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 likelihood and timing of initiation of a Phase 3 clinical trial of GMI-1070 by Pfizer Inc. ("Pfizer"); (ii) the timing of additional clinical trials for our other drug candidates; (iii) the timing of receipt of clinical data for our drug candidates; (iv) our expectations regarding 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) and our cash needs and 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 Quarterly Report on Form 10-K filed with the U.S. Securities and Exchange Commission on March 16, 2015, 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.
GlycoMimetics Highlights

- Compelling Phase 2 data in lead program, Rivipansel (GMI-1070), for treatment of vaso-occlusive crisis (VOC) in patients with sickle cell anemia
  - Pfizer planning Phase 3 start-up in mid-2015. Clinical supply issue resolved.
  - Significant unmet clinical and pharmacoeconomic needs
  - U.S. orphan drug and fast track designation, EU orphan product designation

- AML program (GMI-1271) Phase 1/2 trial in AML now underway
  - Phase 1 was completed in healthy volunteers
  - Orphan Drug Designation granted by FDA for treatment of AML
  - Significant ASH visibility in December 2014
  - Ongoing Phase 1 funded by NHLBI to study thrombosis

- Novel platform in carbohydrate chemistry fueling pipeline
  - Validated by Rivipansel Phase 2 clinical trial data

- Strong intellectual property portfolio
  - Issued and pending patents focused on composition of matter

- Well funded, strong financial position
Sickle Cell Program Update

- Clinical supply issue has been addressed. Partner Pfizer plans Phase 3 trial initiation in mid-2015.
  - Additional $20 million due upon first patient dosing in Phase 3
- Clinical trial of SubQ dosage form being planned; market expansion opportunity
- Data presented at American Society of Hematology (ASH) Annual Meeting in December 2013
  - Phase 2 results selected for “Best of ASH” and highlighted by ASH in a press conference
- Data presented at the National Sickle Cell Disease Scientific Meeting
  - Rivipansel improved efficacy outcomes independent of hydroxyurea use
- Data presented at the American Society of Pediatric Hematology Oncology (ASPHO) 27th Annual Meeting
  - Rivipansel improved outcomes in pediatric patients
- Agreement with FDA on Special Protocol Assessment (SPA) for Phase 3
GMI-1271 Program Update
Initial Focus on Hematologic Malignancies

- AML trial began dosing patients in Q2 2015. Study sites in US, Ireland and Australia.

- Phase 1 in healthy volunteers complete. Drug was well tolerated and pharmacokinetics was consistent with expectations.

- Preclinical data chosen for four oral presentations and a poster for ASH in December 2014
  - Studies support exploration of GMI-1271 in a variety of hematologic malignancies and thrombosis

- Preclinical data presented at AACR in April 2014
  - Three posters showing GMI-1271 improves outcomes in solid tumor models, prevents tumor cell metastasis and migration to bone marrow

- Major grant awarded by National Heart, Lung and Blood Institute to University of Michigan to test GMI-1271 in clinical trials to explore effects on coagulation pathway
  - Clinical trial initiated in November 2014
### GlycoMimetics Pipeline

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<th>Drug Candidate</th>
<th>Indication</th>
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Rivipansel (GMI-1070) for Sickle Cell Crisis
Sickle Cell Market Opportunity

- Common genetic disease in the United States
  - ~100,000 people with the disease in the United States

- Significant unmet needs for VOC
  - Periodic, excruciatingly painful episodes resulting in life-threatening complications and reduced life expectancy
  - Deaths can occur due to infection, acute chest syndrome, stroke, multi-organ failure

- Pharmacoeconomic landscape
  - Leading cause of ER visits for sickle cell patients
  - ~73,000 U.S. hospitalizations in 2010
  - Average length of hospital stay of ~6 days

- Clinical challenges
  - No approved therapies for treatment of ongoing VOC
  - Standard of care focused on managing symptoms through hospitalization, narcotic pain management, and hydration

Sources: U.S. Centers for Disease Control and Prevention (CDC) and National Hospital Discharge Survey conducted by the National Center for Health Statistics.
Initial Market Plus Growth Opportunity

- Rivipansel likely to be used initially in in-patient setting

- Target product profile:
  - Reduce length of hospital stay
  - Reduce duration or intensity of painful episodes
  - Reduce use of narcotics for pain management

- Potential pharmacoeconomic benefit
  - Average U.S. hospital charges for a patient treated for VOC were ~$20,000 to $40,000 in 2006 (1)

U.S. ~73,000 (2)

Potential Market Expansion Opportunities

(1) U.S. Agency for Healthcare Research and Quality and California Office of Statewide Health Planning and Development.
(2) Estimated VOC-related hospitalizations per the CDC.
Well-Characterized Mechanisms Critical to Inflammatory Response Driving VOC

- First step in extravasation from bloodstream—selectins bind immune cells to endothelium
- Neutrophils and monocytes are activated when they bind to selectins
- Activation through selectins also leads to production of microparticles from neutrophils, rich in tissue factor, and can promote thrombus formation

Development of VOC

![Diagram showing the process of extravasation and the development of VOC](image-url)
## Rivipansel (GMI-1070) Clinical Summary

| Phase 1a | Single dose trial (1 of 5 dose levels of GMI-1070, ranging from 2 to 40 mg/kg)  
|          | 40 healthy volunteers (30 dosed with GMI-1070; 10 received placebo)  
|          | **Benign safety profile**  
|          | 7 hour half-life, excreted largely intact |
| Phase 1b | Multiple dose-escalating trial (four dose levels of GMI-1070)  
|          | 32 healthy volunteers (24 dosed with GMI-1070; 8 received placebo)  
|          | **Confirmed benign safety profile and pharmacokinetic (PK) profiles** |
| Pilot Trial | 15 sickle cell patients, not in crisis  
|            | Loading dose of 20 mg/kg, followed by a dose of 10 mg/kg 10 hours later  
|            | Focus on safety and PK profiles  
|            | **Proof of concept effects seen on biomarkers of inflammation and coagulation**  
|            | Data selected for oral presentations at annual ASH conference (2011 and 2012) |
| Phase 2 | 76 patients enrolled in crisis, ranging from 12 to 60 years  
|          | - 43 dosed with GMI-1070 (one of two dose levels) and 33 received placebo  
|          | 22 sites in the United States and Canada  
|          | Primary objective: evaluate efficacy of multiple intravenous (IV) doses of GMI-1070  
|          | Secondary objective: evaluate safety and PK profiles  
|          | Pfizer plans to follow with single registration study  
|          | **Demonstrated meaningful clinical impact on multiple endpoints** |

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**GlycoMimetics, Inc.**
Phase 2 Study Conclusions

- Use of GMI-1070 during VOC improved multiple outcomes:
  - Time to resolution
  - Length of hospital stay
  - Requirement for parenteral opioid analgesia

- Improvements were seen in every efficacy endpoint explored and across every subgroup evaluated

- In some cases, improvements achieved statistical significance even in this small population with high variability

- GMI-1070 had a benign safety profile in this trial

- These results support study of GMI-1070 for efficacy for treatment of VOC in a Phase 3 clinical trial
Phase 2 Study Design

- Prospective multicenter, randomized, placebo-controlled, double-blind, adaptive study of 76 adult and pediatric SCD patients
  - Subjects enrolled at the time of admission to the hospital
  - GMI-1070 or placebo given in addition to standard care for VOC
  - Interim analyses for PK and safety were built in

Primary endpoint – Time to Resolution of VOC
  - Composite endpoint, analyzed as ‘time to event’ for the first component achieved
    - Sustained reduction of ≥1.5 cm and transition to oral analgesics
    - Readiness for discharge
    - Time to discharge

Secondary endpoints
  - Additional efficacy components – length of hospital stay, opioid utilization
  - Safety profile – including rate of SCD-related complications (e.g. acute chest syndrome, transfusion, rehospitalization)
  - Pharmacokinetics (PK)
Median Time to Resolution of VOC Reduced by 63 Hours (Kaplan-Meier Analysis)

- Median time to resolution of VOC reduced by 63 hours ($p=0.187$) (Kaplan-Meier)
- Mean time to resolution of VOC reduced by 41 hours ($p=0.192$) (ANCOVA)
Median Time to Discharge from Hospital Reduced by 84 Hours (Kaplan-Meier Analysis)

- Median time to discharge from hospital reduced by 84 hours (p=0.092) (Kaplan-Meier)
- Mean time to discharge from hospital reduced by 55 hours (p=0.096) (ANCOVA)

![Graph showing the comparison of time to discharge between Placebo and GMI-1070. The graph indicates a reduction in time to discharge for both groups, with GMI-1070 showing a slightly lower probability of discharge at any given time compared to Placebo.](image-url)
Early and Significant Reduction in Hourly Opioid Analgesic Administered (ANCOVA Analysis)

- Cumulative opioid analgesic administered reduced by 83% (p=0.010)

![Graph showing mean hourly opioid use over days with GMI-1070 and Placebo groups, with significant reductions at 24 hours (p<0.001) and 48 hours (p=0.067).]
SPA Agreed to for Phase 3 Trial

- Single registration study
- First FDA-agreed SPA for any drug to treat sickle cell crisis
- Primary efficacy outcome is time to readiness for discharge
- Secondary outcomes are:
  - Time to discharge
  - Cumulative opioid use
  - Time to discontinuation of opioids
  - Cumulative opioid use within first 24 hours
  - Re-hospitalization within three days of discharge
- Estimate enrollment of 350 patients
- Ages 6 and older
### Pfizer Deal Economics

<table>
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<tr>
<th>Rights</th>
<th>Pfizer responsible for all further clinical development, regulatory approval and potential commercialization for all indications worldwide</th>
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<tr>
<td>Upfront</td>
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| Future Milestones | **Total Future Milestones**: up to $320.0 million  
**Development**: up to $115.0 million  
$35.0 million upon start of Phase 3  
$15 million advance payment received in May 2014, remainder due at dosing of the first patient.  
**Regulatory**: up to $70.0 million  
**Commercial**: up to $135.0 million |
| Royalties | Tiered, ranging from low double digits to low teens |
GMI-1271: Targeting the Bone Marrow Microenvironment for Treatment of Blood Cancers
AML Clinical and Market Opportunity

- AML, a hematologic cancer, accounts for the largest number of annual deaths from leukemia in the United States
  - In 2013, ~15,000 people in the United States will be diagnosed with AML and 10,000+ people in the United States will die of the disease
- Overall 5-year relative survival rate for all AML patients is 24%, and only 5% for patients over 65 years old at diagnosis
- Significant need for new treatment options
- E-selectin has been shown to play important roles in the progression of AML
  - Levels of E-selectin correlate with tumor infiltration, and relapse/survival rates
  - **GMI-1271**, an E-selectin antagonist, prolongs survival in animal models when combined with chemotherapy, compared to chemotherapy alone.

Sources: American Cancer Society, National Cancer Institute, and Journal of Clinical Oncology.
GMI-1271 Disrupts Relationship Between Tumor Cells and Bone Marrow Microenvironment

**Current Paradigm**

- Tumor Cells in Quiescent Niche → Chemo → Relapse
- Tumor Cells Protected in Bone Marrow Microenvironment

**E-Selectin Blockade**

- Tumor Cells in Quiescent Niche → GMI-1271 + Chemo → Remission
- Tumor Cells Mobilized From Bone Marrow Microenvironment

**E-selectin is expressed on endothelial cells and is constitutively expressed in the bone marrow microvasculature**

**Actionable Drivers Targeted by GMI-1271**

- 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. Wnt)
- Protects normal HSCs by enhancing quiescence and ability for self-renewal

E-selectin is expressed on endothelial cells and is constitutively expressed in the bone marrow microvasculature.
Ongoing Phase I / II Open-Label Study in AML

**Study Design**
- Dose Escalation: 3+3 design, up to 4 dose levels (5, 10, 20 & 40 mg/kg)
  - Relapsed/refractory AML (MEC)
- Dose Expansion: up to 50 patients
  - Up to 25 R/R AML (MEC)
  - Up to 25 newly diagnosed AML (Ara-C & idarubicin)
    - Safety run-in (2 dose levels)

**Endpoints:** Safety, PK, Biomarkers (mobilization) & Efficacy (MRD)

**Lead Investigator:** Dan DeAngelo, MD – Dana Farber Cancer Institute
- Additional participating centers in USA, Ireland & Australia

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**Flowchart:***

- **Screening**
  - BM Biopsy
  - Visit Day: -22 to 0

- **Treatment**
  - GMI-1271 + Chemo
  - GMI-1271

- **Follow-Up**
  - 15
  - 28

- **Long-Term Follow-Up**
  - 6 Mon
  - 12 Mon

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*GlycoMimetics, Inc.*
GMI-1359: Dual-Function (E-Selectin & CXCR4) Antagonist for Hematology-Oncology
MOA: Simultaneous blockade of E-selectin & CXCR4 binding targets to block well-established pathways of cancer cell migration/infiltration

Target Delivery: SubQ

Status: IND-enabling program Initiated

CMC: Straightforward synthesis with common intermediates shared with GMI-1271
GlycoMimetics Milestones Delivering Strong Scientific and Clinical Momentum

2013
- Compelling rivipansel Phase 2 sickle cell data
- “Best of ASH”
- Preclinical data on GMI-1271 presented at ASH
  - Improved survival and down-regulation of cancer survival pathways in AML models; reduction in chemo-induced toxicity

2014
- January IPO
- Received $15 million milestone from Pfizer tied to Phase 3 rivipansel start
- Agreement reached with FDA on SPA for rivipansel
- IND filed for GMI-1271
- GMI-1271 Phase 1 HV study completed
- GMI-1271 Preclinical data selected for four oral presentations at ASH
  - Compelling data in AML, MM & CML animal models supports use as adjunct to standard of care

2015
- Multiple GMI-1271 clinical trials to be underway:
  - AML
    - Initial clinical activity read-outs
  - Additional hem. malignancy population
  - Thrombosis study funded by NHLBI
- Rivipansel Phase 3 study start mid-2015
  - Additional $20 million due upon Phase 3 initiation
- SubQ Rivipansel study planned, 2H 2015
- Third program (GMI-1359) preparing for IND
  - Additional data disclosures
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Innovation Today, Healing Tomorrow.