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# COOL Research News



**W**hether you are newly diagnosed or have been living with type 1 diabetes (T1D) for a long time, JDRF is committed to improving the lives of every person affected by T1D. We want to accelerate the progress of research to provide better treatments, prevention, and ultimately a cure for T1D. We hope that you will enjoy reading about two exciting areas of research that have the potential to bring us closer to our goal.

## Keeping Beta Cells Young

As a kid, you know that you get better at doing a lot of things as you get older. But unfortunately, you don't get better at growing new beta cells, which are the insulin-producing cells in your pancreas. In fact, by the time you reach the age of 10 to 12 years, your beta cells have largely lost their ability to divide and produce new cells (a process called "regeneration"). Now, JDRF-funded researchers at Stanford University have identified a pathway that is responsible for this age-related decline in beta cell production and have shown that they can coax older beta cells into dividing as frequently as they did when they were younger.

It turns out that beta cells have docking stations on their surfaces, where messengers in the body can drop off cargo or deliver information. But as you get older, some of the docking stations shut down, making it harder for your body to deliver what your beta cells need. That's why these cells have a difficult time reproducing when they are older.

But that's not all! The scientists also have found a way to put in new docking stations after the others have closed, and now are working on a way to prevent those stations from shutting down in the first place—even as you get older. We hope you share in our excitement of the potential of these researchers' work to help develop drugs that could make older beta cells divide again. This may be part of a strategy to maintain a quantity of beta cells that is sufficient to restore insulin production in T1D.

## Alpha Cells to the Rescue

Everyone knows that a see-saw works best with two people—one on each end. In much the same way, your body needs two types of cells—alpha cells and beta cells—to respond to the ups and downs of blood sugar. When your blood sugar is too high, beta cells work by releasing the hormone insulin to bring it back down to a safe level. On the other hand, when your blood sugar is too low, alpha cells work by releasing the hormone glucagon to raise it up to a safe level. Normally, the two hormones work together to keep your blood sugar in balance.

But in T1D, beta cells are knocked off the see-saw, leaving the alpha cells without a counterweight. To rebalance the two sides, scientists want to turn some of the alpha cells into beta cells, but will the remaining alpha cells be able to do their job? Will they be able to carry the extra workload? JDRF-funded scientists showed that mice need only two percent of their alpha cells to keep blood sugar under control. When the other 98 percent are lost, the animals are still able to bring low blood sugar back up again.

We're encouraged by this research, because if scientists figure out how to turn those "extra" 98 percent of alpha cells into beta cells (a process called "reprogramming"), they may be able to restore your body's ability to keep blood sugar in balance. And that's great news to support a healthy and active life.

To find out more about T1D research, or how to get involved with JDRF in your community, visit [www.jdrf.org](http://www.jdrf.org).