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 February 28, 2020, 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.
Late-Stage Clinical Pipeline with Upcoming Catalysts

- **Enrolling uproleselan Phase 3: R/R acute myeloid leukemia**
  - Breakthrough Therapy Designation granted in May 2017
  - Targeting completion of enrollment 2H 2021
  - Apollomics license to develop & commercialize in Greater China
  - IP through 2032 in US, EU and Japan
  - Evolving biomarker data at ASH meeting; strongly supports targeting this mechanism

- **Uproleselan market expansion via consortium-funded trial: NCI**
  - Strong, independent KOL support in newly-diagnosed AML setting
  - First patient dosed 2Q19; active enrollment and significant engagement of sites

- **Dual antagonist GMI-1359: Just announced orphan/rare pediatric disease designations; patent issuance**
  - Phase 1b trial initiated in 1Q

- **Rivipansel**: Wholly owned, new efficacy data
  - Abstract accepted for poster at Foundation for Sickle Cell Research Meeting in September

- **Strong balance sheet; funded through multiple milestones**

- **Creating value in game-changing therapeutic opportunities; novel glycobiology/chemistry platform**
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%
- AML: 27.4%
- ALL: 68.1%

SEER 2019 Statistics
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-κB)
- 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
Uproleselan Product Positioning in AML

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

\(^1\) SEER 2019
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
## 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>
</tr>
</thead>
<tbody>
<tr>
<td>Relapsed / Refractory AML</td>
<td>Overall Survival (months)</td>
<td>8.8 months</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Valspodar + MEC vs. MEC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5.4 months (MEC)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Feldman et al (2005)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Lintuzumab + MEC vs. MEC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5.2 months (MEC)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Roboz et al (2014)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Elcytarabine vs. Inv. choice</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3.4 months (Inv. choice)</td>
</tr>
<tr>
<td>Newly Dx “Fit” for Intensive Chemo AML</td>
<td>Event-Free Survival (months)</td>
<td>9.2 months</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Lowenberg et al (2009)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7+3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>~6.5 months</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Vyxeos vs. 7+3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.0 months (7+3)</td>
</tr>
</tbody>
</table>
Sialyl Le\textsuperscript{x} (E-Selectin Ligand) Expression is Associated with Aggressive Tumors and Poor Clinical Outcomes

“In conclusion, our meta-analysis showed that a high level of sLeX [E-selectin ligand] expression was significantly associated with lymphatic invasion, venous invasion, deep invasion, lymph node metastasis, distant metastasis, tumor stage, tumor recurrence, and OS in cancer”

Twenty nine (29) cancer studies published between 1993 and 2003 were used for meta-analysis

OncoTargets and Therapy 9: 3113-3125 (2016)
E-Selectin Ligand Expression On Leukemic Blasts Associated with Poor Prognosis in Patients with AML

Independent Data from 89 Serially Acquired AML Patient Samples

- Mean fluorescence intensity of E-selectin-Fc binding
  - 4-fold higher for relapsed/refractory patients than for newly diagnosed patients (p=0.0026)

- Percent E-selectin-Fc binding
  - higher in patients with unfavorable than favorable/intermediate risk (p=0.019)

- Expression of E-selectin ligands by leukemic stem cells
  - tightly correlated with expression in leukemic blasts in the same patient

Higher E-selectin ligand expression associated with chemo resistance / AML persistence
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

Randomize 1:1

Induction (1 Cycle)
- Upro plus MEC or FAI (n=190)
- Placebo plus MEC or FAI (n=190)
- Upro plus HiDAC or IDAC
- Placebo plus HiDAC or IDAC

Consolidation (Up to 3 Cycles)

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
GlycoMimetics & Apollomics

Apollomics
- Incubated by OrbiMed Asia; Series B financed by CMBI
- Proven track record
  - Management collectively has >40 commercialized drugs
- Oncology-only focus on biomarker-driven treatments

Terms
- Uproleselan and GMI-1687 exclusive license
  - 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

$9M Upfront

~$180M in Potential Milestones

Tiered Royalties, 8 – 15%
GlycoMimetics, Inc.
Rivipansel Update
Post hoc Phase 3 Rivipansel Data in Foundation for Sickle Cell Research Abstract

- Clear clinical activity in patients treated with rivipansel vs placebo earlier from the time of onset of acute VOC
  - Statistically significant result observed at 26.4 hrs compared to placebo on primary endpoint
  - **58-hour median improvement on time to readiness for discharge**
  - Clean safety profile: pediatrics and adults

- Clinical outcomes **plus** clear biomarker data underscore differentiated MOA: E-selectin

- Preclinical data on more potent e-selectin inhibitor, GMI-1687 support potential for subcutaneous self-administration/outpatient settings
  - Separate abstract accepted for oral presentation
Phase 3 Results
Time to Readiness for Discharge by VOC Onset

Patient Cohort
Time from VOC Onset

<table>
<thead>
<tr>
<th>Time from VOC Onset</th>
<th>Patient Cohort</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 18 Hrs (n=19)</td>
<td></td>
</tr>
<tr>
<td>≤ 24 Hrs (n=57)</td>
<td></td>
</tr>
<tr>
<td>≤ 26.4 Hrs (n=79)</td>
<td></td>
</tr>
<tr>
<td>≤ 30 Hrs (n=116)</td>
<td></td>
</tr>
<tr>
<td>≤ 36 Hrs (n=160)</td>
<td></td>
</tr>
</tbody>
</table>

Hazard Ratio (95% CI)
Time to Readiness for Discharge by VOC Onset

Randomization 1:1 (VOC <= 26.4)

Rivipansel
Median Time to Event: 65.34 hrs

Placebo
Median Time to Event: 111.52 hrs

Median Improvement of 58 hours
(Hazard ratio 0.58)
$p = 0.03$

***Abstract accepted for Foundation for Sickle Cell Research September meeting***

Hazard Ratio and 95% CI are based on a Cox proportional hazard regression model with age and genotype as stratification variables.
Potential to Revisit Rivipansel for Acute Vaso-occlusive Crisis (VOC)

- Rivipansel now wholly-owned; Pfizer rights returned
  - Compelling post hoc analysis of Phase 3 study
  - Ability to develop subQ follow-on, GMI-1687, in SCD

- Clinical and biological rationale to discuss these data with FDA, to determine what, if any, next steps could be taken to carry this program forward in acute VOC

- High unmet need: only therapy in late-stage development for acute VOC
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>Selected markers on circulating cancer stem cells</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pancreatic (39,71,72)</td>
<td>CD133, CD44, CD26, CXCR4, c-Met, ALDH1, ABCG2</td>
</tr>
<tr>
<td>Breast (28,30,73-77)</td>
<td>CD44, ANTXR1, ALDH1, CXCR4, ALDH1</td>
</tr>
<tr>
<td>Colorectal (43,78,79)</td>
<td>CD33, CD44, CD44v6, CXCR4, CD26</td>
</tr>
<tr>
<td>Gastric cancer (80)</td>
<td>CD44</td>
</tr>
<tr>
<td>Glioblastoma (6,81)</td>
<td>CD133, MMP-13</td>
</tr>
<tr>
<td>Lung (82,83)</td>
<td>CXCR4, ABCG2, CD133, ALDH1</td>
</tr>
<tr>
<td>Osteosarcoma (84,85)</td>
<td>CD133</td>
</tr>
<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
The E-selectin / CXCR4 Axis Plays a Critical Role in the Progression of Breast Cancer

1. Cancer cells use a specific molecule to enter the bone marrow. Disabling that molecule, E-selectin, researchers were able to block cancer cells from getting inside.

2. Another molecule anchored the cancer cell inside the bone marrow.

3. Scientists also discovered a way to eject those cancer cells, sending them back into circulation where they may be more vulnerable to the immune system or cancer treatment.

E-selectin antagonist – blocks tumor cells from entering niches

CXCR4 antagonist – ejects cells from protective niches

Adapted from Duke Health
GMI-1359 Phase 1b Dose Escalation/Proof-of-Principle Program

- Lead Investigative Site - Duke University Medical Center
- FPI announced in January
- Single/multiple ascending dose within each patient – 3.5, 5.0 & 7.0 mg/kg
- Range 6-12 patients with metastatic, HR+, stable/minimally progressive breast cancer
- Endpoints – Safety, PK & PD

Possible Clinical Relevance

- Mobilization of Circulating Tumor Cells
  - High-risk breast cancer, including inflammatory breast cancer
  - Other solid tumors (Osteosarcoma)

- Mobilization of Primitive HSCs (with greater reconstitution potential)
  - Transplant (Auto, Allo)
  - Ex-vivo gene editing

- Mobilization of Marrow Infiltrating Lymphocytes
  - Combinations with checkpoint inhibitors

Data read-out expected Q4 2020/Q1 2021
# Wholly Owned Proprietary Programs

<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>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Selectins</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rivipansel</td>
<td>SCD Vaso-occlusive Crisis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uproleselan (GMI-1271)</td>
<td>Relapsed / Refractory AML</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>APL</td>
</tr>
<tr>
<td></td>
<td>Newly Diagnosed “Fit” AML</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hem-Onc &amp; Inflammatory</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>GMI-1359</strong></td>
<td>Various Tumor Types</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>--</td>
</tr>
<tr>
<td><strong>Galectins</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GMI-1757</td>
<td>Hem-Onc &amp; Inflammatory</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>--</td>
</tr>
<tr>
<td>(Galectin-3/E-selectin)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Galectin-3 Inhibitors</td>
<td>Fibrosis &amp; Oncology</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>--</td>
</tr>
</tbody>
</table>

APL = Apollomics (Greater China)
2019 Achievements / Upcoming 2020 News Flow

**2019**
- First patient enrolled, Uproleselan R/R AML pivotal trial
- First patient enrolled, Uproleselan Newly Diagnosed pivotal trial
- Clinical trial planning for GMI-1359, dual function inhibitor
- Rivipansel Phase 3 top-line readout
- ASH abstracts released/presented

**2020 and Upcoming**
- Upro license for Greater China: development and commercialization
- GMI-1359 first patient enrolled in breast cancer P1b trial
- GMI-1359 orphan/pediatric rare disease designation & patent
- Rivipansel rights returned, new efficacy data for Sickle Cell Meeting
- GMI-1359 data read-out from Phase 1b breast cancer trial Q4 ’20/Q1 ‘21
- Enrollment complete, R/R pivotal trial 2H ‘21
## 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
- Evaluating path forward for Rivipansel based on new efficacy data

### 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 ~$154.0 million as of March 30, 2020; runway into ‘22

### Experienced Team
- Pioneers in the field of glycobiology and small-molecule, therapeutic “mimetics”
- Relationships with leading KOLs and oncology networks
July 2020

CORPORATE OVERVIEW

NASDAQ: GLYC

Innovation Today, Healing Tomorrow.