Glycobiology-based therapeutics

Transforming lives.

Harout Semerjian
President and CEO

Nov 2021
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 of enrollment and data readout of the ongoing Phase 3 clinical trials of uproleselan; (ii) the planned or potential clinical development and potential benefits and impact of our drug candidates, including uproleselan; (iii) the timing of receipt of clinical data for our drug candidates; (iv) the potential safety, efficacy, or clinical utility of our drug candidates; (v) 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; (vi) the likelihood and timing of regulatory filings and approvals; and (vii) our cash needs and expected cash runway.

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.
WE ARE PIONEERS IN GLYCOBIOLOGY
Setting new precedents in carbohydrate signaling to improve the treatment of cancer and inflammatory disease
GLYC’s Investment Highlights

**PIONEERS IN GLYCOBIOLOGY AND GLYCOCHEMISTRY**
- Glycobiology insights: Key role of carbohydrates in disease
- Specialized glycochemistry platform: Disrupting carbohydrate signaling with small molecule “mimics”
- Initial focus on AML and SCD

**ADVANCING A BROAD ONCOLOGY AND INFLAMMATORY PIPELINE**
- Two registration trials underway with uproleselan in AML. Breakthrough Therapy and Orphan Drug Designations in US, China; Fast Track in US
- Transformative early-stage pipeline

**CREATING SIGNIFICANT REVENUE OPPORTUNITIES**
- **UPROLESELAN** 44K+ AML patients in 7 major markets; partner in Greater China; potential in other hem-onc malignancies
- **GMI-1359** Targeting tumor microenvironment, including solid tumors with high propensity to metastasize to the bone

**WELL-POSITIONED FOR SUCCESS**
- Cash balance of ~$102M as of September 30, 2021
- Experienced leadership and scientific team

**UPRO**

**1359**

**GMI**
Our Approach

GLYCANS ARE CARBOHYDRATES PRESENT IN EVERY LIVING ORGANISM

<table>
<thead>
<tr>
<th>Coat the surfaces of all cells in nature</th>
<th>Affect key biological functions</th>
<th>Important targets for drug development</th>
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<tbody>
<tr>
<td></td>
<td>• Cell interactions</td>
<td>• NIH Glycomics Consortium</td>
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<td></td>
<td>• Pathogen binding</td>
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GlycoMimetics
DESIGNING NCEs THAT BUILD ON NATURE

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<thead>
<tr>
<th>Mimic natural, functional carbohydrates</th>
<th>Improved drug-like properties</th>
<th>Amenable to structure-based discovery</th>
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<tbody>
<tr>
<td></td>
<td>• Affinity for binding sites</td>
<td>• wholly-owned technology</td>
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<td>• Pharmacokinetics</td>
<td>• Strong IP</td>
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## A Portfolio of Exciting Product Candidates

<table>
<thead>
<tr>
<th>PROGRAM</th>
<th>THERAPEUTIC AREA</th>
<th>DISCOVERY - PRECLINICAL</th>
<th>CLINICAL</th>
<th>MARKET</th>
<th>PARTNER</th>
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<tr>
<td>SELECTINS</td>
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<tr>
<td>UPROLESELAN</td>
<td>Relapsed / Refractory AML</td>
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<tr>
<td>(GMI-1271)</td>
<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 and AML</td>
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<td>GALECTINS</td>
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<tr>
<td>GALECTIN-3</td>
<td>Fibrosis and Oncology</td>
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<tr>
<td>ANTAGONISTS</td>
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<tr>
<td>GMI-1757</td>
<td>Hem-Onc and Inflammatory</td>
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<tr>
<td>(Galectin-3/E-selectin)</td>
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* Greater China

Submit Registration for Regulatory Approval

- Fully Enrolled
Breakthrough Therapy Designation in AML

Uproleselan (GMI-1271)
“Positive outcomes from selectin inhibition in cancer, as showcased by the trials of uproleselan in AML, have reinvigorated the field…”
SIGNIFICANT UNMET NEED IN AML
Lowest 5-Year Survival of all Leukemias\(^1\)

**Estimated New Cases (2019)**

- 20,240 New AML Cases
- All Other Leukemias

**5-Year Survival (2011 – 2017)**

- CML: 70.6%
- CLL: 87.2%
- ALL: 69.9%
- AML: 29.5%

1. SEER 2021 Statistics
Uproleselan: Disrupts the Protective Interaction Between AML Cells and the Bone Marrow Microenvironment

Breaking chemo-resistance:

The E-selectin/E-selectin ligand axis plays a critical role in leukemic cell retention
• Differentiated approach
• Blocks cell-extrinsic chemoresistance pathways
UPROLESELAN
Potential Foundational Backbone Across Spectrum in AML

~20,240 Newly Diagnosed AML Patients in the U.S.¹

~12,000 “Fit” patients eligible for intensive chemotherapy

NEWLY DIAGNOSED, ELDERLY AML
NCI-Sponsored Phase 2/3
Combination of Uproleselan + 7&3

12K PATIENTS/YEAR

RELAPSED / REFRACTORY AML
GMI-Sponsored Phase 3
Combination of Uproleselan + MEC/FAI

8.5K PATIENTS/YEAR

~8,000 “Unfit”

Recent venetoclax approval

8K PATIENTS/YEAR

UPROLESELAN VALUE PROPOSITION
Improve achievement / depth of remission
Extend overall survival
Mitigate chemotherapy-related toxicity

¹ SEER 2021 Statistics
41% CR/CRi; 8.8 mos. Median Overall Survival in Relapsed/Refractory AML

72% CR/CRi; 9.2 mos. Event Free Survival in Newly Diagnosed AML

MRD-negativity in >50% of evaluable patients
  - Enhancing depth of response

E-selectin ligand expression
  - Detectable in every patient tested
  - Higher levels in R/R patients achieving CR/CRi, MRD- and prolonged median OS

Data support biological/clinical activity and late-stage registration program

Published in *Blood* October ‘21
**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

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**

**Primary Endpoint**
Overall survival **not censored** for transplant

Enrollment Completed Nov ‘21
## UPROLESELAN
Historical Benchmarks — What Are We Trying to Beat?

<table>
<thead>
<tr>
<th>AML Population</th>
<th>Registration Program Primary Outcome Measure</th>
<th>Uproleselan Phase 1/2 Results</th>
<th>Historical Comparators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relapsed / Refractory</td>
<td>Overall Survival (months)</td>
<td>8.8 months</td>
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<tr>
<td></td>
<td></td>
<td>5.4 months (MEC)</td>
<td>Valspodar + MEC vs. MEC</td>
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<tr>
<td></td>
<td></td>
<td>5.2 months (MEC)</td>
<td>Lintuzumab + MEC vs. MEC</td>
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<tr>
<td></td>
<td></td>
<td>3.4 months (Inv. choice)</td>
<td>Cytarabine vs. Inv. choice</td>
</tr>
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UPROLESELAN VALUE PROPOSITION

- Improve achievement / depth of remission
- Extend overall survival
- Mitigate chemotherapy-related toxicity

¹ SEER 2021 Statistics
UPROLESELAN INHIBITS BINDING OF BLASTS

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).
UPROLESELAN / VENETOCLAX / HMA COMBINATION
Significantly Reduces Leukemia Burden*

AML-PDX FROM A VENETOCLAX / HMA RESISTANT PATIENT

hCD45 (%, PB)

- Venetoclax
- Uproleselan
- Ven+5Aza
- Combination

hCD45 (K per µL, PB)

Treatment (wk)

Treatment (wk)

*p< 0.05; **p<0.01; ***p<0.001, Student's t-test for experiments that compare two groups.
E-Selectin / CXCR4 Antagonist in Solid Tumor Indications
**GMI-1359**

Small Molecule, Dual Inhibitor Against E-selectin and CXCR4

**Duke University School of Medicine**

Single /multiple ascending doses; metastatic, HR+, stable/minimally progressive breast cancer

- **AACR 2021 Poster**
  - On-target effects of dual antagonist
  - Acceptable safety and tolerability profile
  - No dose-limiting toxicities following multiple dose administration up to 7 mg/kg

- **ASH 2021 abstracts support expanded indications**

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**BIOLOGIC ACTIVITY BEING EVALUATED**

- **Mobilization of circulating tumor cells**
- **Mobilization of primitive HSCs** (with greater reconstitution potential)
- **Mobilization of marrow infiltrating lymphocytes**

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**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**
Treatment of Acute Vaso-occlusive Crisis (VOC) in Patients with Sickle Cell Disease
GMI-1687
Highly Potent E-selectin Antagonist for VOC

• Leveraging Rivipansel’s extensive Phase 2 and 3 findings
  • Efficacy, time to treat, safety and biomarker

• High KOL enthusiasm at SOHO, FSCDR, ASCAT and ASH meetings in 2020

• Subcutaneously bioavailable
  • Potential to self-administer at onset of VOC
  • Eliminates in patient/IV dosing constraints

• IND planned for 1H 2022
GMI-1687
Scientific Rationale

Phase 3 RESET and Open Label Extension Trials

• Patients treated early exhibited 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)

• Strong and consistent data in all age and pediatric subgroups

• Favorable safety profile

• Key role of E-selectin in VOC

• Importance of treating early

PHASE 3 RESET AND OPEN LABEL EXTENSION TRIALS CONFIRM

• Safety
• E-selectin as target
• Treating early is key
GALECTIN-3 INHIBITORS

Potential Treatments in Oncology, Inflammation and Fibrosis
GALECTIN-3 ANTAGONISTS
Highly Potent and Highly Differentiated

- Target: Galectin-3 carbohydrate-binding protein

- Relevance: Central role in fibrosis and cancer
  - Inflammation, aberrant cell activation/proliferation, fibrogenesis
  - Blockade may prevent/reverse fibrosis following organ damage
  - Antifibrotic/antitumor activity in various disease models

- Chemistry: Rationally designed with proprietary platform

- Differentiation: Compounds have high binding affinity and specificity for Galectin-3
2021 – 2022 Expected News Flow*

- Enrollment complete, uproleselan R/R pivotal Phase 3 trial
- Enrollment complete, uproleselan Phase 2 for interim analysis in frontline AML fit for chemo trial with NCI
- ASH abstracts for GMI-1359
- Apollomics initiation of Phase 3 in Greater China
- IND submission for GMI-1687
- Potential IST data at key medical meetings
  - UC Davis: Frontline Unfit AML (Uproleselan Venetoclax, HMA)
  - MD Anderson: Treated Secondary AML (Uproleselan, Cladribine, ARA-C)
  - Washington University St. Louis: MM Transplant (Uproleselan, Busulfan)

* Subject to enrollment and acceptances of abstract submissions
GLYCOBIOLOGY-BASED THERAPEUTICS
GLYC: Delivering Shareholder Value and Transforming Lives

Opportunity
• Large market opportunity with significant unmet medical need
  • Acute Myeloid Leukemia
  • Sickle cell disease
• Pipeline across oncology and Inflammation

Differentiation
• Trailblazing proprietary platform in glycobiology
• Precision medicine targeting:
  • Cell adhesion mediated drug resistance in AML and other cancers
  • VOC crisis in sickle cell disease

Momentum
• Two registrational trials in AML: near term total enrollment of 650 patients
• Ability to extend funding through key milestones
• Skilled team with extensive experience

POISED FOR COMMERCIAL SUCCESS
THANK YOU!

NASDAQ: GLYC

www.glycomimetics.com