UT SOUTHWESTERN MEDICAL CENTER NEWS

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UT Southwestern cardiologists identify mechanism that makes heart disease worse in diabetics

DALLAS – March 2, 2012 – UT Southwestern Medical Center cardiologists have uncovered how a specific protein's previously unsuspected role contributes to the deterioration of heart muscle in patients with diabetes. Investigators in the mouse study also have found a way to reverse the damage caused by this protein.

The new research, available online and published in the March 1 issue of the *Journal of Clinical Investigation*, was carried out in the laboratory of Dr. Joseph Hill, director of the Harry S. Moss Heart Center at UT Southwestern.

"If we can protect the heart of diabetic patients, it would be a significant breakthrough," said Dr. Hill, the study's senior author who also serves as chief of cardiology at the medical center. "These are fundamental research findings that can be applied to a patient's bedside."

Cardiovascular disease is the leading cause of illness and death in patients with diabetes, which affects more than 180 million people around the world, according to the American Heart Association. Diabetes puts additional stress on the heart – above and beyond that provoked by risk factors such as high blood pressure or coronary artery disease, Dr. Hill said.

"Elevated glucose and the insulin-resistant diabetic state are both toxic to the heart," he said.

Dr. Hill and his colleagues in this study were able to maintain heart function in mice exposed to a high fat diet by inactivating a protein called FoxO1. Previous investigations from Dr. Hill's laboratory demonstrated that FoxO proteins, a class of proteins that govern gene expression and regulate cell size, viability and metabolism, are tightly linked to the development of heart disease in mice with type 2 diabetes.

"If you eliminate FoxO1, the heart is protected from the stress of diabetes and continues to function normally," Dr. Hill said. "If we can prevent FoxO1 from being overactive, then there is a chance that we can protect the hearts of patients with diabetes."

Other UT Southwestern investigators participating in the study were Drs. Pavan Battiprolu,

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Zhao Wang and Myriam Iglewski, all postdoctoral researchers in internal medicine; Dr. Berdymammet Hojayev, postdoctoral researcher in pathology; Nan Jiang and John Shelton, senior research scientists in internal medicine; Dr. Xiang Luo, instructor in internal medicine; Dr. Robert Gerard, associate professor of internal medicine and molecular biology; Dr. Beverly Rothermel, assistant professor of internal medicine and molecular biology; Dr. Thomas Gillette, assistant professor of internal medicine; and Dr. Sergio Lavandero, visiting professor of internal medicine.

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