



Discoveries in *Diabetes*

A publication for those who support diabetes research, education, and care at the University of Minnesota through the Minnesota Medical Foundation

Saving cells

An innovative new collaboration pairs diabetes and cancer scientists

Scientist Meri Firpo, Ph.D., spends countless hours in her University of Minnesota lab intensely focused on stem cell research that could lead to a cure for type 1 diabetes.

But sometimes, she says, it's the ideas that arise outside of the lab—after work—that provide a fresh perspective on research questions and, ultimately, lead to new discoveries.

One of Firpo's latest diabetes research projects started with a conversation she had at a grad student recruiting party. Thanks to that chat, Firpo and University cancer biologist Anindya Bagchi, Ph.D., are teaming up to find a way to protect insulin-producing beta (or islet) cells—the ones damaged in diabetes.

"We know that in both cases of type 1 and late-stage type 2 diabetes, the cells that make insulin are damaged and die," Firpo says. "We might be able to find ways to block that cell death."

Learning from cancer research

Firpo, an assistant professor in the University's Stem Cell Institute and the Schulze Diabetes Institute, says that the key to her research with Bagchi is determining how cell death occurs and what stops it.

That's where the cancer research comes in.

"With cancer cells, they don't die," says Bagchi. "They keep growing and growing." So, if cancer illustrates accelerated cell growth, the opposite is accelerated aging—cells dying prematurely, he explains. This is what happens in diabetes.

In type 1 diabetes, a person's immune system no longer recognizes its own insulin-producing beta cells, which causes T-cells to kill them. In type 2 diabetes, the body becomes resistant to insulin—causing the beta cells to fail.

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Photo by Scott Strebler

Meri Firpo, Ph.D., and Anindya Bagchi, Ph.D., team up to protect beta cells, with the hope of ultimately preventing diabetes.

Saving cells *(continued from cover)*

“If you don’t take risks, you can’t discover.”

Anindya Bagchi, Ph. D.

Using mouse models, Firpo and Bagchi are studying the differences in cellular pathways that are activated in both healthy and dying beta cells. Their goal is to intervene and protect the beta cells.

If the technique proves successful, says Firpo, it could also be used to get beta cells to regenerate—providing an alternative to islet transplantation to treat type 1 diabetes.

“Ultimately, we would rather cure type 1 by getting the beta cells to grow back,” she says. “It would be better for patients if we could get the islets to regenerate instead of [resorting to] transplantation.”

Collaboration is key

Both Firpo and Bagchi say that cross-field collaboration is essential to research success and one of the perks of working at a world-class research University.

“The collaborative opportunity at the University is unbelievable,” Bagchi says. “The signature of a good problem is that it has multiple sides. You have to think non-linearly.”

Interdisciplinary collaboration makes that possible.

Crucial support for early ideas

Firpo’s and Bagchi’s project is so new, that Firpo’s lab is currently paying for it while the scientists seek other funding.

That’s not unusual; the newest, most inventive ideas are often the hardest to fund.

Most major funding agencies, such as the National Institutes of Health (NIH), support research that’s much further along and can demonstrate promising early results.

Firpo says her work with Bagchi is not yet at that stage. “This is something that might be higher risk [to fund], because it’s so new, but it could have a larger affect for people,” she says.

That’s why philanthropic support is so crucial, concludes Bagchi. “Even if it’s a small amount of money—it’s so helpful to get funding.”

“If you want to make an impact, you have to shake up the paradigm. If we don’t take risks, we can’t discover,” he says. “That’s where the breakthroughs come.”

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Lions' pride:

A symbolic partnership aims to solve diabetes

In the wild, lions rely on their prides—communities in the animal kingdom—for protection, food, and other types of support. Members of Minnesota Lions clubs foster that same sense of community by committing to causes that help others, such as cure-focused diabetes research.

The Minnesota Lions Diabetes Foundation, Inc. awarded a \$50,000 grant last fall to University of Minnesota scientists, expanding the group's commitment to diabetes research—specifically homing in on the study of kidney disease linked to type 2 diabetes.

Because diabetes is the most common cause of end-stage kidney disease, University researcher Luiza Caramori, M.D., M.Sc., Ph.D., says that if earlier markers of diabetic nephropathy can be found, preventive therapies could target patients at increased risk.

"We are studying the relationships between kidney structure and function in patients with diabetes. One of the goals is to compare these relationships between individuals with type 1 and type 2 diabetes," she says.

"The Lions' gift is a huge help—especially at a time when funding is more and more difficult," says Caramori. "The Lions' gift will provide us a rare opportunity to study precious research kidney biopsy materials. Hopefully, by better understanding the mechanisms associated with renal injury in diabetes, we can find ways to prevent and even cure kidney disease caused by diabetes."

This grant is just one of the many ways the Minnesota Lions have stepped up to support diabetes research at the University.

After learning years ago about the University's islet transplantation research led by Bernhard Hering, M.D., Duluth Lions Club member Larry Winner says he was energized and thought the Lions should be involved.

The Minnesota Lions went on to make a series of financial contributions to the University's

diabetes research (see the note below), and members also began serving as fundraising ambassadors.

Winner and other Minnesota Lions Diabetes Foundation trustees traveled around Minnesota and to several clubs in Northwest Ontario, motivating more than 570 Lions clubs to contribute to the University's diabetes research through pancake events, golf benefits, and more.

In recognition of the group's support, the MD5M Lions—which includes 676 clubs in Minnesota, Manitoba, and Northwest Ontario—will receive the American Diabetes Association's Stop Diabetes Act Award in May.

"I'm proud and amazed," says Winner, now vice chair of the Minnesota Lions Diabetes Foundation. "Thirteen years ago, I thought, 'What can I do as one person?' But it's been awesome to see how much we could accomplish."

—Karin Miller



Submitted photo

In the community: For more than 10 years, LaCrescent Lions in southeast Minnesota have hosted free diabetes screenings during the community's Applefest event in the fall. Each year they screen approximately up to 200 adults and children for diabetes.

Growth in giving

In 2010, the Lions' Foundation gave the University \$50,000 grant for supplies needed to custom-build islet imaging equipment. That's in addition to their support for the Spring Point Project, a University research partnership aimed at producing an unlimited source of islets for transplantation.

In 2011, the Lions also made a three-year \$250,000 pledge to fund improvements to the University's islet imaging laboratory, which in April will be named the Minnesota Lions Islet Imaging Laboratory. Look for a story about the impact of this gift in a future issue of *Discoveries in Diabetes*.

UNIVERSITY OF MINNESOTA

Minnesota Medical Foundation
McNamara Alumni Center
200 Oak Street SE, Suite 300
Minneapolis, MN 55455-2030

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**Golf Classic 'fore'
Diabetes Research**
June 18, 2012
Town & Country Club
St. Paul

This event benefits cure-focused type 1 diabetes research at the University of Minnesota's Schulze Diabetes Institute. Since its inception in 1996, Golf Classic and related efforts have raised nearly \$5 million.

Visit www.mmf.umn.edu/events/golfclassic for details. For information about participating as a golfer or sponsor, contact Katie Mae Pritchard at 612-625-5682 or kmp@mmf.umn.edu.



Working to conquer diabetes

The Decade of Discovery, a major initiative of the Minnesota Partnership for Biotechnology and Medical Genomics, has hired an executive director and awarded three research grants totaling \$1.86 million to bring the University of Minnesota and Mayo Clinic closer to the initiative's goal: finding a cure for diabetes.

David Etwiler, the Decade of Discovery's new executive director, has a background in leadership in the private health care sector, having served as vice president of community affairs and executive director

of the Medtronic Foundation. He also has experience securing government funding for large projects.

The state-funded grants awarded by the Partnership will support research led by University and Mayo Clinic co-investigators to create an artificial pancreas, develop anti-obesity drugs aimed at preventing type 2 diabetes, and explore immune-based diabetes treatments—work that will spearhead the Decade of Discovery's research programs in coming months.

"Using the resources from the Minnesota Partnership, we expect to see major advances in both diabetes treatment and prevention as a result of this work," says University endocrinologist and Decade of Discovery co-leader Elizabeth Seaquist, M.D.

The Minnesota Partnership for Biotechnology and Medical Genomics is a collaboration of the University, Mayo Clinic, and the state of Minnesota.

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Robyn White, *Editor/Writer*
Karin Miller, *Writer*
Lisa Haines, *juju Design*

For more information, please contact:

Jean Gorell, CFRE
Director of Development,
Diabetes
612-625-0497 (direct)
800-922-1663 (toll free)
j.gorell@mmf.umn.edu

Minnesota Medical Foundation
McNamara Alumni Center
200 Oak Street SE
Suite 300
Minneapolis, MN
55455-2030

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