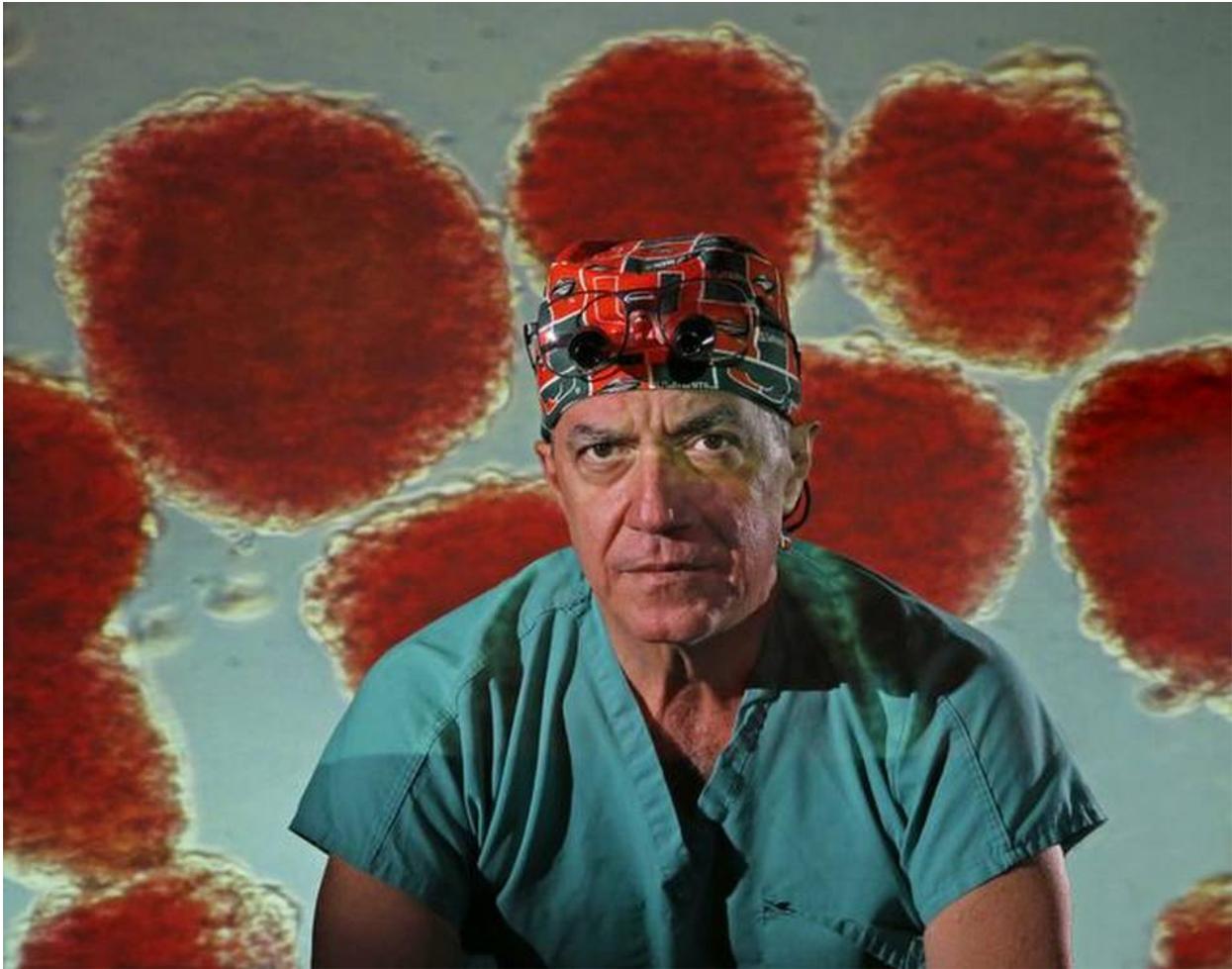


## UM's Diabetes Research Institute working toward cure of Type 1 diabetes

By Katie Lepri - klepri@miamiherald.com  
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AT DIABETES RESEARCH INSITUTE: Dr. Camillo Ricordi with islets (cell clusters in the pancreas that produce insulin) projected behind. Some patients who've had islet cell transplants don't have to take insulin. Al Diaz MIAMI HERALD STAFF

Dr. Camillo Ricordi considers himself a diabetes freedom fighter.

Ricordi, the director of the Diabetes Research Institute at the University of Miami Miller School of Medicine, is considered one of the world's leading scientists in diabetes cure-focused research.

“The search for a cure is a full-time job,” said Ricordi, 57, who has been searching for a cure for the degenerative disease for more than 25 years. “It has to be something to consume you completely.”

In his office near Jackson Memorial Hospital, he keeps framed photographs of his most compelling Type1 diabetes patients near his desk, as a reminder of why he continues the crusade. One photograph is of former Miami Heat star Ray Allen’s son, Walker Allen, who was diagnosed with Type1 diabetes when he was 17 months old.

There is no known cure for Walker and the 382 million people diagnosed worldwide with diabetes. Of those, 5percent have Type1 diabetes, which primarily affects children and young adults. In Type1, the body’s immune system destroys pancreatic cells that make insulin, the hormone needed to regulate the body’s blood sugar. People with Type1 diabetes must have daily insulin injections or be on an insulin pump to survive.

Ricordi thinks that in the next three to seven years there will be a cure for Type1 patients.

“It’s not a prediction — it’s a promise that I make to patients. We will defeat this disease for sure,” Ricordi said. “Depending on how many obstacles we hit, and regulatory complexities and cost, it could take more than 10 years, depending, but we’re getting there.”

At the DRI, Ricordi works with an international team of 169 scientists and staff members, who come from China, Italy and Spain, among other countries. Their goal: Search for a biological cure for diabetes in the fastest and most efficient way possible.

“There has been so much progress in the past three years ... that we hope will deliver something substantial,” said Ricordi. “All the trials are focused on a cure.”

The DRI’s most promising experimental trial, the islet transplant, just completed its Food and Drug Administration PhaseIII trial for approval in the United States. This is one of the last phases before the FDA reviews the procedure. Islets, clusters of 3,000 to 4,000 cells in the pancreas, produce insulin to regulate the body’s blood sugar. The islet clusters make up about 2percent of the pancreas.

“It has already been approved in Canada, England, Switzerland [and] Australia,” said Ricordi, who thinks the procedure could be approved in the U.S. within the next two years.

Originally developed in 1986 by Ricordi at Washington University in St.Louis, the procedure is used in worst-case Type1 patients. The procedure, which takes about six hours, moves purified islet cells from the pancreas of a deceased organ donor into a patient with Type1 diabetes through a complex transfusion process. The transfusion deposits the new insulin-producing cells to the liver, which then does double duty as both the liver and the pancreas.

The goal is to help patients with Type1 diabetes live without daily insulin injections and forgo anti-rejection medication.

Along with the islet transplant, the DRI is involved in several other projects, including conducting trials of a synthetic mini-organ, known as the BioHub, which it developed. The synthetic organ can house insulin-producing cells, mimicking the function of a healthy pancreas.

The DRI also is working on replacing a malfunctioning pancreas with a healthy set of islet cells that produce insulin. Working with donor cells, the DRI and its partner centers have successfully performed 43 islet-cell transplants in the United States.

One of those transplants went to Randi Fibus-Caster, 57, of Boca Raton, who was diagnosed with Type 1 diabetes when she was 5. Before she received her first transplant in 2006 of islet cells and bone marrow, which keep the islet cells from dying, Fibus-Caster lived in and out of hospitals. Because her blood sugar was unregulated, she had major highs and lows, which led to several car accidents and emergency medical services regularly at her door.

She called her life before the transplant “a game of Russian roulette.” In addition to uncontrolled blood sugar, diabetes can affect blood flow and damage muscle tissue, often resulting in weakness, spasms and poor balance. She would routinely fall and often wore bangles and bracelets to alert people of her falls.

For years, she went to the doctor every three months carrying a notebook filled with +2 or +4 urine strip measurements until blood tests became available when she was 13. By the time she was 50, she had pricked herself more than 68,985 times to test her blood sugar.

“My whole life before I had my transplant was iffy,” Fibus-Caster said. “My blood sugar, when it was low, it was serious, and when it was high it was serious.”

After receiving that first transplant in 2006, she went through two more transplants, one in 2008 and another in 2010. She’s been insulin-free for the last four years. Ricordi performed the three transplants.

Fibus-Caster knows that until a cure is found, there are no guarantees.

“It’s just like a cancer survivor or anybody else — it’s only temporary,” she said. “Until something else happens, this is perfect.”

Today, she takes anti-rejection medication to help her body accept the donor’s islet cells.

“I’m lucky that I haven’t taken insulin for four years. It’s not luck, it’s a part of the research,” she said. “I’m still a diabetic, [but] a healthy one.”