

Research Progress Report

Therapeutic Area: Glucose Control Key Advances Spring 2010

Thanks to the generous support you and other donors have provided, JDRF's Glucose Control research program has made significant advances in recent months. This therapeutic program aims to develop multiple approaches for restoring tight blood glucose control for people at all stages of type 1 diabetes, to improve quality of life, reduce the risk of complications, and help other therapies work more effectively. One of the key goals of the program is to create a commercially viable artificial pancreas. By enabling people with type 1 diabetes to achieve superior blood glucose control, and therefore maintain or improve their overall health, the artificial pancreas would also give them the best possible chance to fully benefit from a biological cure when it is found. We rely on supporters like you to move this work along as rapidly as possible. Below are highlights of the recent advances you have helped make happen.

Driving Towards an Artificial Pancreas

JDRF's Artificial Pancreas Project (APP) continues to make momentous progress toward the development of an artificial pancreas, a device that can reduce the risk of complications and help to ease the daily burdens of type 1 diabetes. In January, JDRF announced an innovative, non-exclusive partnership with Animas Corporation to develop an automated insulin delivery system – a first-generation artificial pancreas – that will help people with type 1 diabetes better control their disease; Animas is a Johnson & Johnson company and a leading pump manufacturer. Only a week later, JDRF announced a second partnership, this time with BD (Becton, Dickinson and Company), a leading global medical technology company, aimed at developing novel insulin delivery products to enhance insulin pumps. Advances in pump technology will not only lead to improved glucose control but can potentially be incorporated into an artificial pancreas, either those developed by Animas or by other companies committed to finding cures and treatments for type 1 diabetes. Most recently, in a landmark study in children and teenagers with type 1 diabetes, JDRF-funded researchers at the University of Cambridge showed that using a first-generation artificial pancreas system overnight can lower the risk of low blood sugar emergencies while sleeping and at the same time improve diabetes control.

What this means for people with type 1 diabetes: These developments represent a giant step on the path to achieving an artificial pancreas, a fully automated system that can dispense insulin to patients based on real-time changes in blood sugar levels. Even the earliest systems could bring dramatic changes in the quality of life for the three million people in the U.S. with type 1 diabetes.

Regular CGM Use Increases Control in All Age Groups, Enables Good Control Long-Term

Two more JDRF-funded continuous glucose monitor (CGM) studies have shown that CGM use is beneficial. One study found that regular CGM use – six days per week or more – is the key factor in achieving better diabetes control, more important than the age of the user or other demographic, clinical, or psychosocial factors. The second study found that people who continued using a CGM achieved good glucose control while experiencing a lower incidence of hypoglycemia – the dangerous low blood sugar episodes that can occur with tightly managed type 1 diabetes.

What this means for people with type 1 diabetes: The results underscore the importance of continued research into a closed-loop artificial pancreas, a system that uses CGM technology as one of its key components. There are now four separate publications documenting the benefits of CGM devices.

To stay up-to-date on the latest JDRF-funded advances, please visit www.jdrf.org.