



Miller School Researcher Receives \$1.5 Million Grant to Study Role of Osteopontin in Heart Failure

A University of Miami Miller School of Medicine researcher has received a \$1.5 million grant from the National Heart, Lung and Blood Institute to study a potential new strategy for treating an intractable form of heart failure.



From left, Ivonne Schulman, M.D., with Lina Shehadeh, Ph.D.

“Prior studies have shown that lowering the level of a protein called osteopontin can ameliorate heart failure with reduced ejection fraction (HFrEF),” said Lina Shehadeh, Ph.D., assistant professor of medicine in the Division of Cardiology and the Interdisciplinary Stem Cell Institute (ISCI). “Now, our collaborative team will study for the first time how this protein in association with a mitochondrial protein (OGDHL) affects heart failure with preserved ejection fraction (HFpEF).”

Shehadeh and her co-investigator, nephrologist Ivonne Schulman, M.D., associate professor of clinical medicine, are beginning a four-year study on “The Role of Osteopontin-OGDHL Axis in HFpEF.” Study collaborators include ISCI Director Joshua M. Hare, M.D., the Louis Lemberg Professor of Medicine;



Sanjoy Bhattacharya, Ph.D., professor of ophthalmology; and Carlos Moraes, Ph.D., the Lichtenstein Professor of Neurology and Cell Biology.

In patients with the HFpEF type of heart failure, the amount of blood pumped from the left ventricle with each beat (ejection fraction) is greater than 50 percent (which is normal). As a result, it is difficult to diagnose these patients with heart failure. In addition, HFpEF patients have multiple comorbidities, such as high blood pressure and kidney disease. “Currently, there are no effective treatments for heart failure with preserved ejection fraction,” Shehadeh said.

Shehadeh and Schulman will use a laboratory mouse and pig model of kidney disease to study osteopontin, which is produced by the kidneys.

“Our preliminary data shows that cardiac disease progression, including hypertrophy, fibrosis, and hypertension, may be related to osteopontin,” Shehadeh said. “We will test the hypothesis that high levels of osteopontin, released from the kidney, activate pathological signaling in the heart, contributing to the problem of HFpEF. Our goal is to understand the mechanisms underlying the development of HFpEF, and provide new targets for treating this disease.”

Shehadeh and Schulman, who come from two different fields, said that their ideas were sparked by both of them being housed at ISCI, sharing a room at the American Heart Association (AHA) conferences, and some post-AHA tourism.

“We had a fruitful scientific discussion on the bus on our way to the Grand Canyon after the AHA meeting in Phoenix,” said



Schulman.

“This is another success story for our interdisciplinary model at ISCI,” added Hare.

Dr. Shehadeh is thankful to the Miami Heart Research Institute for funding and enabling her work.