Innovation Today, Healing Tomorrow.

March 2021

CORPORATE OVERVIEW

NASDAQ: GLYC

GlycoMimetics, Inc.
Forward-Looking Statements

To the extent that statements contained in this presentation are not descriptions of historical facts regarding GlycoMimetics, Inc. ("GlycoMimetics," "we," "us," or "our"), they are forward-looking statements reflecting management’s current beliefs and expectations. Forward-looking statements are subject to known and unknown risks, uncertainties, and other factors that may cause our or our industry’s actual results, levels of activity, performance, or achievements to be materially different from those anticipated by such statements. You can identify forward-looking statements by terminology such as “may,” “will,” "should," “expects,” “plans,” “anticipates,” “believes,” “estimates,” “predicts,” “potential,” “intends,” or “continue,” or the negative of these terms or other comparable terminology. Forward-looking statements contained in this presentation include, but are not limited to, statements regarding: (i) the expected timing of completion and data readout of the ongoing Phase 3 clinical trial of Rivipansel by Pfizer Inc. (ii) the timing of receipt of clinical data for our drug candidates; (iii) our expectations regarding the potential safety, efficacy, or clinical utility of our drug candidates; (iv) the size of patient populations targeted by drug candidates we or our collaborators develop and market adoption of our potential drugs by physicians and patients; (v) the likelihood and timing of regulatory filings and approvals; and (vi) our cash needs and expected cash runway, as well as potential royalties and milestone payments under license and collaboration agreements.

Various factors may cause differences between our expectations and actual results, including unexpected safety or efficacy data, unexpected side effects observed during preclinical studies or in clinical trials, lower than expected enrollment rates in clinical trials, changes in expected or existing competition, changes in the regulatory environment for our drug candidates, failure of our collaborators to support or advance our collaborations or drug candidates, our need for future capital, the inability to protect our intellectual property, and the risk that we become a party to unexpected litigation or other disputes. For a further description of the risks associated with forward-looking statements, as well as other risks facing GlycoMimetics, please see the risk factors described in the Company’s Annual Report on Form 10-K filed with the U.S. Securities and Exchange Commission on March 2, 2021, as well as other reports we file with the U.S. Securities and Exchange Commission from time to time, including those factors discussed under the caption “Risk Factors” in such filings. Forward-looking statements speak only as of the date of this presentation, and GlycoMimetics undertakes no obligation to update or revise these statements, except as may be required by law.
Clinical Pipeline with Upcoming Catalysts

- **Uproleselan**: Two independent registration programs ongoing in R/R acute myeloid leukemia (GMI-sponsored) and frontline acute myeloid leukemia (NCI-sponsored)
  - Strong, independent KOL, NCI and regulatory agency support with Breakthrough Therapy Designation in US and China
  - Targeting completion of enrollment 2H 2021 for R/R AML and frontline AML (interim analysis) programs
  - Apollomics license to develop & commercialize in Greater China
  - IP through 2032
  - Data at ASH meeting supports development expansion in frontline “unfit” AML

- **GMI-1359**: Dual-function CXCR4/E-selectin antagonist
  - Interim data from ongoing Phase 1b trial in patients with advanced breast cancer to be released in 1H 2021
  - Orphan Drug and Rare Pediatric Designation granted by the FDA
  - IP through 2035
Transformative Early Stage Pipeline

- **GMI-1687**: Best-in-class E-selectin antagonist that is ideally suited for self-administration at earliest onset of acute VOC in patients with sickle cell disease
  - Fully bioavailable following subcutaneous administration
  - Program leverages extensive clinical and biomarker data from completed rivipansel RESET program
  - IND-enabling program advancing with IND anticipated in 2022

- **Galectin-3**: Highly potent, specific inhibitors rationally designed through application of proprietary glycobiology/chemistry platform
  - Activity demonstrated in numerous animal models of fibrosis and cancer
  - In vivo activity observed following oral dosing

- Balance sheet funding through multiple milestones and through year-end 2022
Uproleselan (GMI-1271)

Breakthrough Therapy Designation

Significant Market Opportunity
Significant Unmet Need in AML
Highest Incidence, Lowest 5-yr Survival of all Leukemias

Estimated New Cases (2019)
- 21,450 New Cases
- All Other Leukemias

5-Year Survival (2008 – 2014)
- CML: 67.6%
- CLL: 84.2%
- ALL: 68.1%
- AML: 27.4%
Uproleselan Mechanism of Action

E-selectin:
- Is constitutively expressed in the bone marrow microvasculature, levels up-regulated in AML
- Binds to the E-selectin ligand expressed on AML cells to activate pathways for chemoresistance

In preclinical models:
- Prevents trafficking of tumor cells to the bone marrow
- Disrupts cell adhesion-mediated drug resistance (CAMDR) within bone marrow microenvironment
- Inhibits activation of cancer survival pathways (e.g. NF-kB)
- Protects normal HSCs by enhancing quiescence and ability for self-renewal
- Reduces chemotherapy-associated toxicity (e.g. severe mucositis)

Uproleselan disrupts the interaction between AML cells and the bone marrow microenvironment
Position uproleselan as potential foundational backbone treatment that:
- Deepens achievement / depth of remission
- Extends overall survival
- Mitigates chemotherapy-related toxicity

~21,000 Patients\(^1\) (Estimated New Cases in USA)

"Fit" patients eligible for intensive therapy

GMI-Sponsored Phase 3
Relapsed / Refractory AML
Combination of Uproleselan + MEC/FAI

~8,500 Patients/Year

NCI-Sponsored Phase 2/3
Newly Diagnosed, Elderly AML
Combination of Uproleselan + 7&3

~12,500 Patients/Year

"Unfit"

Recent venetaclax approval

- ASH (Dec. 2020)
  Upro plus venetoclax/HMA may prolong survival

\(^1\) SEER 2019
Final Efficacy/Correlative Results: Uproleselan Phase 1/2 Oral Presentation at ASH 2018

- R/R AML Cohort: 41% CR/CRi; 8.8 mos. Median Overall Survival
- Newly Diagnosed AML Cohort: 72% CR/CRi; 9.2 mos. Event Free Survival
- >50% of evaluable patients archived a stringent MRD-negativity
  - Appears to enhance depth of response
- E-selectin ligand expression
  - Detectable in every patient tested; target biologically relevant
  - Higher in those R/R patients achieving CR/CRi, MRD- and prolonged median OS

Data supports biological/clinical activity and late-stage registration program
Uproleselan Relapsed / Refractory AML Phase 3 Study Design

Key Eligibility Criteria
• ≥18 and ≤75 years in age
• Either primary refractory or relapsed (first or second relapse) AML
• Eligible for intensive salvage treatment
• ≤1 prior HSCT

Induction (1 Cycle)
Upro plus MEC or FAI (n=190)

Consolidation (Up to 3 Cycles)
Upro plus HiDAC or IDAC

Placebo plus MEC or FAI (n=190)

Placebo plus HiDAC or IDAC

Randomize 1:1
1:1 Randomization (stratified by age, disease status and backbone chemo)

Follow-Up for Overall Survival

MEC: Mitoxantrone, etoposide and cytarabine
FAI: Fludarabine, cytarabine and idarubicin
HiDAC/IDAC: High-dose or Intermediate-dose cytarabine

Phase III Primary Endpoint: Overall Survival, defined as the time of randomization until death from any cause – analysis of OS will not be censored for transplant.
## Historical Benchmarks - What Are We Trying to Beat?

<table>
<thead>
<tr>
<th>Population</th>
<th>Registration Program Primary Outcome Measure</th>
<th>Uproleselan Phase 1/2 Results</th>
<th>Historical Comparator's</th>
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<tbody>
<tr>
<td></td>
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<td>Publication</td>
</tr>
<tr>
<td>Relapsed / Refractory AML</td>
<td>Overall Survival (months)</td>
<td>8.8 months</td>
<td>Greenberg et al (2004)</td>
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<td>Feldman et al (2005)</td>
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<td>Roboz et al (2014)</td>
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<tr>
<td>Newly Dx “Fit” for Intensive Chemo AML</td>
<td>Event-Free Survival (months)</td>
<td>9.2 months</td>
<td>Lowenberg et al (2009)</td>
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<td>Lancet et al (2014)</td>
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</table>
Hypomethylating Agent Increases the Expression of the E-selectin Ligand - Adhesion is Reversed with Uproleselan

KG1 AML cells were incubated for 96 hours in the absence or presence of 100 nM 5-azacytidine, labeled with calcein and allowed to adhere to E-selectin coated plates (control and 5-azacytidine above). After 45 minutes of adhesion, Uproleselan was added to the wells and fluorescence determined after 30 minutes (5-azacytidine → Uproleselan above).
Combination of Uproleselan with Venetoclax/HMA Significantly Reduces Leukemia Burden*

AML-PDX From a Venetoclax/HMA Resistant Patient

![Graphs showing hCD45 changes over time with different treatments.]

*ASH December 2020

*p<0.05; **p<0.01; ***p<0.001, Student’s t-test for experiments that compare two groups.
Apollomics
- Incubated by OrbiMed Asia; Series B financed by CMBI
- Proven track record of >40 commercialized drugs
- Oncology-only focus on biomarker-driven treatments

Exclusive license: Uproleselan and GMI-1687
- All therapeutic and prophylactic uses
  - Mainland China, Hong Kong, Macau & Taiwan by
- All clinical development and commercialization costs in Greater China covered by Apollomics
  - Priority: Uproleselan R/R AML registration program
  - Commitment to advance GMI-1687
    - Preclinical and clinical
- Phase 1 bridging trial initiated, Phase 3 initiation pending
- Breakthrough Therapy Designation from Chinese authorities

GlycoMimetics & Apollomics

$9M Upfront

~$180M in Potential Milestones

Tiered Royalties, 8 – 15%
GMI-1359
E-Selectin / CXCR4 Antagonist
Solid Tumor Indications
GMI-1359 Product Profile

GMI-1359: Small molecule, dual inhibitor against E-selectin and CXCR4

- Disrupts tumor–stromal interactions
- Inhibits cell survival/activation pathways
- Prevent trafficking / mobilizes dormant cancer cells from protective niches to make them more susceptible to lysis by chemotherapy

Complementary pathways relevant for tumors that originate/metastasize to bone

Validated Biomarkers for Detection of Circulating Cancer Cells

<table>
<thead>
<tr>
<th>Tumor type (Reference)</th>
<th>Cell surface markers on circulating cancer stem cells</th>
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</thead>
<tbody>
<tr>
<td>Pancreatic (39,71,72)</td>
<td>CD133, CD44, CD26, CXCR4, c-Met, ALDH1, ABCG2</td>
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<tr>
<td>Breast (28,30,73-77)</td>
<td>CD44, ANTXR1, ALDH1, CXCR4, ALDH1</td>
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<tr>
<td>Colorectal (43,78,79)</td>
<td>CD133, CD44, CD44v6, CXCR4, CD26</td>
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<tr>
<td>Gastric cancer (80)</td>
<td>CD44</td>
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<tr>
<td>Glioblastoma (6,81)</td>
<td>CD133, MMP-13</td>
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<tr>
<td>Lung (82,83)</td>
<td>CXCR4, ABCG2, CD133, ALDH1</td>
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<tr>
<td>Osteosarcoma (84,85)</td>
<td>CD133</td>
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<tr>
<td>Retinoblastoma (86)</td>
<td>ABCG2</td>
</tr>
<tr>
<td>Head and neck cancer (87)</td>
<td>c-Met</td>
</tr>
<tr>
<td>Ovarian (88)</td>
<td>CD133</td>
</tr>
</tbody>
</table>

Major E-selectin ligands

CXCR4 ligand
GMI-1359 Phase 1b Dose Escalation
Proof-of-Principle Program

- Lead Investigative Site - Duke University Medical Center
- Single/multiple ascending dose within each patient – 3.5, 5.0 & 7.0 mg/kg
- Small number of patients with metastatic, HR+, stable/minimally progressive breast cancer, COVID impact
- Endpoints – Safety, PK & PD
- Data in abstract submission 1H21 to major medical meeting

Possible Clinical Relevance
- High-risk breast cancer, including inflammatory breast cancer
- Other solid tumors (Osteosarcoma)
- Transplant (Auto, Allo)
- Ex-vivo gene editing
- Combinations with checkpoint inhibitors

Data read-out expected 1H 2021
GMI-1687
Treatment of Acute Vaso-occlusive Crisis
In Patients with Sickle Cell Anemia
Advancement of GMI-1687 for Acute Vaso-occlusive Crisis (VOC)

- High KOL enthusiasm - oral presentations at SOHO, FSCDR, ASCAT and ASH in 2020
- Best-in class, highly potent E-selectin antagonist for acute VOC that is subcutaneously bioavailable
  - Potential to self-administer at home at onset of VOC
  - Not constrained by logistical / time factors associated with acute care / IV dosing settings
- IND-enabling program ongoing with IND anticipated in 2022
- Program leverages extensive Phase 2 & 3 efficacy, safety and biomarker data generated with rivipansel
Analysis of Phase 3 RESET & Open Label Extension Trials
Underscore Scientific Rationale for GMI-1687

- Strong and consistent data confirms key role of E-selectin in VOC and importance of treating early

- Early treatment group (patients treated within 26.4 hours of onset of pain; first quartile)
  - Statistically significant difference from placebo
    - Primary endpoint: Time to readiness for discharge (TTRFD)
    - Key secondary endpoints: Time to discharge (TTD) and time to discontinuation of IV opioids (TTDIVO)
    - Parallel, independent Open Label Extension Study corroborates RESET in all ages and pediatric subgroups

- Clean safety profile
# A Portfolio of Exciting Product Candidates

## Development Pipeline

<table>
<thead>
<tr>
<th>Compound</th>
<th>Therapeutic Area</th>
<th>Discovery</th>
<th>Pre-Clin</th>
<th>Ph 1</th>
<th>Ph 2</th>
<th>Ph 3</th>
<th>Registration</th>
<th>Partner</th>
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<tbody>
<tr>
<td><strong>Selectins</strong></td>
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<td>Uproleselan (GMI-1271)</td>
<td>Relapsed / Refractory AML</td>
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<td>APL</td>
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<td>Newly Diagnosed “Fit” AML</td>
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<tr>
<td>GMI-1359</td>
<td>Various Tumor Types</td>
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<tr>
<td>GMI-1687</td>
<td>SCD Vaso-occlusive Crisis &amp; AML</td>
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<td>APL</td>
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<td><strong>Galectins</strong></td>
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<tr>
<td>GMI-1757</td>
<td>Hem-Onc &amp; Inflammatory</td>
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<td>(Galectin-3/E-selectin)</td>
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<tr>
<td>Galectin-3 Inhibitors</td>
<td>Fibrosis &amp; Oncology</td>
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APL = Apollomics (Greater China)
### 2020 Achievements / Upcoming News Flow

<table>
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<th>Event</th>
<th>Status</th>
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<tr>
<td>Upro license for Greater China: development and commercialization</td>
<td>✓</td>
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<tr>
<td>GMI-1359 first patient enrolled in breast cancer P1b trial</td>
<td>✓</td>
</tr>
<tr>
<td>GMI-1359 orphan/pediatric rare disease designation &amp; patent</td>
<td>✓</td>
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<tr>
<td>Rivipansel new efficacy data at FSCDR, ASCAT, ASH</td>
<td>✓</td>
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<tr>
<td>GMI-1687 new preclinical data in SCD presented at FSCDR, ASCAT and ASH</td>
<td>✓</td>
</tr>
<tr>
<td>Internal decision on rivipansel</td>
<td>✓</td>
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<tr>
<td>Apollomics initiates upro registration program for greater China</td>
<td>✓</td>
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<tr>
<td>GMI-1359 interim data read-out from Phase 1b breast cancer trial</td>
<td>1H '21</td>
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<tr>
<td>Initiation of upro IST in frontline “unfit” AML population</td>
<td>2H '21</td>
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<tr>
<td>Enrollment complete, upro R/R pivotal trial</td>
<td>2H '21</td>
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<tr>
<td>Enrollment complete, upro Phase 2 interim analysis frontline AML trial</td>
<td>2H '21</td>
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## Investment Opportunity – Nasdaq: GLYC

### Advancing Pipeline
- Uproleselan: BTD for R/R AML; Greater China deal; Two Phase 3s underway
- GMI-1359: Simultaneous blockade of CXCR4 & E-Selectin; Proof-of-principle trial; orphan/pediatric designations, new patent
- Prioritization of GMI-1687 for SCD acute VOC

### Significant Revenue Opportunities
- Uproleselan: > 44,000 AML patients in 7 major markets; expansion potential into other hematologic malignancies; Greater China
- GMI-1359: Targeting solid tumors with high propensity to metastasize to the bone (e.g. breast, osteosarcoma); market enhancing FDA designations

### Strong Investment Base
- Top-tier biotech investors
- Cash balance of ~$137 million as of December 31, 2020; runway through ‘22

### Experienced Team
- Pioneers in the field of glycobiology and small-molecule, therapeutic “mimetics”
- Relationships with leading KOLs and oncology networks