

JDRF's Glucose Control research aims to establish tight blood glucose (or blood sugar) control for people at all stages of type 1 diabetes, from those who have been recently diagnosed to those who have been living with the disease for a long time. Tight glucose control improves quality of life, reduces the risk of developing complications, and helps other therapies work more effectively.

## JDRF's Glucose Control Priority Programs

JDRF prioritizes two lines of research that have high potential to improve the lives of people with diabetes in the near-term. The first is the development of a closed-loop artificial pancreas, a device that will revolutionize diabetes care by enabling people to achieve tight blood sugar control while avoiding dangerous lows and highs, reducing the risk of the disease's devastating complications. The second is the development of novel insulins that are faster acting, glucose-responsive, and easier to use and manage than existing options. In addition to these priority areas, JDRF will also fund science to identify new drugs to improve glucose control, minimize or prevent hypoglycemia, and restore hypoglycemia awareness.

## Specific Research Goals

JDRF has developed a specific set of goals for Glucose Control and the rest of our therapeutic areas. These goals are guiding every decision we make about where to direct our funds and energies to bring results as quickly as possible. For Glucose Control, our goals include:

- Developing strategic partnerships with industry to accelerate the development of an artificial pancreas.
- Evaluating the effectiveness of continuous glucose monitors (CGMs) in a JDRFI-sponsored human clinical trial of the devices.
- Developing the complex formulas that will enable continuous glucose monitors to "communicate" with insulin pumps to achieve tight blood glucose control.
- Designing and launching a clinical trial to test approaches to preventing low blood sugar.
- Completing a clinical trial of a drug that can treat metabolic stress in the insulin-producing beta cells.
- Launching a clinical trial of the first-generation artificial pancreas prototype.

## Glucose Control Research Facts

**JDRFI Funding:** \$5.9 million (U.S.); 6 per cent of all FY09 funding

**Human Clinical Trials:** 7

## What Will Your Support Mean?

Your support of JDRF's Glucose Control research will accelerate progress toward the development of an artificial pancreas and of novel insulins and other methods to help people with type 1 diabetes achieve tight blood glucose control and reduce their risk for complications.

## Recent Research Progress

- JDRFI announces partnership with Animas Corp. to develop an automated insulin delivery system—a first-generation artificial pancreas.
- JDRFI enters partnership with Becton Dickinson and Co. to develop novel insulin-delivery products that enhance the use of insulin pumps.
- Over the past year, four separate studies document the benefits of CGM devices—including a landmark clinical trial that demonstrates they improve blood sugar control. Several major insurers decide to cover CGMs.
- Boris Kovatchev, a JDRFI-funded scientist working to create an artificial pancreas, is named a "medical pioneer" by U.S. News & World Report in June 2009.
- Study finds metabolic disturbances may precede autoimmunity, opening a potential window for strategies to prevent type 1 diabetes.
- JDRFI funds the development of SmartInsulin, a "selfregulating" insulin administered just once a day designed to maintain continuous, tight control of blood sugar while reducing the risk of life-threatening hypoglycemia. ■