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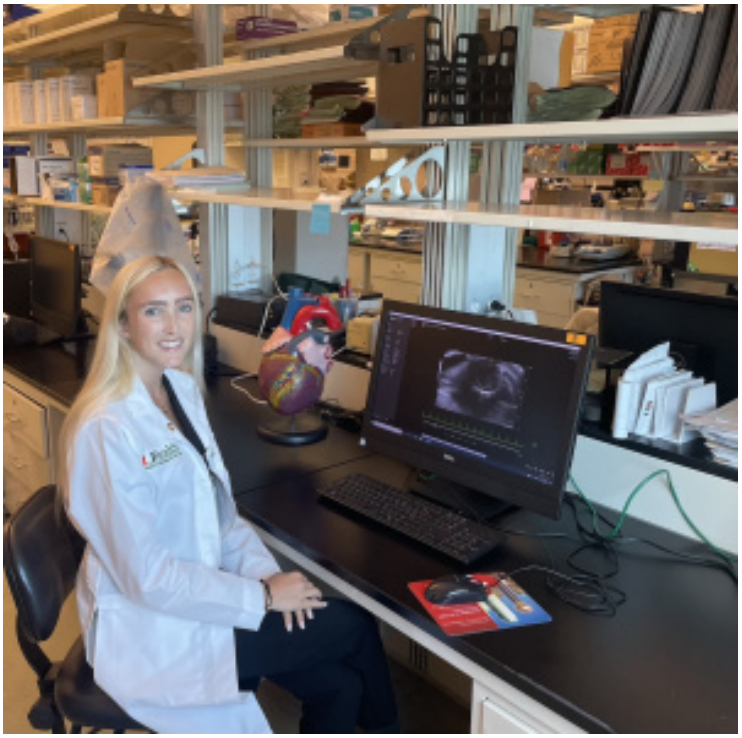
American Heart Association Funds Miller School Student for Research Aimed at Regenerating Heart Tissue

University of Miami Miller School of Medicine student Emily Todd has been chosen to receive a $2,000 award as part of the American Heart Association's 2022 Student Scholarships in Cardiovascular Disease.



Miller School student Emily Todd, M.D. Class of 2025, received the award from the American Heart Association for her research in cardiovascular disease.

The American Heart Association selects students researching cardiovascular disease based on the quality of the proposal, supporting supervision and the student's academic achievement, according to the association.

The scholarship is for bench research that Todd is doing under the direction of Lina Shehadeh, Ph.D., professor of medicine in the Interdisciplinary Stem Cell Institute and Division of Cardiology at the Miller School, looking at using a supplement called alpha-ketoglutarate to help regenerate myocyte cells after heart attack.

"The ultimate application of this research would be a medical therapy or intervention for heart failure associated with cardiomyocyte loss, such as that caused by a heart attack, which would work by inducing myocyte regeneration," Todd said.

Regenerating Cardiomyocytes

Cardiomyocyte regeneration post-heart attack has long been a dilemma in cardiology, according to Dr. Shehadeh.

"Heart cells do not generally divide and proliferate, making the heart one of the hardest organs to regenerate," she said. "What usually happens is fibroblasts proliferate, resulting in scarring which can cause other problems, such as arrythmias."

Dr. Shehadeh and Todd are studying the therapy in a mouse model in which cardiac myocyte division is illustrated by one cell becoming red and the other green.

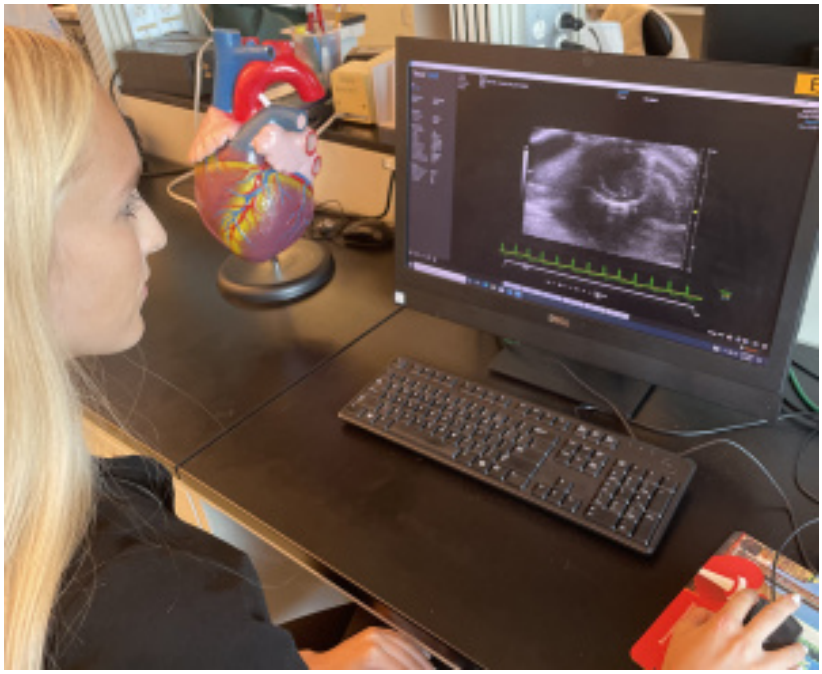
Promising Results with Alpha-ketoglutarate

"There's no ambiguity about it. If what we are using is working, you will see red and green cells," Dr. Shehadeh said. "We've been trying for a long time and, finally, for the first

time, we saw a signal when we put the mice on alpha-ketoglutarate."

The researchers saw a signal for cardiomyocyte division in mice with healthy hearts that were on a diet with the supplement for about a month. The next step is to induce heart attacks in the mice supplemented with alpha-ketoglutarate to see if the heart cells that die are replaced by new cells.

The American Heart Association scholarship opens the door not only for Todd to pursue this and potentially other cardiovascular research, but also reflects on Todd's passion for cardiology and goal to become a physician-scientist.



Todd's research is focused on using a supplement called alpha-ketoglutarate to help regenerate myocyte cells after heart attack.

"Prior to medical school, I worked with the Miami Transplant

Institute at Jackson Memorial Hospital as a scribe in advanced heart failure transplant and cardiology. One of the most appealing aspects of cardiology to me is the long-term relationship formed between physician and patient, and how different interventions can drastically and fundamentally change a person's life," Todd said. "I'm drawn to not only working in the clinic but also doing research, so after starting medical school, I reached out to Dr. Shehadeh because I was particularly interested in her regenerative medicine cardiology research."

AHA Rewards Novel Research

According to Dr. Shehadeh, the scholarship acknowledges the novelty of the research and the American Heart Association's faith in Todd, who is part of the M.D. Class of 2025.

"The institutional environment, in this case, is very important because my lab is in the Interdisciplinary Stem Cell Institute, where Joshua M. Hare, M.D., F.A.C.C., F.A.H.A., is director. He is a big name in regenerative medicine and cardiology," Dr. Shehadeh said.

The scholarship also speaks to the Miller School's emphasis on medical curricula that expose students to research in their first year of medical school.

"It happens that Emily is in the scholarly pathway for regenerative medicine, and the scholarship shows that medical students can compete for and get awards for research," Dr. Shehadeh said.

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