, overhead and other" below is the cost of laboratory space, supplies, research and development (R&D) employee costs (including stock-based compensation), travel and medical education.

	Three months ended June 30,		Six months ended June 30,	
	2022	2021	2022	2021
Direct research and development expenses:				
Manufacturing process development	$ 688	$ 237	$ 1,572	$ 726
Preclinical trials	60	-	625	2
Clinical development	626	290	1,209	1,068
Regulatory	233	43	402	85
Internal staffing, overhead and other	2,520	1,911	5,297	3,841
Total research and development	$ 4,127	$ 2,481	$ 9,105	$ 5,722

Research and development activities are central to our business model. We expect our research and development expenses to increase because product candidates in later stages of clinical development generally have higher development costs than those in earlier stages of clinical development, primarily due to the increased size and duration of later-stage human trials. Our research and development expenses reflect the reimbursement of certain MAT2501 program expenses related to the CFF award agreement. In addition, we will look to strategically expand the use of our drug platform technology through additional development work. During 2022, we will be focused on advancing our lead product candidate, MAT2203, to efficacy data in the treatment of cryptococcal meningitis (CM), accelerating the development of MAT2501 and also expanding application of our LNC platform delivery technology through both internal efforts and collaborations with third parties.

General and Administrative Expenses

General and administrative expenses consist principally of salaries and related costs for personnel in executive and finance functions. Other general and administrative expenses include facility costs, insurance, investor relations expenses, professional fees for legal, patent review, consulting and accounting/audit services. We anticipate that our general and administrative expenses during 2022 will remain relatively consistent with expenses incurred during 2021.

Sale of Net Operating Losses (NOLs) & Tax Credits

Income obtained from selling unused net operating losses (NOLs) and unused research tax credits under the New Jersey Technology Business Tax Certificate Program was approximately $1.7 million and $1.3 million for the six months ended June 30, 2022 and 2021, respectively.

Other Income, net

Other income, net is largely comprised of interest income/(expense) and dividends.

Application of Critical Accounting Policies and Accounting Estimates

A critical accounting policy is one that is both important to the portrayal of our financial condition and results of operation and requires management's most difficult, subjective or complex judgments, often as a result of the need to make estimates about the effect of matters that are inherently uncertain.

For a description of our significant accounting policies, refer to "Note 3 – *Summary of Significant Accounting Policies*" in our 2021 Form 10-K. Of these policies, the following are considered critical to an understanding of our Unaudited Condensed Consolidated Financial Statements as they require the application of the most difficult, subjective and complex judgments; (i) Stock-based compensation, (ii) Fair value measurements, (iii) Research and development costs, (iv) Goodwill and other intangible assets, (v) Basic and diluted net loss per common share, and (vi) Revenue recognition.

Recent Accounting Pronouncements

Refer to "Note 3 – *Summary of Significant Accounting Policies"* in the Notes to Unaudited Condensed Consolidated Financial Statements for a discussion of recently adopted accounting pronouncements and their expected impact on our financial positions and results of operations.

Current Operating Trends

Our current R&D efforts are focused on advancing our lead LNC product candidates, MAT2203, through clinical development toward an initial indication for the treatment of CM, accelerating preclinical development of MAT2501 with the assistance of the CFF, and expanding application of our LNC platform delivery technology through collaborations with third parties. Our R&D expenses consist of manufacturing work and the cost of active pharmaceutical ingredients and excipients used in such work, fees paid to consultants for work related to clinical trial design and regulatory activities, fees paid to providers for conducting various clinical studies as well as for the analysis of the results of such studies, and for other medical research addressing the potential efficacy and safety of our drugs. We believe that significant investment in product development is a competitive necessity, and we plan to continue these investments in order to be in a position to realize the potential of our product candidates and proprietary technologies.

We expect that all of our R&D expenses in the near-term future will be incurred in support of our current and future preclinical and clinical development programs rather than technology development. These expenditures are subject to numerous uncertainties relating to timing and cost to completion. We test compounds in numerous preclinical studies for safety, toxicology and efficacy. At the appropriate time, subject to the approval of regulatory authorities, we expect to conduct early-stage clinical trials for each drug candidate. We anticipate funding these trials ourselves, and possibly with the assistance of federal grants, contracts or other agreements. As we obtain results from trials, we may elect to discontinue or delay clinical trials for certain products in order to focus our resources on more promising products. Completion of clinical trials may take several years, and the length of time generally varies substantially according to the type, complexity, novelty and intended use of a product candidate.

The commencement and completion of clinical trials for our products may be delayed by many factors, including lack of efficacy during clinical trials, unforeseen safety issues, slower than expected participant recruitment, lack of funding or government delays. In addition, we may encounter regulatory delays or rejections as a result of many factors, including results that do not support the intended safety or efficacy of our product candidates, perceived defects in the design of clinical trials and changes in regulatory policy during the period of product development. As a result of these risks and uncertainties, we are unable to accurately estimate the specific timing and costs of our clinical development programs or the timing of material cash inflows, if any, from our product candidates. Our business, financial condition and results of operations may be materially adversely affected by any delays in, or termination of, our clinical trials or a determination by the FDA that the results of our trials are inadequate to justify regulatory approval, insofar as cash in-flows from the relevant drug or program would be delayed or would not occur.

Results of Operations

Comparison of the three months ended June 30, 2022 to the three months ended June 30, 2021

The following tables summarizes our revenues and operating expenses for the periods presented:

	Three Months Ended June 30,	
	2022	**2021**
Revenues	$ 1,063	$ -
Expenses:		
Research and development	$ 4,127	$ 2,481
General and administrative	2,861	2,309
Operating Expenses	$ 6,988	$ 4,790

Revenues. During the three months ended June 30, 2022 we generated $1.1 million from the research collaboration with BioNTech SE and no revenue during the same period in 2021.

Research and Development expenses. Research and Development (R&D) expense for the three months ended June 30, 2022 and 2021 was approximately $4.1 million and $2.5 million, respectively. The increase in R&D expenses was primarily due to the increased preclinical and clinical trial costs related to the advancement of our product candidates and higher compensation expense in 2022.

General and Administrative expenses. General and administrative expense for the three months ended June 30, 2022 and 2021 was approximately $2.9 million and $2.3 million, respectively. The increase in general and administrative expense was primarily due to increased compensation expense related to increased head count.

Comparison of the six months ended June 30, 2022 to the six months ended June 30, 2021

	Six Months Ended June 30,	
	2022	**2021**
Revenues	$ 1,063	$ 33
Expenses:		
Research and development	$ 9,105	$ 5,722
General and administrative	5,605	5,454
Operating Expenses	$ 14,710	$ 11,176
Sale of net operating losses (NOLs)	$ 1,734	$ 1,328

Revenues. During the six months ended June 30, 2022 and 2021, we generated revenue of approximately $1.1 million and $33 thousand. The amount earned during the current year consists of contract research revenue resulting from the research collaboration with BioNTech SE while the amount earned during the prior year resulted from the feasibility study agreement with Genentech Inc.

Research and Development expenses. Research and Development (R&D) expense for the six months ended June 30, 2022 and 2021 was approximately $9.1 million and $5.7 million, respectively. The increase in R&D expenses was primarily due to the increased clinical trials and manufacturing costs related to the advancement of our product candidates and higher compensation expense in 2022.

General and Administrative expenses. General and administrative expense for the six months ended June 30, 2022 and 2021 was approximately $5.6 million and $5.5 million, respectively. The increase in general and administrative expense was primarily due to higher compensation expense.

Sale of net operating losses (NOLs). The Company recognized approximately $1.7 million and $1.3 million for the six months ended June 30, 2022 and 2021, respectively, in connection with the sale of state net operating losses and state research and development credits to third parties under the New Jersey Technology Business Tax Certificate Program.

Liquidity and capital resources

Sources of Liquidity

We have funded our operations since inception through private placements and public offerings of our equity securities. As of June 30, 2022, we have raised a total of approximately $156.7 million in gross proceeds and approximately $143.9 million, net, from sales of our equity securities.

As of June 30, 2022, we had cash, cash equivalents and marketable securities totaling approximately $38.5 million.

Cash Flows

The following table sets forth the primary sources and uses of cash, cash equivalents and restricted cash for each of the periods set forth below:

	Six Months Ended June 30,	
	2022	**2021**
Cash used in operating activities	$ (9,888)	$ (5,516)
Cash (used in) provided by investing activities	(830)	16,471
Cash provided by financing activities	87	6,965
Net (decrease)/increase in cash and cash equivalents and restricted cash	$ (10,631)	$ 17,920

Operating Activities

Net cash used in operating activities was approximately $9.9 million and $5.5 million for the six-month periods ended June 30, 2022 and 2021, respectively. Net losses of approximately $11.9 million and $9.7 million for the six-month periods ended June 30, 2022 and 2021, respectively, were partially offset by working capital adjustments due to the timing of receipts and payments in the ordinary course of business. We expect that there will be an increase in cash used in operations during the remainder of 2022 due to higher research and development expenses as we continue to move our product candidates and delivery platform forward in their development cycles.

Investing Activities

Approximately $0.8 million of net cash was used in investing activities for the six-month period ended June 20, 2022, while approximately $16.5 million of net cash was provided by investing activities for the six-month period ended June 30, 2021. The decrease of cash provided by investing activities of approximately $17.3 million was primarily due to the approximately $14.3 million decrease in proceeds received from maturities of our marketable securities, an increase of approximately $2.4 million in purchases of marketable securities and the purchase of approximately $0.6 million of leasehold improvements and equipment as compared to June 30, 2021.

Financing Activities

Net cash provided by financing activities was approximately $0.1 million and $7.0 million for the six-month periods ended June 30, 2022 and 2021, respectively. The decrease of approximately $6.9 million is primarily due to the ATM sales during January 2021 of approximately $5.6 million, for which the Company did not have similar equity raises during the six months ended June 30, 2022, and a decrease in the receipt of proceeds of approximately $1.3 million from the exercising of stock options.

Funding Requirements and Other Liquidity Matters

We expect to continue to incur significant expenses and increasing operating losses for the foreseeable future. We anticipate that our expenses will increase substantially if and as we:

- conduct further preclinical and clinical studies of MAT2203, our lead product candidate, even if such studies are primarily financed with non-dilutive funding from NIH;
- support the conduct of further clinical studies of MAT2501, even if such studies are primarily financed with non-dilutive funding from the CFF;
- seek to discover and develop additional product candidates;
- seek regulatory approvals for any product candidates that successfully complete clinical trials;
- require the manufacture of larger quantities of product candidates for clinical development and potentially commercialization;
- maintain, expand and protect our intellectual property portfolio;
- hire additional clinical, quality control and scientific personnel; and
- a d d operational, financial and management information systems and personnel, including personnel to support our product development and planned future commercialization efforts and personnel and infrastructure necessary to help us comply with our obligations as a public company.

We expect that our existing cash and cash equivalents will be sufficient to fund our operating expenses and capital expenditures requirements through 2023.

Until such time, if ever, that we can generate product revenues sufficient to achieve profitability, we expect to finance our cash needs through a combination of public and private equity offerings, debt financings, government or other third-party funding, collaborations and licensing arrangements. We do not have any committed external source of funds other than limited grant funding from the CFF and NIH. To the extent that we raise additional capital through the sale of common stock, convertible securities or other equity securities, the ownership interest of our stockholders may be materially diluted, and the terms of these securities may include liquidation or other preferences that adversely affect your rights of our common stockholders. Debt financing and preferred equity financing, if available, would result in increased fixed payment obligations and 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, that could adversely impact our ability to conduct our business. Securing additional financing could require a substantial amount of time and attention from our management and may divert a disproportionate amount of their attention away from day-to-day activities, which may adversely affect our management's ability to oversee the development of our product candidates.

If we raise additional funds through collaborations, strategic alliances or marketing, distribution, 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 grant licenses on terms that may not be favorable to us. If we are unable to raise additional funds through equity or debt financings when needed, we may be required to delay, limit, reduce or terminate our product development or future commercialization efforts or grant rights to develop and market product candidates that we would otherwise prefer to develop and market ourselves.

Contractual Obligations and Commitments

On March 7, 2022, the Company entered into an agreement with Thermo Fisher Scientific to provide commercial manufacturing capabilities for MAT2203. The estimated fees under the agreement, including capital equipment requirements, are approximately $7.7 million. The fees are expected to be incurred over a two-year period beginning in March 2022 through the first quarter of 2024.

Off-Balance Sheet Arrangements

We did not have during the periods presented, and we do not currently have, any off-balance sheet arrangements, as defined under SEC rules, such as relationships with unconsolidated entities or financial partnerships, which are often referred to as structured finance or special purpose entities, established for the purpose of facilitating financing transactions that are not required to be reflected on our balance sheets.

Item 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Not applicable.

Item 4. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures.

Disclosure Controls and Procedures:

As of June 30, 2022, under the supervision and with the participation of our principal executive officer and principal financial officer we have evaluated, the effectiveness of the design and operation of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (the "Exchange Act"). Based on that evaluation, our principal executive officer and principal financial officer concluded that our disclosure controls and procedures were effective at the reasonable assurance level as of June 30, 2022.

Our disclosure controls and procedures are designed to provide reasonable assurance that information required to be disclosed in the reports that we filed or submitted under the Exchange Act is recorded, processed, summarized and reported within time periods specified by 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 in our reports filed under the Exchange Act is accumulated and communicated to our management, including principal executive officer and principal financial officer, as appropriate to allow timely decisions regarding required disclosure.

Changes in Internal Control Over Financial Reporting

There were no changes in our internal control over financial reporting identified in connection with the above evaluation that occurred during the second quarter of 2022 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

PART - II OTHER INFORMATION

Item 1. LEGAL PROCEEDSINGS

None.

Item 1A. RISK FACTORS

There were no material changes from the risk factors set forth under Part I, Item 1A., "Risk Factors" in our Annual Report on Form 10-K for the fiscal year ended December 31, 2021. You should carefully consider the risk factors contained in our Annual Report on Form 10-K for the fiscal year ended December 31, 2021 in addition to the other information set forth in this report which could materially affect our business, financial condition or future results. The risks and uncertainties described in this report and in our Annual Report on Form 10-K for the year ended December 31, 2021, as well as other reports and statements that we file with the SEC, are not the only risks and uncertainties facing us. Additional risks and uncertainties not currently known to us or that we currently deem to be immaterial may also have a material adverse effect on our financial position, results of operations or cash flows.

Item 2. UNREGISTERED SALES OF EQUITY SECURITIES AND USE OF PROCEEDS

None.

Item 3. DEFAULTS UNDER SENIOR SECURITIES

None.

Item 4. MINE SAFETY DISCLOSURES

Not applicable.

Item 5. OTHER INFORMATION

On August 8, 2022, Dr. Raphael Mannino, the Company's Chief Scientific Officer, notified the Company of his intent to retire from employment, effective December 31, 2022. On August 8, 2022, the Company and Dr. Mannino entered into a consulting agreement (the "Consulting Agreement") for at least one year following the termination of his employment, whereby Dr. Mannino will serve as a strategic advisor to the Chief Executive Officer and provide various transition and other services to the Company at a monthly rate of $15,000 and the extension of the vesting and exercisability terms of outstanding stock options and warrants of the Company held by Dr. Mannino. The Consulting Agreement can be terminated at any time by Dr. Mannino and by the Company for cause, as defined in the Consulting Agreement. Pursuant to the Consulting Agreement, Dr. Mannino has agreed to certain specified restrictions on sales of the Company's stock through the period ending December 31, 2023. The foregoing description of the Consulting Agreement does not purport to be complete and is qualified in its entirety by reference to the full text of the Consulting Agreement. A copy of the Consulting Agreement will be filed with the Securities and Exchange Commission as an exhibit to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2022 (the "Form 10-Q"). Certain terms of the Consulting Agreement have been omitted from this description and will be omitted from the version of the Consulting Agreement to be filed as an exhibit to the Form 10-Q.

Item 6. EXHIBITS

See the Exhibit Index following the signature page to this Quarterly Report on Form 10-Q for a list of exhibits filed or furnished with this report, which Exhibit Index is incorporated herein by reference.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

MATINAS BIOPHARMA HOLDINGS, INC.

BY:

/s/ Jerome D. Jabbour

Dated: August 11, 2022

Jerome D. Jabbour
Chief Executive Officer (Principal Executive Officer)

/s/ Keith A. Kucinski

Dated: August 11, 2022

Keith A. Kucinski
Chief Financial Officer
(Principal Financial and Accounting Officer)

EXHIBIT INDEX

3.1	Certificate of Incorporation (incorporated by reference to Exhibit 3.1 to Amendment No. 1 to the Company's Registration Statement on Form S-1 filed with the SEC on February 7, 2014).
3.2	Bylaws (incorporated by reference to Exhibit 3.2 to Amendment No. 1 to the Company's Registration Statement on Form S-1 filed with the SEC on February 7, 2014).
3.3	Certificate of Amendment, dated October 29, 2015 to Certificate of Incorporation. (incorporated herein by reference to the Company's Current Report on Form 8-K filed with the SEC on November 5, 2015).
4.6	Description of Securities* (incorporated herein by reference to the Company's Annual Report on Form 10-K filed with the SEC on March 8, 2022)
*31.1	Certification of Chief Executive Officer
*31.2	Certification of Chief Financial Officer
*32.1	Section 1350 Certifications
*101.1	Inline XBRL Instance Document.
*101.2	Inline XBRL Taxonomy Extension Schema Document.
*101.3	Inline XBRL Taxonomy Extension Calculation Linkbase Document.
*101.4	Inline XBRL Taxonomy Extension Definition Linkbase Document.
*101.5	Inline XBRL Taxonomy Extension Label Linkbase Document.
*101.6	Inline XBRL Taxonomy Extension Presentation Linkbase Document.
104	Cover Page Interactive Data File (embedded within the Inline XBRL document)

* Filed herewith.

Exhibit 31.1

CERTIFICATION

I, Jerome D. Jabbour, certify that:

1. I have reviewed this report on Form 10-Q of Matinas BioPharma Holdings, 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: August 11, 2022

By: */s/ Jerome D. Jabbour*
Name: Jerome D. Jabbour
Title: Chief Executive Officer

Exhibit 31.2

CERTIFICATION

I, Keith A. Kucinski, certify that:

1. I have reviewed this report on Form 10-Q of Matinas BioPharma Holdings, 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 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: August 11, 2022

By: */s/ Keith A. Kucinski*
Name: Keith A. Kucinski
Title: Chief Financial Officer

Exhibit 32.1

SECTION 1350 CERTIFICATIONS

Pursuant to 18 U.S.C. §1350 as adopted pursuant to §906 of the Sarbanes-Oxley Act of 2002, the undersigned officers of Matinas BioPharma Holdings, Inc. (the "Company") hereby certify that to their knowledge and in their respective capacities that the Company's quarterly report on Form 10-Q to which this certification is attached (the "Report"), fully complies with the requirements of Section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and that the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: August 11, 2022

By: */s/ Jerome D. Jabbour*
Name: Jerome D. Jabbour
Title: Chief Executive Officer

Date: August 11, 2022

By: */s/ Keith A. Kucinski*
Name: Keith A. Kucinski
Title: Chief Financial Officer

This certification shall not be deemed "filed" for any purpose, nor shall it be deemed to be incorporated by reference into any filing under the Securities Act of 1933 or the Exchange Act. A signed original of this written statement required by Section 906, or other document authenticating, acknowledging, or otherwise adopting the signature that appears in typed form within the electronic version of this written statement required by Section 906, has been provided to Matinas BioPharma Holdings, Inc. and will be retained by Matinas BioPharma Holdings, Inc. and furnished to the Securities and Exchange Commission or its staff upon request.