



MATINAS

BIOPHARMA

EnACT – *Topline Data*

September 13, 2021

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, 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.

Agenda

Opening Remarks

- *Jerome D. Jabbour, Chief Executive Officer*

Review of Results

- *Theresa Matkovits, PhD, Chief Development Officer*

Principal Investigator/KOL Perspective

- *David Boulware, MD, MPH, FIDSA*

LNC Platform Implications

- *James J. Ferguson, MD, Chief Medical Officer*

Question & Answer Session

EnACT: Review of Results

Theresa Matkovits, PhD
Chief Development Officer

Cryptococcal Meningitis (CM)

- Difficult-to-treat invasive fungal infection impacting the brain and central nervous system
- Associated with high mortality

Early Treatment Phases (Standard of Care)

- Induction (1-2 weeks): IV amphotericin with oral flucytosine (5-FC), followed by fluconazole
- Consolidation/Maintenance (at least 8 weeks): Fluconazole

Amphotericin B

- Gold standard for the treatment of invasive fungal infections
- Currently only available as an intravenous (IV) formulation (Fungizone or liposomal Ambisome®)
- Significant, use-limiting side-effect profile (renal toxicity, anemia, and infusion-related reactions)
- Resource-intensive hospitalization required

MAT2203: A Novel Approach with a Proven Therapeutic Agent



- Oral amphotericin B formulation utilizing Matinas' proprietary lipid nanocrystal (LNC) delivery platform
- Proprietary formulation with robust intellectual property protection
- Initial gateway indication to treat CM with plans to expand use into treatment of other invasive fungal infections and prophylaxis
- Being developed with support from the National Institutes of Health (NIH)/NIAID



- LNC formulation enables oral administration, bioavailability and improved toxicity over IV amphotericin
- Efficient intracellular delivery to immune cells with delivery directly to infected tissues
- Demonstrated ability to cross the blood-brain barrier with an oral therapy



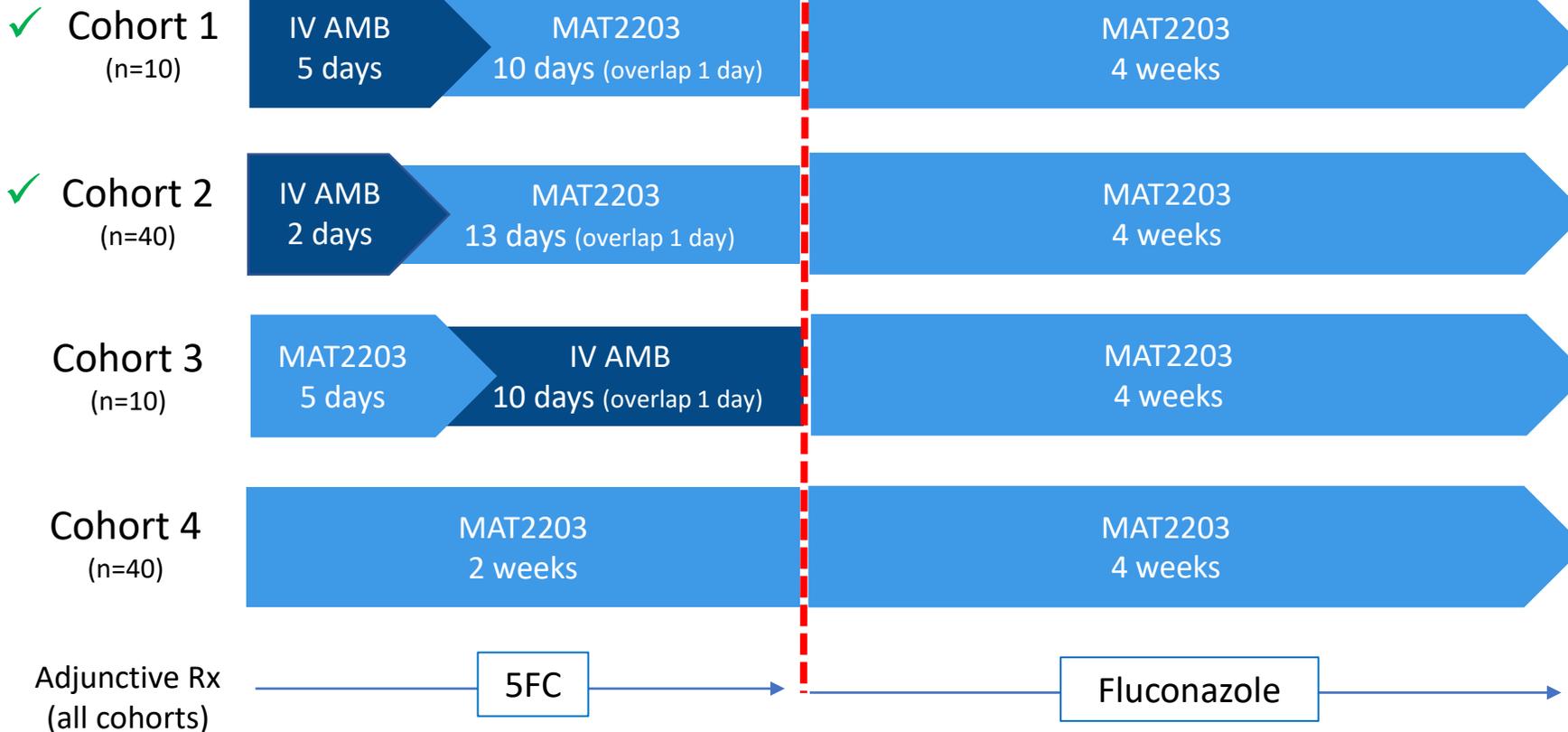
- Potential to become the preferred antifungal agent for all invasive fungal infections (\$8 billion+ market)
- Orphan Drug Designation + 4 Qualified Infectious Disease (QIDP) and Fast Track Designations
- Up to 12 years marketing exclusivity, if approved

EnACT Study Design

Primary Endpoint: Early Fungicidal Activity (EFA) > 0.20

Induction
(2 weeks)

Early Consolidation
(4 weeks)



MAT2203 TREATMENT REGIMENS:

Cohort 1

- Induction: 2.0g/day
- Consolidation: 1.5g/day

Cohort 2

- Induction: 1.8g/day
- Consolidation: 1.2g/day

- For each Cohort, a control group receives standard of care IV AMB +5FC (7 days), followed by 1200mg Fluconazole (7 days) for Induction and then only Fluconazole (800mg) for Early Consolidation
- Control arm present primarily to assess patient safety
- EnACT **not** powered to formally test comparisons with the control arm standard of care

Key Elements of EnACT and Potential Indications

- Sequential cohort, gradually extending use of oral MAT2203, to assess safety and efficacy
- Strategic design, providing data to support up to **three potential indications**
- Rigorous safety monitoring; DSMB review after each cohort

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Step-down induction treatment following initial administration of IV amphotericin

- Shorter, simpler induction treatment
- Opportunity for earlier patient discharge
- Lower risk of toxicity

Cohorts 1,2

2

Consolidation treatment after induction, out to 6 weeks with MAT2203

- Amphotericin currently cannot be used for extended periods due to toxicity
- Current SoC treatment with fluconazole has significant associated resistance and relapse

Cohorts 1-4

3

All-oral regimen for induction treatment

- Avoids all IV amphotericin-associated toxicity
- Avoids complex treatment pathway, prolonged hospitalization

Cohort 4

EnACT – Baseline and Demography Summary

- 71 total patients were randomized in Cohorts 1 and 2
 - Cohort 1 (MAT2203): 10 patients
 - Cohort 2 (MAT2203): 40 patients
 - SOC (combined): 21 patients
- Demographic and baseline characteristics were comparable across the treatment groups
 - First episode of CM for the majority of patients in the study
 - Quantitative Cerebral Spinal Fluid (CSF) cultures were similar at baseline

- **Primary Endpoint:** EFA (\log_{10} CFU/mL/day) at Day 14
 - Rate of CSF fungal clearance (log reduction)
 - Quantitative measure of antifungal activity of an induction treatment for CM
 - Early surrogate marker that predicts survival
- **Primary Endpoint Objective:** Demonstrate EFA for MAT2203 treated patients > 0.20
 - EFA > 0.20 - associated with lower mortality and improved clinical outcomes*
 - Achievements above this threshold are clinically meaningful, representing strong fungal clearance
- **Secondary Endpoints**
 - Sterilization of CSF cultures
 - Prevention of relapse (no breakthroughs)
 - Survival at 18 weeks

**Clin Infect Dis.* 2020;71(5):e45-49

EnACT – Efficacy Results for Cohort 2

Primary endpoint **ACHIEVED**: EFA for MAT2203 treated patients > 0.20

Key primary and secondary endpoints:

1) EFA:	0.38 log₁₀ CFU/mL/day 95% confidence intervals (0.30 to 0.46)
2) Patients achieving sterile culture while on MAT2203	100%
3) Patients with relapse or breakthrough infections	None
4) Patient survival*	95%
5) Patients with MAT2203-related renal toxicity	None

* As of Sept 13th, 18-week survival data; no deaths were attributed to lack of effect of MAT2203

EnACT Cohort 2 – Summary of Overall Safety and Efficacy

Safety

- MAT2203 was safe and well-tolerated over **6 weeks** of treatment
 - No renal toxicity or electrolyte abnormalities
 - No other major safety signals
 - No treatment-limiting tolerability issues
- Majority of SAEs and AEs were events expected in this patient population
 - No discontinuations due to AEs
 - No MAT2203-related SAEs

Efficacy

- EFA for MAT2203 was **0.38** (95% CI 0.30 to 0.46), meeting the primary endpoint for the study
- Also met major clinical endpoints of interest:
 - All 39 MAT2203 patients completing induction achieved CSF sterility
 - Survival rates were **95%** in Cohort 2
- No breakthrough infections during MAT2203 treatment (10 weeks)

❖ *EnACT Cohort 2 results highlight MAT2203's potential as early step-down oral regimen in CM treatment*

❖ *No renal toxicity with longer-term treatment out to 6 weeks*

❖ *First and only oral formulation of amphotericin B capable of delivering active drug across blood-brain barrier to a CNS site of infection*

❖ *Sets stage for multiple, and potentially longer-term, treatment options and prophylaxis of invasive fungal infections (**>\$8 billion in 2025**)*

David Boulware, MD, MPH



Dr. Boulware is an infectious disease physician-scientist and Professor of Medicine, Division of Infectious Diseases and International Medicine at The University of Minnesota Medical School. His primary research interests are in meningitis in resource-limited areas including diagnosis, prevention, treatment, and quality improvement initiatives incorporating cost-effectiveness analyses in order to translate knowledge into improved care. Dr. Boulware's current research is focused on improving the clinical outcomes of HIV-infected persons with cryptococcal meningitis and TB meningitis. Dr. Boulware has active research collaborations in Uganda, South Africa, and Ethiopia leading a multidisciplinary, international research team. He serves on US and WHO panels for cryptococcal meningitis and WHO panels for advanced HIV disease.

LNC Platform Implications

James J. Ferguson, MD, FACC, FAHA
Chief Medical Officer

A hand is shown holding a clear glass vial. Inside the vial, a glass pipette tip is visible. The background is a soft, light blue gradient. The overall image conveys a sense of precision and scientific research.

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Question & Answer
Session