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COOL Research News



Every day, JDRF leverages the expertise and innovation of distinguished researchers from across the globe to support research for life-changing treatments and ultimately a cure for type 1 diabetes (T1D). Our aim is to progressively reduce the burden of the disease on people's lives until we can achieve a world without T1D. Please enjoy reading about some of the ways that we are working tirelessly to make that happen.

Dietary Fat Impacts Insulin Requirements

Dietary fat is essential for human health—a key source of metabolic energy and an important cellular building block. But for people with T1D, meals high in dietary fat can affect blood-glucose levels and insulin requirements, according to a recent study by JDRF-funded researchers at Joslin Diabetes Center in Boston.

Previous research has shown that dietary fat can impair insulin sensitivity and increase glucose production. However, many of those studies focused on type 2 diabetes. This trial focused only on T1D. By reviewing continuous glucose monitoring and food-log data from adults with T1D, the researchers determined that “several hours after eating high-fat meals, glucose levels went up,” says Howard Wolpert, M.D., senior physician in the Joslin Clinic Section on Adult Diabetes and director of Joslin’s Insulin Pump Program.

More insulin was required in participants who ate a high-fat dinner than those who ate a low-fat dinner. In fact, the average increase in insulin required was 42 percent for the high-fat dinner group. Even with the increased insulin, participants experienced greater hyperglycemia after the high-fat dinner with insulin levels elevated 5 to 10 hours after the meal.

The study has major implications for the management of T1D, because it highlights the limitations of basing mealtime insulin dosing for T1D solely on carbohydrate intake. “We need to consider fat as well as carbohydrates in insulin dosing calculations as well as in nutritional recommendations,” says Dr. Wolpert.

First Encapsulation Consortium Meets

For people living with T1D, establishing insulin independence by implanting insulin-producing beta cells into the body would be life changing. But a challenge to this potential therapy lies in the body’s immune system, which recognizes the implanted beta cells as foreign invaders and subsequently attacks them. To overcome this obstacle, researchers are working to build a shield around the cells in an approach referred to as encapsulation. Now, JDRF is bringing together scientists and researchers from 27 institutions to accelerate this technology through the newly formed JDRF Encapsulation Consortium.

The inaugural meeting of the JDRF Encapsulation Consortium was held March 14 in New York City with the purpose of supporting a collaborative group of key players in science, engineering, and medicine to share their research to advance encapsulation technology. The ultimate goal of the consortium is to develop a product that will hide implanted beta cells from the immune system or make the immune system accept the cells and that will also provide an environment in which the cells can function normally—sensing a person’s blood-glucose levels and releasing the correct amount of insulin at the appropriate times—to allow people with T1D to live life as if they don’t have the disease.

“JDRF is investing in a diverse portfolio of different approaches and technologies, and we want to continue to build the pipeline of encapsulation technologies,” says Albert Hwa, Ph.D., senior scientific program manager of beta cell therapies at JDRF. “The consortium will facilitate collaboration and sharing of information to drive progress in this area.”

To find out more about T1D research, or how to get involved with JDRF in your community, visit jdrf.org.