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U of M receives $40 million for type 1 diabetes research

Gift will help make a cure reality

December 11, 2008 —The Richard M. Schulze Family Foundation has pledged $40 million for diabetes research to the University of Minnesota. The gift, to be paid over five years, will capitalize on the University's strength in diabetes research and aims to shorten the timeline for translating it into a cure for people with type 1 diabetes.

The gift is the second largest in the University's history and the second largest by an individual or family foundation to diabetes research in the United States. In recognition of the gift and the future of diabetes research, the University will rename its Diabetes Institute for Immunology and Transplantation (DIIT) the Schulze Diabetes Institute.

"We have the capacity to cure this devastating disease and help people enjoy a happy and productive life no longer constrained by diabetes and constant fears and worries," says Bernhard Hering, M.D., an internationally recognized diabetes researcher and scientific director of the Schulze Diabetes Institute. "Curing type 1 diabetes is possible. We only need to declare it possible, engage the brightest minds, be contagiously committed, and break all barriers. This gift is breaking big barriers by boosting resources, raising awareness, and injecting a sense of urgency and responsibility."

A history of success

Researchers have had success reversing diabetes with human islet cell transplants, but because of the severe shortage of donor organs and the challenges of immunosuppression, few have benefited from this experimental treatment. University researchers have sought a cure for type 1 diabetes through developing both an abundant supply of islet cells and better and safer immunosuppressant techniques.

In 1974, a team led by David Sutherland, M.D., Ph.D., director of the Schulze Diabetes Institute and founder of the former DIIT, was the first to perform a human islet transplant. Since then, Sutherland, Hering, and others have established the protocol standard for human islet transplantation.

They are continually improving outcomes by refining the process to minimize the number of cells used and the need for immunosuppressive drugs. Nearly 90 percent of patients who have undergone the procedure through clinical trials are now insulin-independent.

Pam Dallmann of Tomahawk, Wisconsin, is one of them. Diagnosed with type 1 diabetes at age 6, Dallmann had dealt with complications of the disease for most of her life. When she was in the eighth grade, she fell into a 10-day diabetic coma. She had a difficult time sensing when she had low blood sugar, which resulted in many 911 calls. She was let go from a job because her condition was interfering with her work. And 10 years ago, diabetes caused her to lose sight in her right eye.

Then Dallmann found out about the islet transplant clinical trials at the University of Minnesota. She knew she wanted to participate if she was eligible, and in June 2002 Dallmann received a transplant of 66,000 islet cells

MULTIMEDIA

VIDEO: Schulze Diabetes Institute scientific director Bernhard Hering, M.D., and senior vice president for health sciences Frank Cerra, M.D., speak at the gift announcement on December 11.

ABOUT TYPE 1 DIABETES

A crippling and relentless disease, type 1 diabetes occurs in children and young adults when the immune system mistakenly destroys all insulin-producing islet beta cells in the pancreas. Insulin helps prevent high blood sugar levels, which can damage tissues such as nerves, kidneys, and eyes.

People with diabetes must regulate their blood sugar through multiple daily measurements and insulin injections or by continually infusing insulin through a pump. Even with intensive disease management, they are at risk of developing deadly complications.

FOR MORE INFORMATION

- University of Minnesota Diabetes milestones
- Schulze Diabetes Institute (formerly the Diabetes Institute for Immunology and Transplantation)

under Hering's direction. "Those little buggers are working," she says of the transplanted islet cells.

Insulin-free since August 25, 2002, Dallmann says her transplant has totally changed her life. She now enjoys boating with her husband, usually walks an impressive 12 miles a day, and can again be a daycare provider a couple of days a week.

"It's like you're given your life back again," she says. "Anyone out there who's thinking about doing this, don't hesitate. It is a life-changing experience—something you will never, ever regret doing."

Focused on finding a cure

With the Schulze family's gift, University physician-researchers hope they can help many more people with type 1 diabetes achieve insulin independence. Through pioneering work at the newly named Schulze Diabetes Institute, the Stem Cell Institute, the Center for Translational Medicine, and other critical University resources, three promising conceptual cures have been identified: human islet transplantation, pig islet transplantation, and stem cell–derived islet cells. The Schulze gift will support research focused on efforts to implement these cures.

"This transformative gift enables some of the world's best minds to aggressively pursue a cure for a disease that has an impact on millions of people worldwide," says University President Robert Bruininks. "I want to personally thank the Schulze family for their leadership, passion, and generosity. By focusing on such a widespread and devastating disease, they will transform not only lives, but the very nature of global health care."

The collaborative effort to advance these cures will be led by Hering and Meri Firpo, Ph.D., of the Stem Cell Institute, with support from the Center for Translational Medicine, directed by Bruce Blazar, M.D. The University will make the best of its resources to achieve this ambitious goal. The pledge is based on achievement milestones that have been established for each year of funding.

"The scientists, especially Drs. Hering, Firpo, and Blazar and their teams at the University have the passion, determination, experience, and knowledge to find a cure for type 1 diabetes," says Richard M. Schulze. "We felt the time was right to choose a direction that would advance to a cure in the next five years. The University of Minnesota, its president, and its board are committed to collaborating internally and externally to make it the center of excellence it needs to be to accomplish this goal."

Hering and his team have also successfully reversed diabetes in animal models using pig islet cells and have established a relationship with Spring Point Project, a nonprofit organization that raises medical-grade pigs to supply islets for transplantation. Hering's research team is currently developing a cell therapy to offset immunosuppression issues related to xenotransplantation (transplantation from one species to another).

Firpo is investigating the reprogramming of adult skin cells into stem cells that can generate islet cells. She also uses stem cells to study the development of the cells and tissues involved with the disease, with the hope that better understanding may lead to discoveries that would enable islet cell regeneration or prevent the islet cells from being destroyed in the first place.

"This gift gives us a significant opportunity to collaborate and bring different and very promising approaches to the same problem," Firpo says. "These synergies will help us find the best cure faster. Stem cells provide another source of islets for transplantation and offer us tremendous potential to conquer this complicated disease."

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