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

FORM 8-K

CURRENT REPORT

Pursuant to Section 13 or 15(d) of
The Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): August 14, 2024

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

Delaware	**001-38022**	**46-3011414**
(State or other jurisdiction of incorporation)	**(Commission File Number)**	**(IRS Employer ID Number)**

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

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

Not Applicable
(Former name or former address, if changed since last report.)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions (see General Instruction A.2. below):

□ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)

□ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)

□ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))

□ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

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

Title of Each Class	Trading Symbol	Name of Each Exchange on Which Registered
Common Stock	MTNB	NYSE American

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (17 CFR §230.405) or Rule 12b-2 of the Securities Exchange Act of 1934 (17 CFR §240.12b-2).

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. □

Item 2.02. Results of Operations and Financial Condition.

On August 14, 2024, Matinas BioPharma Holdings, Inc. (the "Company") issued a press release announcing its financial results for the quarter ended June 30, 2024. The full text of the press release is furnished as Exhibit 99.1 hereto and is incorporated by reference herein.

The information in Item 2.02 of this Current Report on Form 8-K and Exhibit 99.1 attached hereto shall not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), or otherwise subject to the liabilities of that Section, nor shall such information be deemed incorporated by reference in any filing under the Securities Act of 1933, as amended (the "Securities Act"), or the Exchange Act, except as shall be expressly set forth by specific reference in such a filing.

Item 7.01 Regulation FD Disclosure.

The Company updated its corporate presentation (the "Corporate Presentation") which it intends to use at various conferences and investor meetings. The Corporate Presentation is attached hereto as Exhibit 99.2 and incorporated herein by reference.

The information in this Item 7.01 and Exhibit 99.2 attached hereto shall not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), or otherwise subject to the liabilities of that Section, nor shall such information be deemed incorporated by reference in any filing under the Securities Act of 1933, as amended, or the Exchange Act, except as shall be expressly set forth by specific reference in such a filing.

Item 9.01 Financial Statements and Exhibits.

Exhibit No.	Description
99.1	Press Release, dated August 14, 2024
99.2	Corporate Presentation, dated August 14, 2024
104	Cover Page Interactive Data File (embedded within the Inline XBRL document)

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 hereunto duly authorized.

MATINAS BIOPHARMA HOLDINGS, INC.

Dated: August 14, 2024

By: */s/ Jerome D. Jabbour*

Name: Jerome D. Jabbour

Title: Chief Executive Officer

Exhibit 99.1

Matinas BioPharma Reports Second Quarter 2024 Financial Results and Provides a Business Update

Signs non-binding term sheet granting global rights to develop and commercialize oral MAT2203 for invasive aspergillosis and potentially other invasive fungal infections

31 patients have enrolled in the MAT2203 Compassionate/Expanded Use Access Program with 6 additional patients under evaluation

Additional LNC platform work in inflammation and oncology completed; Company evaluating next steps

Conference call begins at 4:30 p.m. Eastern time today

BEDMINSTER, N.J. (August 14, 2024) – Matinas BioPharma Holdings, Inc. (NYSE American: MTNB), a clinical-stage biopharmaceutical company focused on delivering groundbreaking therapies using its lipid nanocrystal (LNC) platform delivery technology, reports financial results for the three and six months ended June 30, 2024 and provides a business update.

"We continue to engage in constructive partnership dialogues for MAT2203 and are pleased to announce that we have signed a non-binding term sheet for global licensing rights to this oral formulation of the potent, yet toxic antifungal amphotericin B," said Jerome D. Jabbour, Chief Executive Officer of Matinas. "Since June, seven additional patients have gained access to oral MAT2203 in our Compassionate/Expanded Use Access Program with an additional six patients under evaluation. We are experiencing a dramatic increase in requests by physicians seeking access for their patients who have limited or no treatment options, which we attribute to the consistently positive clinical impact of MAT2203 in successfully treating a variety of deadly invasive fungal infections.

"Recent studies have increased our understanding of the potential for our LNC platform in delivering both small oligonucleotides and small molecule oncology drugs, including LNC cellular uptake and cargo delivery," he added. "We continue to expand our knowledge base and are evaluating the next best steps for this technology as we determine how to maximize return to shareholders. We expect to be in a better position to provide additional guidance following the consummation of a MAT2203 partnership."

Key Program Updates

MAT2203 (Oral Amphotericin B)

- Matinas signed a non-binding term sheet with a single partner for global licensing rights to develop, manufacture and commercialize MAT2203 for all future treatment indications, including the intended initial indication of treatment for patients with invasive aspergillosis with limited or no other treatment options. Preparations are ongoing to enable the initiation of the ORALTO Phase 3 registration trial of MAT2203 to commence as soon as possible following a successful partnership announcement.

- Under the Compassionate/Expanded Use Access Program, 31 patients with a variety of serious and even life-threatening invasive fungal infections with limited or no other treatment options have been provided access to oral MAT2203, and 6 additional requests are under evaluation. Importantly, 7 patients have been or are being treated for invasive aspergillosis, each with positive results.

- Of the 15 patients in the Compassionate/Expanded Use Access Program who have completed treatment with MAT2203 (median treatment of 16 weeks with a range of 2 to 49 weeks), 8 had a complete response and 7 were improved. Response to treatment was assessed by the treating physician. Nine additional patients are continuing to receive longer-term treatment with positive ongoing effects and 5 have just recently initiated treatment. To date, only 2 patients have discontinued MAT2203 in this program, both occurring during the first week of treatment, with one due to an intolerance and the other due to a terminal condition not otherwise related to the underlying fungal infection.

LNC Platform

- Following early success in melanoma, recent additional *in vivo* studies in animal breast, prostate and lung cancer models have demonstrated varying degrees of tumor growth inhibition with daily oral dosing of LNC-docetaxel. Additionally, daily oral LNC-docetaxel in combination with intravenous docetaxel demonstrated greater degrees of tumor inhibition, but also resulted in additional weight loss. Additional studies are evaluating several strategies to potentially improve the therapeutic index of docetaxel.

- An LNC formulation of an additional chemotherapeutic agent, miriplatin, a highly toxic agent only approved outside the U.S. for intra-arterial use, demonstrated strong cellular uptake and tumor cell-killing capabilities *in vitro* in testing conducted during the second quarter. More recent *in vivo* testing showed the oral LNC formulation of miriplatin as very effective in reducing tumor sizes with significant weight loss also observed.

- A series of *in vitro* studies was recently completed investigating potential relationships between the amount of surface phosphatidylserine (PS) and the extent of LNC uptake into certain tumor cells. Based upon these studies, surface PS expression appears to be one, but not the only, driving factor for cellular uptake. Additional work is ongoing to better understand and predict the efficacy of LNC-delivered chemotherapeutics.

- Following early encouraging *in vivo* data demonstrating the successful oral delivery, biological activity, and potential therapeutic efficacy of two different LNC-formulated small oligonucleotides targeting inflammatory cytokines IL-17A and TNFα, more recent follow-up *in vivo* studies of orally administered LNC-formulated small oligonucleotides have been less consistent in showing therapeutic efficacy in certain inflammatory conditions. Additional optimization is required prior to identifying a potential product candidate.

Second Quarter Financial Results

The Company reported no revenue for the second quarters of 2024 and 2023.

Total costs and expenses for the second quarter of 2024 were $5.8 million, compared with $6.2 million for the second quarter of 2023. The decrease was primarily due to lower clinical development expenses, personnel costs and administrative expenses.

The net loss for the second quarter of 2024 was $5.7 million, or $0.02 per share, compared with a net loss for the second quarter of 2023 of $6.1 million, or $0.03 per share.

Six Month Financial Results

The Company reported no revenue for the six months ended June 30, 2024, compared with $1.1 million for the six months ended June 30, 2023, which was generated from research collaborations with BioNTech SE and Genentech Inc.

Total costs and expenses for the first six months of 2024 were $11.7 million, compared with $12.8 million for the first six months of 2023.

The net loss for the first six months of 2024 was $11.5 million, or $0.05 per share, compared with a net loss for the first six months of 2023 of $11.6 million, or $0.05 per share.

Cash, cash equivalents and marketable securities as of June 30, 2024, were $14.3 million, compared with $13.8 million as of December 31, 2023. In April 2024, the Company raised gross proceeds of $10.0 million through a registered direct offering.

Conference Call and Webcast

Matinas will host a conference call and webcast today beginning at 4:30 p.m. Eastern time. To participate in the call, please dial (866) 682-6100 or (862) 298-0702. The live webcast will be accessible on the Investors section of the Company's website and archived for 90 days.

About Matinas BioPharma

Matinas BioPharma is a biopharmaceutical company focused on delivering groundbreaking therapies using its lipid nanocrystal (LNC) platform delivery technology.

Matinas' lead LNC-based therapy is MAT2203, an oral formulation of the broad-spectrum antifungal drug amphotericin B, which although highly potent, can be associated with significant toxicity. Matinas' LNC platform provides oral delivery of amphotericin B without the significant nephrotoxicity otherwise associated with IV-delivered formulations. Combining comparable fungicidal activity with targeted delivery results in a lower risk of toxicity and potentially creates the ideal antifungal agent for the treatment of invasive fungal infections. MAT2203 was successfully evaluated in the completed Phase 2 EnACT study in HIV patients suffering from cryptococcal meningitis, meeting its primary endpoint and achieving robust survival. MAT2203 will be further evaluated in a single Phase 3 registration trial (the "ORALTO" trial) as an oral step-down monotherapy following treatment with AmBisome® (liposomal amphotericin B) compared with the standard of care in patients with invasive aspergillosis who have limited treatment options.

In addition to MAT2203, preclinical and clinical data have demonstrated that this novel technology can potentially provide solutions to many challenges of achieving safe and effective intracellular delivery of both small molecules and larger, more complex molecular cargos including small oligonucleotides such as ASOs and siRNA. The combination of its unique mechanism of action and flexibility with routes of administration (including oral) positions Matinas' LNC technology to potentially become a preferred next-generation orally available intracellular drug delivery platform. For more information, please visit www.matinasbiopharma.com.

Forward-looking Statements

This release contains "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995, including those relating to our business activities, our strategy and plans, the potential of our LNC platform technology, and the future development of our product candidates, including MAT2203, the Company's ability to identify and pursue development, licensing and partnership opportunities for its products, including MAT2203, or platform delivery technologies on favorable terms, if at all, and the ability to obtain required regulatory approval and other statements that are predictive in nature, that depend upon or refer to future events or conditions. All statements other than statements of historical fact are statements that could be forward-looking statements. Forward-looking statements include words such as "expects," "anticipates," "intends," "plans," "could," "believes," "estimates" and similar expressions. These statements involve known and unknown risks, uncertainties and other factors which may cause actual results to be materially different from any future results expressed or implied by the forward-looking statements. Forward-looking statements are subject to a number of risks and uncertainties, including, but not limited to, our ability to continue as a going concern, our ability to obtain additional capital to meet our liquidity needs on acceptable terms, or at all, including the additional capital which will be necessary to complete the clinical trials of our product candidates; our ability to successfully complete research and further development and commercialization of our product candidates; the uncertainties inherent in clinical testing; the timing, cost and uncertainty of obtaining regulatory approvals; our ability to protect the Company's intellectual property; the loss of any executive officers or key personnel or consultants; competition; changes in the regulatory landscape or the imposition of regulations that affect the Company's products; and the other factors listed under "Risk Factors" in our filings with the SEC, including Forms 10-K, 10-Q and 8-K. Investors are cautioned not to place undue reliance on such forward-looking statements, which speak only as of the date of this release. Except as may be required by law, the Company does not undertake any obligation to release publicly any revisions to such forward-looking statements to reflect events or circumstances after the date hereof or to reflect the occurrence of unanticipated events. Matinas BioPharma's product candidates are all in a development stage and are not available for sale or use.

Investor Contact:

LHA Investor Relations
Jody Cain
Jcain@lhai.com
310-691-7100

[*Financial Tables to Follow*]

Matinas BioPharma Holdings, Inc.
Condensed Consolidated Balance Sheets
(in thousands, except for share data)

	June 30, 2024 (Unaudited)	December 31, 2023 (Audited)
ASSETS:		
Current assets:		
Cash and cash equivalents	$ 4,216	$ 4,787
Marketable debt securities	10,097	8,969
Restricted cash – security deposit	50	50
Prepaid expenses and other current assets	922	1,737
Total current assets	15,285	15,543
Non-current assets:		
Leasehold improvements and equipment – net	1,739	1,923
Operating lease right-of-use assets – net	2,770	3,064
Finance lease right-of-use assets – net	18	21
In-process research and development	3,017	3,017
Goodwill	1,336	1,336
Restricted cash – security deposit	200	200
Total non-current assets	9,080	9,561
Total assets	$ 24,365	$ 25,104
LIABILITIES AND STOCKHOLDERS' EQUITY:		
Current liabilities:		
Accounts payable	$ 238	$ 514
Accrued expenses	1,442	1,447
Operating lease liabilities – current	707	656
Financing lease liabilities – current	5	5
Total current liabilities	2,392	2,622
Non-current liabilities:		
Deferred tax liability	341	341
Operating lease liabilities – net of current portion	2,514	2,877
Financing lease liabilities – net of current portion	15	18
Total non-current liabilities	2,870	3,236
Total liabilities	5,262	5,858
Stockholders' equity:		
Common stock par value $0.0001 per share, 500,000,000 shares authorized at June 30, 2024 and December 31, 2023; 250,816,164 and 217,264,526 issued and outstanding as of June 30, 2024 and December 31, 2023, respectively	25	22
Additional paid-in capital	206,245	195,018
Accumulated deficit	(187,116)	(175,573)
Accumulated other comprehensive loss	(51)	(221)
Total stockholders' equity	19,103	19,246
Total liabilities and stockholders' equity	$ 24,365	$ 25,104

Matinas BioPharma Holdings, Inc.
Condensed Consolidated Statements of Operations and Comprehensive Loss
(in thousands, except for share and per share data)
Unaudited

	Three Months Ended June 30,		Six Months Ended June 30,	
	2024	**2023**	**2024**	**2023**
Revenue:				
Contract revenue	$ —	$ —	$ —	$ 1,096
Costs and expenses:				
Research and development	3,371	3,559	6,817	7,530
General and administrative	2,468	2,600	4,925	5,311
Total costs and expenses	5,839	6,159	11,742	12,841
Loss from operations	(5,839)	(6,159)	(11,742)	(11,745)
Other income, net	120	99	199	172
Net loss	$ (5,719)	$ (6,060)	$ (11,543)	$ (11,573)
Net loss per share – basic and diluted	$ (0.02)	$ (0.03)	$ (0.05)	$ (0.05)
Weighted average common shares outstanding:				
Basic and diluted	249,350,963	217,264,526	233,354,524	217,264,526
Other comprehensive gain, net of tax				
Unrealized gain on securities available-for-sale	83	81	170	310
Other comprehensive gain, net of tax	83	81	170	310
Comprehensive loss	$ (5,636)	$ (5,979)	$ (11,373)	$ (11,263)

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Exhibit 99.2

Corporate Presentation

August 2024

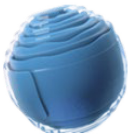
www.matinasbiopharma.com
NYSE American: MTNB

Forward Looking Statements

This presentation contains "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995, including those relating to the Company's product development, clinical and regulatory timelines, market opportunity, cash flow and other statements that are predictive in nature, that depend upon or refer to future events or conditions. All statements other than statements of historical fact are statements that could be forward-looking statements. Forward-looking statements include words such as "expects," "anticipates," "intends," "plans," "could," "believes," "estimates" and similar expressions. These statements involve known and unknown risks, uncertainties and other factors which may cause actual results to be materially different from any future results expressed or implied by the forward-looking statements. Forward-looking statements are subject to a number of risks and uncertainties, including, but not limited to, our ability to obtain additional capital to meet our liquidity needs on acceptable terms, or at all, including the additional capital which will be necessary to complete the clinical trials of our product candidates; our ability to successfully complete research and further development and commercialization of our product candidates; the uncertainties inherent in clinical testing; the timing, cost and uncertainty of obtaining regulatory approvals; our ability to protect the Company's intellectual property; the loss of any executive officers or key personnel or consultants; competition; changes in the regulatory landscape or the imposition of regulations that affect the Company's products; and the other factors listed under "Risk Factors" in our filings with the SEC, including Forms 10-K, 10-Q and 8-K. Investors are cautioned not to place undue reliance on such forward-looking statements. Except as may be required by law, the Company does not undertake any obligation to release publicly any revisions to such forward-looking statements to reflect events or circumstances after the date hereof or to reflect the occurrence of unanticipated events. Matinas BioPharma's product candidates are all in a development stage and are not available for sale or use.

Investment Thesis: LNC Delivery Unlocks Therapeutic Value

Lipid Nanocrystals (LNCs)



- Intracellular delivery
- Oral administration
- Less toxicity
- Targeting beyond the liver

MAT2203 → Clinical Validation of LNC Capabilities → **Pipeline Products and Opportunities**

- Oral Amphotericin B - without nephrotoxicity
- Phase 3–ready

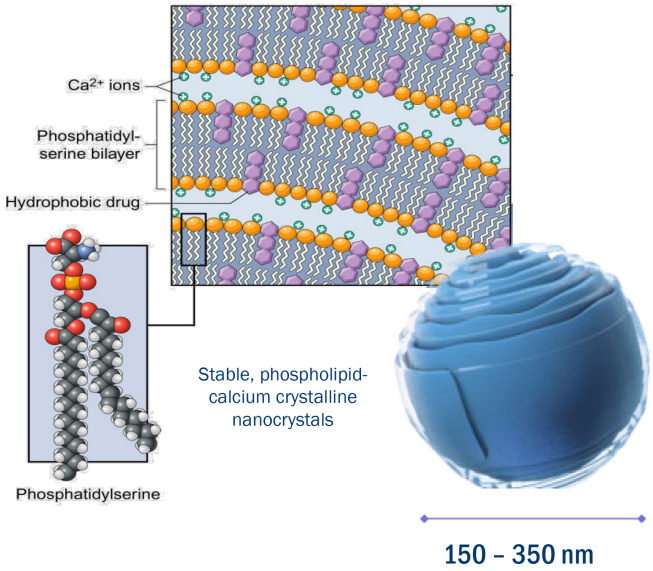
  ORALTO – Treatment of Invasive Aspergillosis in ~216 patients with limited or no treatment options
- Provides effective longer-term fungicidal stepdown therapy for Invasive Fungal Infections
- 12 years of exclusivity*

*QIDP and Orphan designations

- Expand LNC cargo capabilities:
  - small molecule chemotherapeutics
  - oral delivery of small oligonucleotides

    ASOs, siRNA, RNAi
- Focus on ***inflammation*** and ***oncology*** under evaluation

Lipid Nanocrystals (LNCs): A Clinically Validated Intracellular Delivery Platform



Delivery of small molecules and small oligonucleotides

- Successful oral delivery of therapeutics in infectious disease, inflammation, and oncology

Extra-hepatic targeting

- Selective delivery to targeted tissues facilitated by phosphatidylserine
- Validated Blood-Brain-Barrier penetration with MAT2203 in cryptococcal meningitis

Oral delivery

- Unique structure protects cargo in GI tract
- Particle size obviates first-pass hepatic metabolism

Safe & stable

- Deliver high-target tissue concentrations of drug with low plasma levels and no absorption by non-target tissues
- No evidence of immunogenicity or cytotoxicity

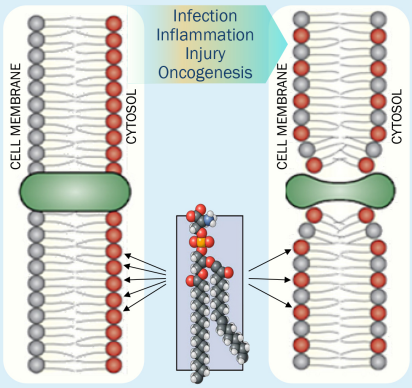
Phosphatidylserine Enables Cellular Targeting and Intracellular Delivery

Targeting

Stressed Cells Externalize PS

Normally, PS is confined to the inner layer (facing cytosol)

With cellular stress or injury, PS moves from the inner layer to the outer layer of the cell membrane



PHOSPHATIDYLSERINE (PS)

Delivery

With a wide variety of potential target cells

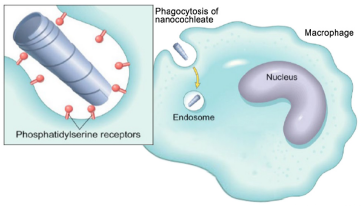
PS-containing LNCs deliver their cargo to the interior of cells by both phagocytosis and fusion

PROFESSIONAL PHAGOCYTES
- Macrophages/monocytes
- Neutrophils
- Dendritic cells

NON-PROFESSIONAL PHAGOCYTES
- Fibroblasts, epithelial cells, endothelial cells

PHAGOCYTOSIS

PS on the outer layer of injured cells is an "eat-me" signal enabling recognition and uptake by professional phagocytes



INJURED/STRESSED CELLS
- Infection
- Inflammation
- Other physiologic stressors

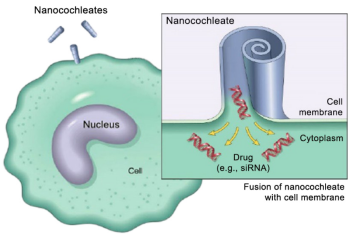
TUMOR CELLS

OTHER IMMUNE CELLS
- T-cells

EXTRACELLUAR PATHOGENS

FUSION

PS on the outer cell membrane facilitates direct LNC-to-membrane fusion and rapid direct cytosolic delivery



MATINAS BIOPHARMA

MAT2203
Oral Amphotericin B

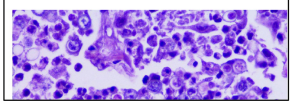
Clinical Validation of LNC Delivery

The Growing Threat of Invasive Fungal Infections (IFIs)

WIRED

The Battle Against the Fungal Apocalypse Is Just Beginning

Fungal infections are rising worldwide and climate change may be to blame. Medicine isn't ready.



Nature Reviews Microbiology **2022**

Tackling the emerging threat of antifungal resistance to human health

Matthew C. Fisher, Ana Alastruey-Izquierdo, Judith Berman, Tihana Bicanic, Elaine M. Bignell, Paul Bowyer, Michael Bromley, Roger Brüggemann, Gary Garber, Oliver A. Cornely, Sarah J. Gurr, Thomas S. Harrison, Ed Kuijper, Johanna Rhodes, Donald C. Sheppard, Adilia Warris, P. Lewis White, Jianping Xu, Bas Zwaan and Paul E. Verweij

Abstract | Invasive fungal infections pose an important threat to public health and are an under-recognized component of antimicrobial resistance, an emerging crisis worldwide. Across a period of profound global environmental change and expanding at-risk populations, human-infecting pathogenic fungi are evolving resistance to all licensed systemic antifungal drugs. In this Review, we highlight the main mechanisms of antifungal resistance and explore the similarities and differences between bacterial and fungal resistance to antimicrobial control. We discuss the research and innovation topics that are needed for risk reduction strategies aimed at minimizing the emergence of resistance in pathogenic fungi. These topics include links between the environment and One Health, surveillance, diagnostics, routes of transmission, novel therapeutics and methods to mitigate hotspots for fungal adaptation. We emphasize the global efforts required to steward our existing antifungal armamentarium, and to direct the research and development of future therapies and interventions.

New York Times

The New York Times

Fungus Immune to Drugs Secretly Sweeps the Globe

Mysterious Bug Adds Alarming Dimension to Dangers of Overusing Medicines

Wall Street Journal

SCIENCE

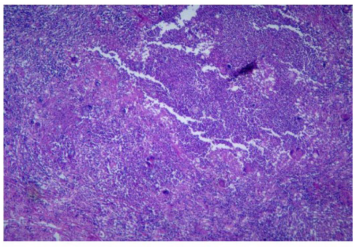
Dangerous Fungi Are Spreading Across U.S. as Temperatures Rise

Some fungi such as the type that causes Valley Fever might be adapting to endure more heat stress

By Dominique Mosbergen Follow

Feb. 1, 2023 10:08 am ET

Save 408 Listen (5 min)



WHO fungal priority pathogens list to guide research, development and public health action

World Health Organization

Scientific American

Deadly Fungi Are the Newest Emerging Microbe Threat All Over the World

These pathogens already kill 1.6 million people every year, and we have few defenses against them

By Maryn McKenna

Wall Street Journal

Deadly Fungal Infections Confound Doctors—'It's Going to Get Worse'

Once a freak occurrence, fungi resistant to standard drugs now threaten millions of vulnerable Americans

By Dominique Mosbergen Follow

June 22, 2023 9:59 am ET

NBC Nightly News

MATINAS BIOPHARMA

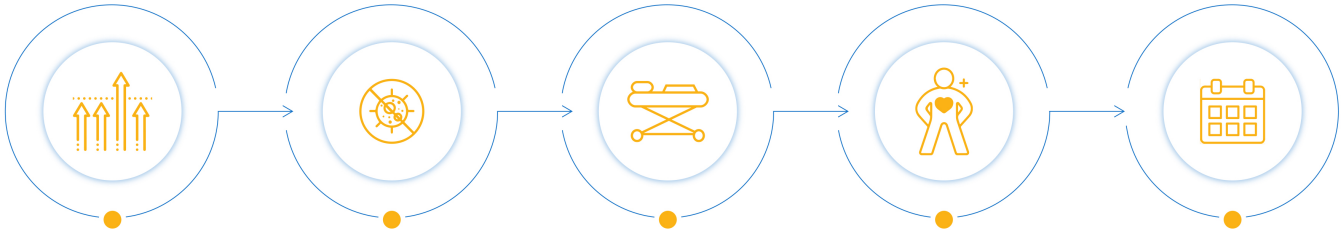
MAT2203: Unlocking the Full Potential of Amphotericin B

Innate Amphotericin B Characteristics		IV Amphotericin B Limitations	=	Unlocked Potential
POTENT – broad-spectrum fungicidal		Only available through IV administration		Available systemically and orally (crosses BBB following oral administration)
Minimal drug-drug interactions		Significant toxicity and side effects		Well-tolerated and safe
Low propensity for resistance		High systemic exposure distributed throughout the body		Delivered directly into infected tissues
Active against susceptible and emerging drug-resistant fungal infections		Must be administered in hospital, increasing costs		Cost-effective with potential for significant health economic benefits

MAT2203 is a promising potential therapeutic option
for the treatment of MULTIPLE serious and life-threatening fungal infections

EnACT: Phase 2 Clinical Validation of Safety and Efficacy

EnACT Clinical Data in Cryptococcal Meningitis Validates the Use of the LNC Platform to Enable Oral Administration and Overcome Toxicity



Exceeded the primary endpoint threshold

- EFA for MAT2203 was 0.42 (95% CI 0.29 to 0.55)

(primary endpoint threshold was 0.20)

All patients completing induction achieved CSF sterility

- 97% for patients receiving MAT2203
- 76% for patients receiving SOC

No breakthrough Infections

- Over 10 weeks, patients showed no breakthrough infections post-MAT2203 treatment

Survival at Day 30

- 98% for patients receiving MAT2203
- 88% for patients receiving IV AMPB (SOC)

MAT2203 was safe and well-tolerated over 6 weeks of treatment

- Repeat dosing showed no renal toxicity or electrolyte abnormalities
- No discontinuations due to AEs nor MAT2203-related SAEs

Results of EnACT Published in Highly Regarded Peer-Reviewed Journal

Clinical Infectious Diseases

MAJOR ARTICLE

Oral Lipid Nanocrystal Amphotericin B for Cryptococcal Meningitis: A Randomized Clinical Trial

David R. Boulware,[1,a,©] Mucunguzi Atukunda,[2,a] Enock Kagimu,[2] Abdu K. Musubire,[2] Andrew Akampurira,[2] Lillian Tugume,[2] Kenneth Ssebambulidde,[2,3] John Kasibante,[2] Laura Nsangi,[2] Timothy Mugabi,[2] Jane Gakuru,[2] Sarah Kimuda,[2] Derrick Kasozi,[2] Suzan Namombwe,[2] Isaac Turyasingura,[2] Morris K. Rutakingirwa,[2] Edward Mpoza,[2] Enos Kigozi,[4] Conrad Muzoora,[4] Jayne Ellis,[2] Caleb P. Skipper,[1] Theresa Matkovits,[5] Peter R. Williamson,[3] Darlisha A. Williams,[1] Ann Fieberg,[6] Kathy H. Hullsiek,[6] Mahsa Abassi,[1] Biyue Dai,[5] and David B. Meya[1,2]

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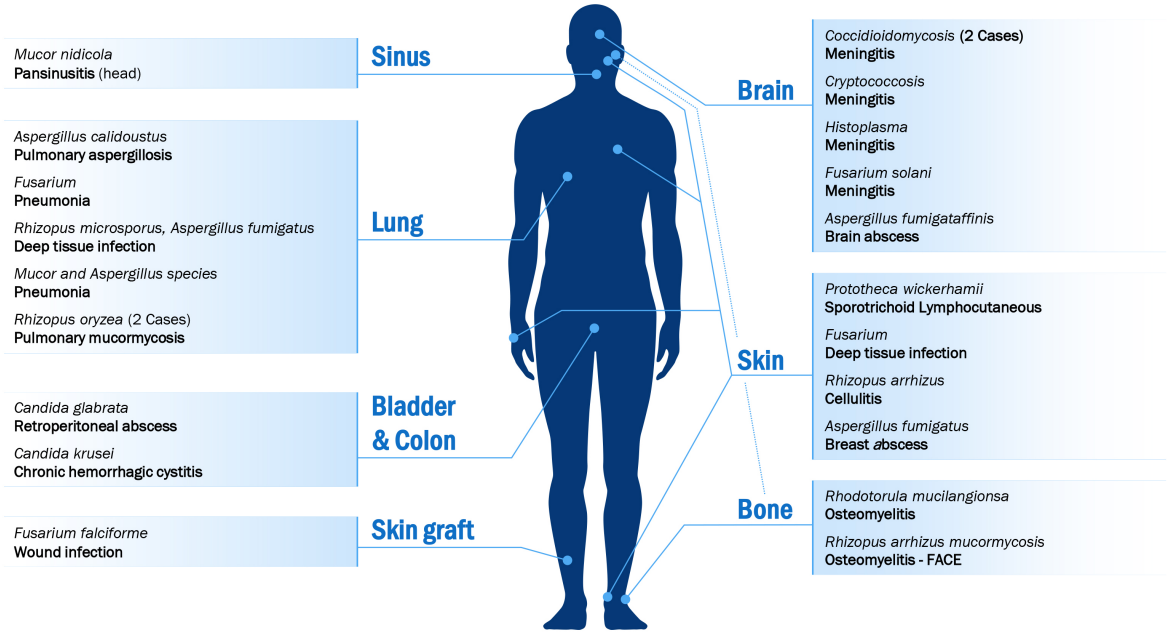
MAT2203 Expanded Access Program – Targeted Treatment of IFIs Throughout the Body



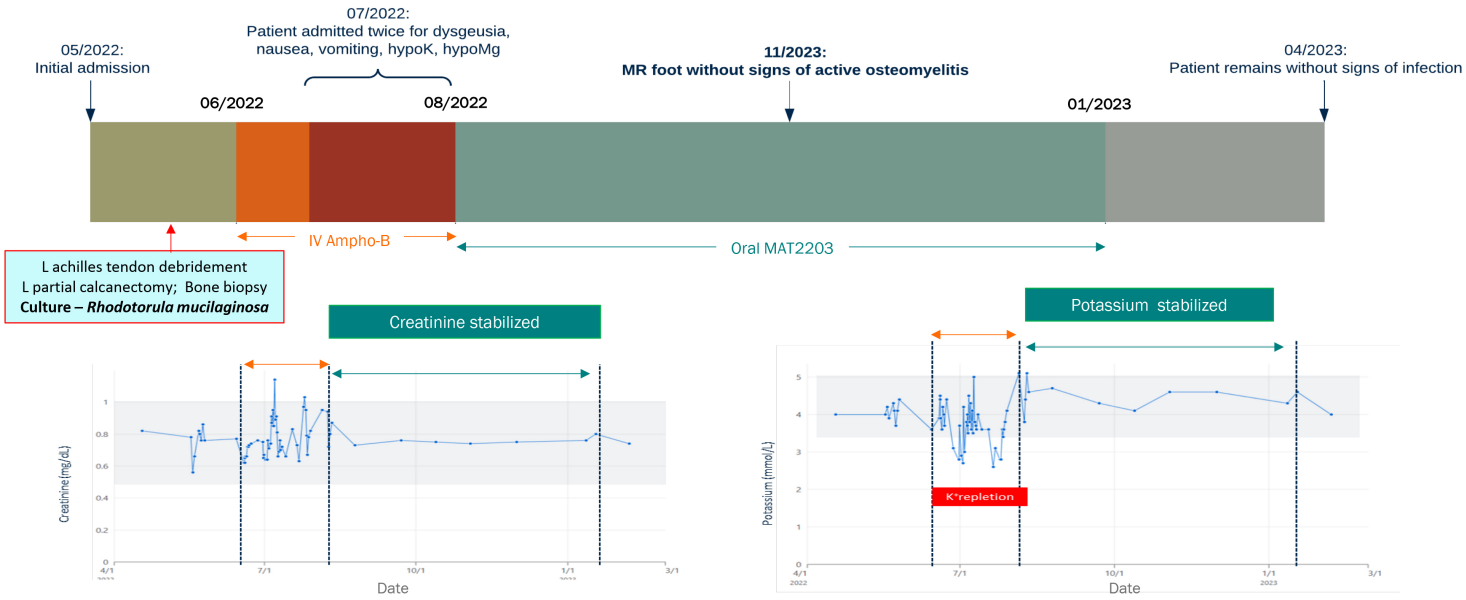
MAT2203 Expanded Access/Compassionate Use Program

Demonstrated Efficacy in Treatment of Patients with Limited Treatment Options

- 31 patients with no other treatment options have enrolled to receive or have completed treatment with MAT2203 with 6 additional requests under evaluation
  - Notable Healthcare Institutions: NIH, University of Michigan, Johns Hopkins, City of Hope, Nationwide Children's Hospital, Vanderbilt University Medical Center, Memorial Sloan Kettering, University of California, San Diego School of Medicine, Children's Hospital of Philadelphia, NY Presbyterian/Weill Cornell Medical Center, Thomas Jefferson University Hospital, University of North Carolina, University of Iowa
- Patients were not responding/resistant to/or unable to receive, azole therapy
- Patients were switched to treatment with IV Amphotericin B with clinical response but unable to tolerate treatment due to renal toxicity
  - All patients hospitalized to monitor/manage renal safety and most received IV electrolyte supplementation
- Following oral MAT2203 initiation, patients were discharged to continue treatment at home
- Renal toxicity reversed and renal function returned to baseline after switching to MAT2203
- All patients who received at least two weeks or more of treatment had positive clinical outcomes with significant success stories of full recovery in majority of patients

Compassionate Use - *Recovery from IV Amphotericin B Kidney Toxicity with MAT2203*

A 38 y/o female with systemic lupus erythematosus on chronic hydroxychloroquine and prednisone presented with a progressively enlarging wound on her left foot.



High Unmet Medical Need in Invasive Aspergillosis (IA) with Limited Treatment Options

- **IA** is a serious, life-threatening fungal infection that occurs primarily in severely immunocompromised patients with hematologic malignancies and transplant recipients
  - ~15,000 new cases per year in the U.S.
  - WHO, CDC, and FDA all consider it a ***critical priority*** and a global public health concern
- IDSA Guidelines recommend treatment with mold-active azoles as first-line treatment for 6-12 weeks
  - Azole use requires fungal expertise to manage toxicities and significant DDIs that can limit duration of use
  - Resistance to azoles is increasing globally
  - Breakthrough **IA** now being reported in patients receiving antifungal prophylaxis (azoles)
    - Failures attributed to non-compliance, poor absorption, DDIs, or infection with drug-resistant Aspergillus species
- Unmet medical need highest in **IA** patients who cannot take azoles
  - ~3,000-5,000 cases per year in the U.S.
  - Include patients with resistance, intolerance, DDIs, breakthrough infections
  - No other good long-term oral options
  - Rare disease/orphan commercial opportunity

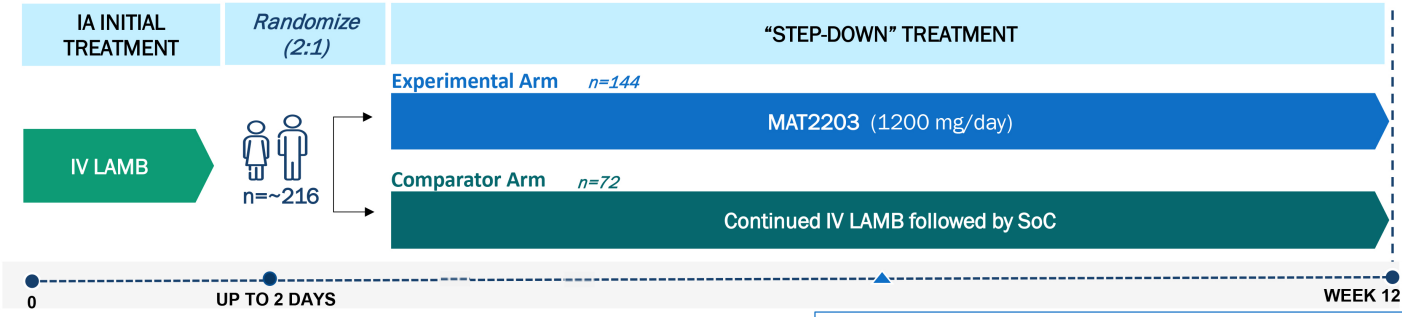
Bazaz R *et al.*
Pharmaceutical Journal 2019

MAT2203 Regulatory and Development Strategy

- Near-term development strategy refined to narrow initial target indication: treatment of invasive aspergillosis in patients with limited treatment options (azole-intolerant, azole-resistant, or not effectively managed with an azole)
  - Potential registration through leveraging LPAD pathway
  - Other regulatory designations protected and maintained (QIDP, ODD, Fast-Track, potential for Breakthrough Therapy)
- In February 2024, reached agreement with FDA on a single Phase 3 Registration Trial in support of an NDA for the treatment of invasive aspergillosis in patients with limited treatment options (the "ORALTO" Trial)
- Preparations underway with global CRO in preparation for Phase 3 study implementation
- Non-binding term sheet executed and development and commercial partnership discussions ongoing

FDA-Agreed Phase 3 Study Design in Invasive Aspergillosis (IA) (the "ORALTO" Trial)

- To demonstrate that initial treatment with IV LAMB followed by step-down to oral MAT2203 is comparable to (noninferior) SoC treatment in adult patients with Invasive Aspergillosis (IA) who are unable to receive treatment with a mold-active azole and have limited alternative treatment options
- Patients will be randomized 2:1 to receive either oral MAT2203 (Experimental Arm) or continued IV LAMB followed by Standard of Care (Comparator Arm)



Treatment of IA in patients with LIMITED TREATMENT OPTIONS
- Fungal pathogen not susceptible to azoles
- Risk for toxicity or drug-drug interactions with azoles
- Other clinical contraindications for azole use

PRIMARY ENDPOINT
- All-Cause Mortality at Study Day 42

SECONDARY ENDPOINTS
- Global response to treatment
- All-cause mortality at 84 days
- Safety and tolerability
- Pharmacoeconomic impact

KEY SECONDARY SUPERIORITY SAFETY ENDPOINT
- Treatment discontinuation or dose adjustment due to treatment-related toxicity
  - Renal toxicity: serum creatinine >1.5X baseline
  - Hypokalemia: serum K^+ < 3.0 mmol/L or requiring K^+ supplementation
  - Infusion-related reaction
  - Hepatic toxicity
  - Clinically significant azole DDI requiring medical intervention
  - Severe GI intolerance requiring medical intervention
  - Other toxicity that resulted in discontinuation and/or change in dose

** Phase 3 trial start dependent on securing partnership*

MAT2203 Value Proposition

AMPHOTERICIN B + ORAL ADMINISTRATION + LACK OF NEPHROTOXICITY = Safe, long-term oral step-down Tx with a potent fungicidal agent

LIFE CYCLE MANAGEMENT

Phase 2
Cryptococcal Meningitis
(Proof of Concept)

Phase 3
Invasive Aspergillosis
Oral step-down therapy
(Limited- or no-treatment Option Patients)

LCM
- Treatment of Other IFIs
- Prophylaxis

VALUE

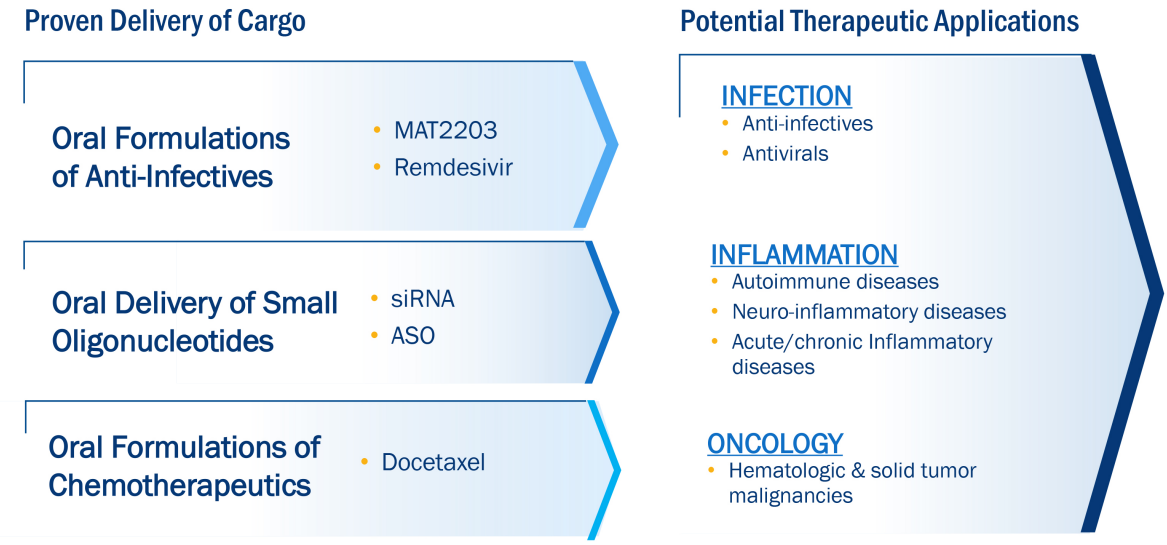
Near-Term Development Strategy:
Focused strategy on Phase 3 registration trial in Invasive Aspergillosis in patients with limited or no treatment options under the Limited Population Pathway for Antifungal Drugs (LPAD)*

* Evaluated at time of NDA filing

LNCs Beyond Infection

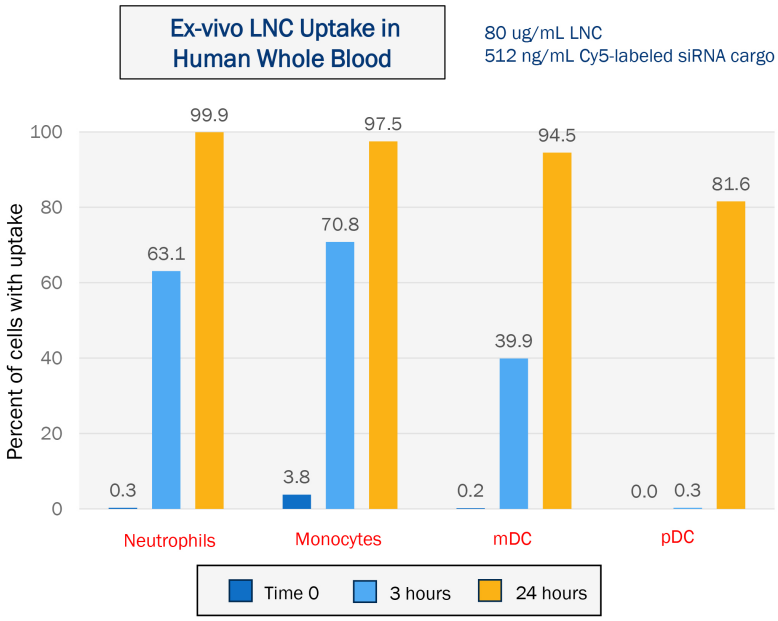
Efficient and Safe Delivery of Small Oligonucleotides and Chemotherapeutics in Inflammation and Oncology

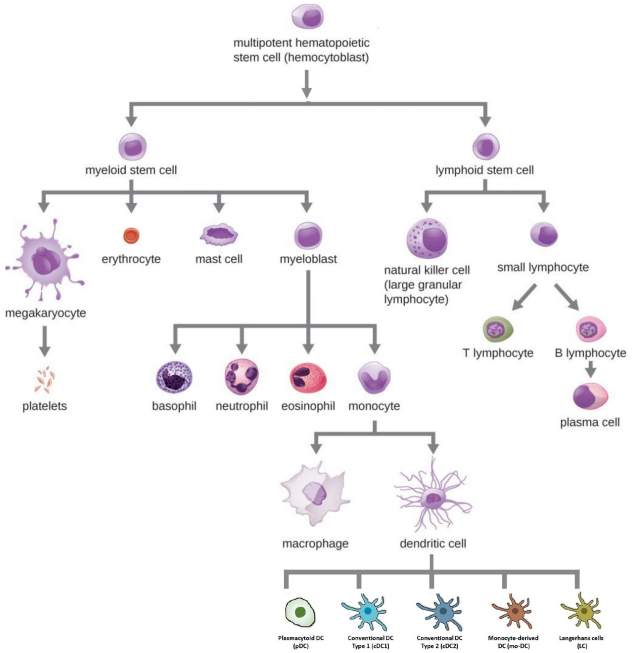
Unlocking the Full Potential of the LNC Platform



Matinas is working internally and with third parties to broaden its portfolio of LNC-based therapeutics

LNCs are Avidly Taken up by Innate Immune Cells - *Potential in Inflammation*

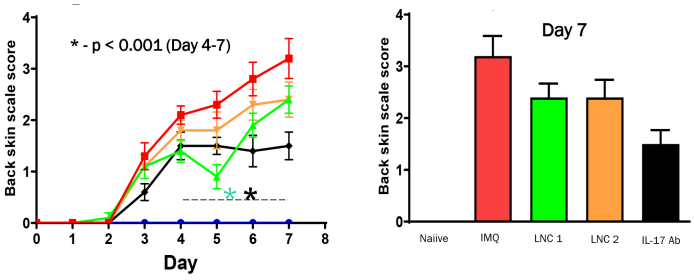




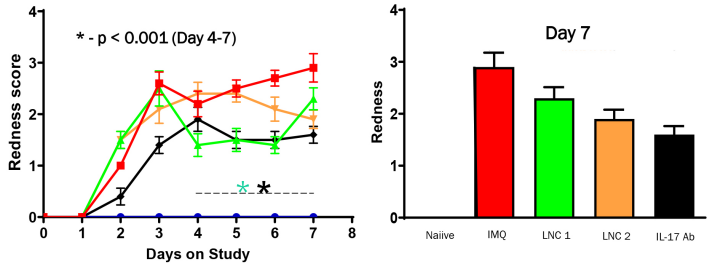
MATINAS BIOPHARMA

Effect of Oral LNC IL-17A RNAi in a Murine Imiquimod (IMQ) Psoriasis Model

Scaling



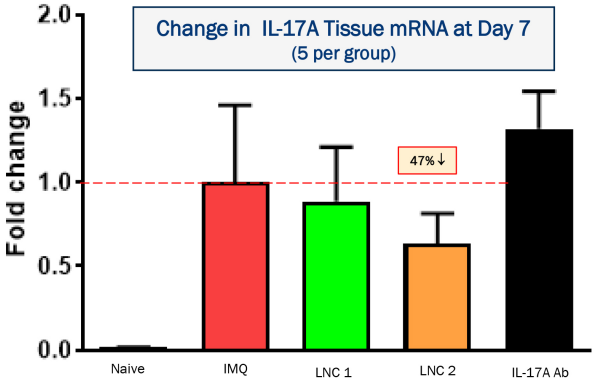
Redness



BalbC mice
(n = 50)

5 Groups

Naïve
IMQ only
LNC1
LNC2 | 10 µg/mouse daily (oral gavage)
IL-17A murine Ab 1 mg/kg i.p. qod



Changes in serum cytokine levels not expected in this model

MATINAS BIOPHARMA

Effect of Oral LNC-TNFα RNAi in a Murine DSS Acute Colitis Model

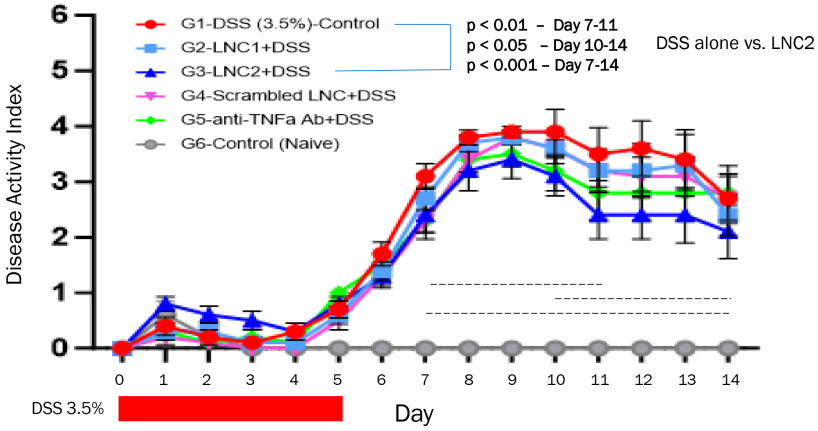
Female C57BL/6 mice
(n = 55)

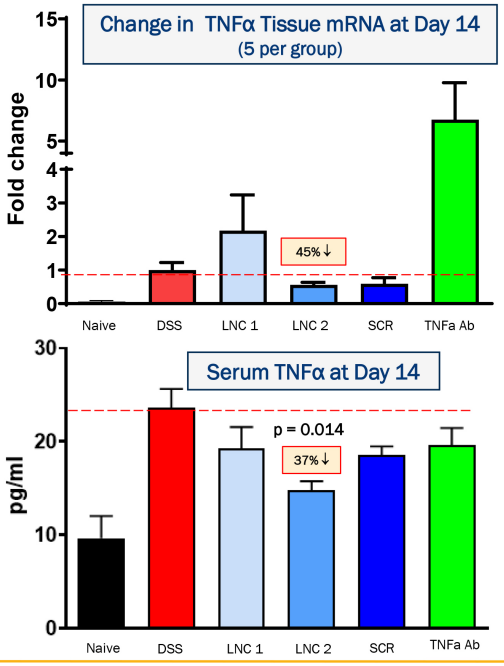
6 Groups

- Untreated control
- DSS alone
- DSS + oral LNC 1
- DSS + oral LNC 2
- DSS + oral Scrambled LNCs

pre-Rx for 2 days, then qd
10 ug/dose

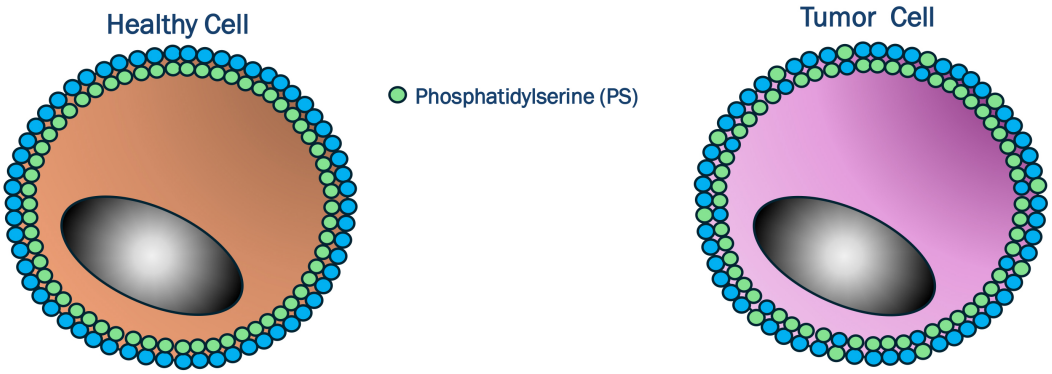
- DSS + anti-TNFα Ab — 0.167 mg/mouse on day 0, 4 and 6





MATINAS BIOPHARMA

LNCs Target PS on Tumor Cells - *Potential Opportunities in Oncology*



PS is confined to the interior leaflet of the cellular plasma membrane

LNCs ***not*** taken up by normal cells

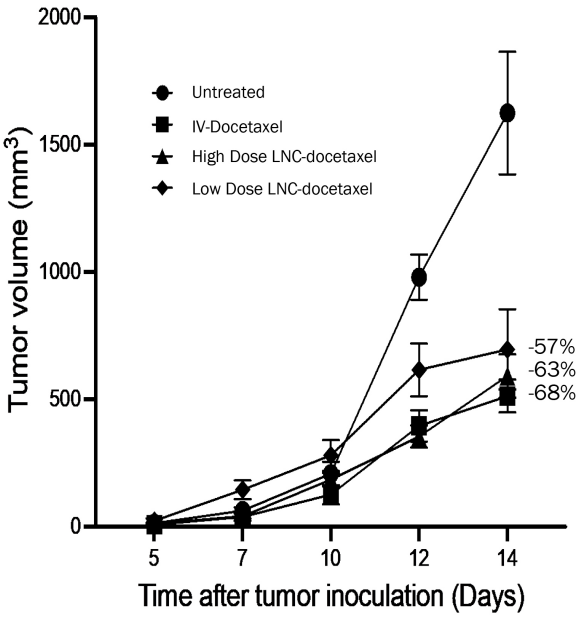
PS is exposed on the surface of tumor cells

LNCs avidly taken up by cells expressing PS on their surface

Targeted delivery provides strong opportunities

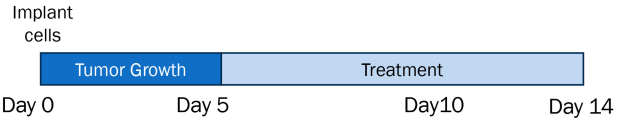
Improved Therapeutic Index	▶	Improved safety & tolerability Enhanced efficacy
Anti-tumor small oligos	▶	New therapeutic options

In vivo Therapeutic Efficacy of Oral Docetaxel LNCs in a Murine Syngeneic Melanoma Model



Female C57BL/6 mice

(n = 40)

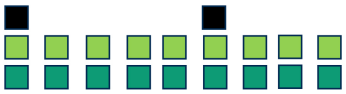


Untreated control (with tumors)

Docetaxel 0.15 mg/mouse iv on day 5 and day 10

Oral LNC-docetaxel - high dose – 0.5 mg/day 5-13

Oral LNC-docetaxel - low dose – 0.17 mg/day 5-13

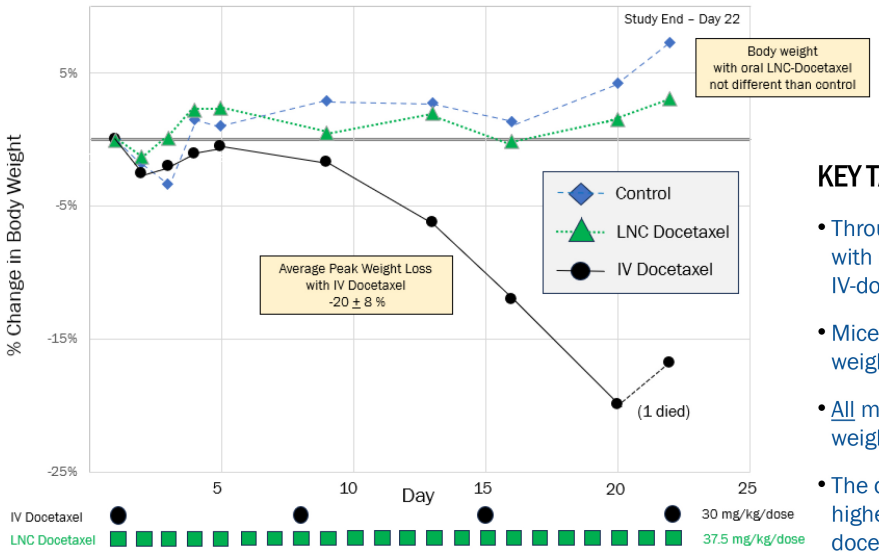


Reductions in tumor volume and tumor weight comparable to that seen with IV-docetaxel

No significant effect of daily oral LNC-docetaxel treatment on body weight or hematologic parameters

MATINAS BIOPHARMA

Oral LNC-Docetaxel Markedly Reduces Toxicity



Healthy C57BL/6 mice (n = 24)

Oral saline (control)
Docetaxel 0.6 mg/mouse iv q week x 3
Oral LNC-docetaxel 0.75 mg/mouse daily through day 22

KEY TAKEAWAYS

- Through Day 22, the total amount of docetaxel administered with oral LNC-docetaxel was more than 8x greater than with IV-docetaxel.
- Mice treated with oral LNC-docetaxel maintained their body weight; statistically no different than controls.
- All mice treated with IV-docetaxel lost a significant amount of weight (toxicity)—an average peak loss of 20%.
- The daily administered oral LNC-docetaxel dose was 50% higher (total administered drug 3.5x greater) than the LNC-docetaxel dose administered in the previous melanoma study.

Recent Key Advances Highlight Broader Applicability of LNC Platform Capabilities

Oncology

- Successful *in vivo* oral delivery of LNC-docetaxel in a melanoma tumor model
  - Reductions in tumor weight and volume comparable to IV docetaxel
  - No adverse effects on body weight or hematologic parameters
- Corroboration of safety in an additional *in vivo* study with higher dose/longer docetaxel Rx in healthy mice
  - Daily oral dose 50% higher than prior study
  - Total drug administered 3.5x higher than prior study
  - No weight loss – compared with 20% peak weight loss with IV-docetaxel

Inflammation

- Successful *in vivo* oral LNC delivery of 2 different RNAi oligonucleotides targeting inflammatory cytokines
- Documented biological activity and therapeutic impact in two different disease models.

Psoriasis (IL-17A)	• Reduction in tissue IL-17A mRNA levels (skin) • Statistically significant improvement in clinical scoring of skin lesions • Reductions in tissue TNFα mRNA levels (colon)
Colitis (TNFα)	• Statistically significant reductions in serum TNFα levels • Statistically significant improvement in disease activity scores

Key LNC Capabilities

- *Oral delivery*
- *Delivery of active therapeutics to diseased tissues outside the liver*
- *Low blood levels of active drug, with potential for improved safety*

Expanding LNC Intellectual Property Portfolio

Increasing Patent Portfolio to Increase Protection and Exclusivity

MAT2203 potentially entitled to **12+ years of marketing exclusivity** (QIDP & Orphan designations)

Owned and Licensed Global Platform IP with potential **protection out to 2044**

Recent patent applications **based on formulation work with small oligonucleotides and in oncology**

Strong IP & Regulatory Designations

Experienced Leadership Team

EXECUTIVE TEAM

Jerome D. Jabbour, J.D.
Chief Executive Officer

Thomas Hoover, MBA
Chief Business Officer

Theresa Matkovits, Ph.D.
Chief Development Officer

James Ferguson, M.D.
Chief Medical Officer

Keith Kucinski, CPA, MBA
Chief Financial Officer

Hui Liu, Ph.D., MBA
Chief Technology Officer

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Jerome D. Jabbour, J.D.
CEO

Investment Thesis

Financial Summary

Runway into Q2 2025

$14.3M in Cash, Cash Equivalents and Marketable Securities at 6/30/24

Non-Dilutive Financing Options

2024 Milestones

✓ Q2 –	Additional *in vivo* Oral Delivery of Small Oligonucleotides Targeting Inflammation
✓ Q2 –	*In vivo* Evaluation of Additional Chemo-toxic Agents Delivered with LNCs
✓ Q2 –	Evaluation of LNC-docetaxel in Additional Tumor Models
Q3 –	Potential MAT2203 Global Partnership
Q4 -	Initiation of ORALTO Phase 3 Trial

Solid Value "Foundation"

MAT2203 (Infection)

- Clinically Validated
- Clear Registration Pathway
- Highest unmet need

Potential UPSIDE

LNC ORAL Delivery of Small Oligonucleotides in Inflammation

LNCs to Improve Therapeutic Index of Chemotherapeutic Agents in Oncology

Toward

Establishing Internal and External Pipelines