May 25, 2016

GlycoMimetics Announces Publication of New Preclinical Data with GMI-1271 in Science Translational Medicine

GMI-1271 Inhibits Breast Cancer Cell Homing to the Bone Marrow

ROCKVILLE, Md.--(BUSINESS WIRE)-- GlycoMimetics, Inc. (NASDAQ: GLYC) today announced that the peer-reviewed journal, *Science Translational Medicine,* has published preclinical research in its May 25 issue pointing to a potential clinical application for GMI-1271 in the treatment of breast cancer. The published study details research in an *in vivo* model that showed the company's drug candidate, GMI-1271, a novel E-selectin antagonist, inhibits breast cancer metastasis.

The study provides important new detail on how metastasis from breast cancer can lead to relapse, even if the primary cancer is in remission. The research highlights a possible new application of GMI-1271, currently in a Phase 1/2 clinical trial in AML, as a potential treatment for solid tumors. Data from the study also suggest a possible therapeutic avenue to test GMI-1359, a GlycoMimetics drug candidate that targets both E-selectin and CXCR4, for use as a potential treatment for certain cancers.

"The preclinical data published in an important peer-reviewed journal demonstrate key roles for both E-selectin and CXCR4 in progression of metastatic breast cancer," said John Magnani, Ph.D., Vice President and Chief Scientific Officer of GlycoMimetics and co-author of the study. "The data also provide further evidence of the *in vivo* activity of GMI-1271 and suggest possible uses of GMI-1271 and GMI-1359 in solid tumors. This is an encouraging development as we progress through preclinical and clinical research of our drug candidates, and provides further rational for developing antagonists against both E-selectin and CXCR4."

The researchers found that breast cancer cells accumulate in regions of the protective bone marrow, an environment rich in E-selectin and SDF-1 (which binds to CXCR4, another molecule associated with cancer cell adhesion and proliferation). GMI-1271, by inhibiting E-selectin, blocks trafficking of breast cancer cells into bone marrow regions where metastasis can become dormant and protected from chemotherapy treatment. At the same time, researchers found that inhibition of CXCR4 as well as of E-selectin could mobilize and excise dormant metastasis from these protective niches and block their reentry, thereby potentially eliminating a common site for metastases and source of relapsed disease. These effects indicate a potential role in treatment of breast cancer not only for GMI-1271, but also for GMI-1359, which inhibits the actions of both E-selectin and CXCR4.

GlycoMimetics plans to file an investigational new drug (IND) application with the U.S. Food and Drug Administration in the third quarter of this year for its combined E-selectin-CXCR4 antagonist GMI-1359, initially for treatment of hematologic malignancies.

About GMI-1271

GMI-1271 is designed to block E-selectin (an adhesion molecule on cells in the bone marrow) from binding with AML cells as a targeted approach to disrupting well-established mechanisms of leukemic cell drug resistance within the bone marrow microenvironment. Preclinical research points to the drug's potential role in moving cancerous cells out of the protective environment of the bone marrow where they hide and escape the effects of chemotherapy. In preclinical studies using animal models of AML, the results of which were presented at meetings of the American Society of Hematology (ASH), GMI-1271 was also associated with a reduction of chemotherapy-induced neutropenia and chemotherapy-induced mucositis.

About GMI-1359

GMI-1359 is a compound that targets both E-selectin and CXCR4, which aid in cancer cell resistance to chemotherapy. The compound is in preclinical evaluation. GMI-1359 is a potent dual antagonist of both E-selectin and CXCR4, demonstrating anti-tumor activity in preclinical models of pancreatic cancer, FLT-3+ acute myeloid leukemia (AML), and prostate cancer. GlycoMimetics plans to file an IND for GMI-1359 in the third quarter of 2016.

About GlycoMimetics, Inc.

GlycoMimetics is a clinical-stage biotechnology company focused on sickle cell disease and cancer. GlycoMimetics' most advanced drug candidate, rivipansel, a pan-selectin antagonist, is being developed for the treatment of vaso-occlusive

crisis in sickle cell disease and is being evaluated in a Phase 3 clinical trial being conducted by its strategic collaborator, Pfizer. GlycoMimetics' wholly-owned drug candidate, GMI-1271, an E-selectin antagonist, is being evaluated in an ongoing Phase 1/ 2 clinical trial as a potential treatment for AML. GlycoMimetics expects to file an IND with the FDA for a third drug candidate, GMI-1359, a combined CXCR4 and E-selectin antagonist, in the third quarter of 2016. GlycoMimetics is located in Rockville, MD in the BioHealth Capital Region. Learn more at www.glycomimetics.com.

Cautionary Note Regarding Forward-Looking Statements

This press release contains forward-looking statements regarding the clinical development plans for GMI-1271 and GMI-1359 and potential treatment indications for these drug candidates. Actual results may differ materially from those in these forward-looking statements. For a further description of the risks associated with these statements, as well as other risks facing GlycoMimetics, please see the risk factors described in the company's annual report on Form 10-K that was filed with the U.S. Securities and Exchange Commission on February 29, 2016, and other filings the company makes with the SEC from time to time. Forward-looking statements speak only as of the date of this release, and GlycoMimetics undertakes no obligation to update or revise these statements, except as may be required by law.

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