

The U.S. National Institutes of Health support diabetes research at the IRCM

The NIH grants over \$2.5 million for Canadian research on the artificial pancreas

Montréal, August 26, 2015 – A Canadian research team working on the development of an external artificial pancreas is receiving a grant of \$2,509,367 USD from the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) of the U.S. National Institutes of Health (NIH). The objective of the project, which will be led by Dr. Rémi Rabasa-Lhoret at the IRCM (Institut de recherches cliniques de Montréal), is to compare the effectiveness of the single-hormone (insulin alone) artificial pancreas, the dual-hormone (insulin and glucagon) artificial pancreas, and conventional insulin pump therapy for the treatment of type 1 diabetes.

“Most patients with type 1 diabetes show difficulty in maintaining their glucose levels within recommended target ranges,” says Dr. Rabasa-Lhoret, endocrinologist and clinical researcher at the IRCM. “High blood glucose can lead to devastating complications such as blindness, kidney failure and heart disease, while low blood glucose can cause malaise and even comas. The artificial pancreas has a great potential to improve glucose control by reducing both high and low glucose levels, which should consequently improve health outcomes and patients’ quality of life.”

Previous studies have demonstrated the artificial pancreas can prevent hypoglycemia and decrease mean glucose levels. The recent development of a portable automated artificial pancreas has facilitated the transition from short-term studies to larger outpatient studies. The funded project aims to compare the three treatment methods and their ability to regulate day-and-night glucose levels for up to 15 weeks in adults and children with type 1 diabetes.

“While the dual-hormone artificial pancreas has the potential to further reduce the risk of hypoglycemia compared to other therapies, quantifying the benefits provided by glucagon is especially important to determine whether they outweigh the reduced costs, use and system complexity provided by single-hormone therapy,” explains Dr. Rabasa-Lhoret. “Our study will provide a head-to-head comparison of the different treatment options, using a large sample size over a longer period of time.”

“I would like to congratulate Dr. Rabasa-Lhoret and his team for this great success, and I am very proud that they are among the recipients of this prestigious NIH grant competition,” says Tarik Möröy, PhD, the IRCM’s President and Scientific Director. “By combining research activities with a specialized outpatient clinic, the IRCM provides an ideal environment for such a promising project. As the leading Canadian team working on the development of an external artificial pancreas, these researchers are contributing to making a significant difference in the lives of people with type 1 diabetes. Their study represents an important step in making this technology available to the general public in the near future.”

“Development of the artificial pancreas has the potential to improve the lives and health of people with type 1 diabetes,” says Dr. Guillermo Arreaza-Rubín, the Diabetes Technology Program Director at the NIDDK. “This project will provide information comparing the risks and benefits of three approaches to glucose control in people with type 1 diabetes.”

The project *Comparison of dual-hormone artificial pancreas, single-hormone artificial pancreas, and sensor-augmented pump therapy in outpatient settings* will receive funding for a period of four years. This grant (grant number 1 DP3 DK106930-01) will be supported by the Special Statutory Funding Program for Type 1 Diabetes Research. Through this program, the NIDDK seeks to accelerate the pace of scientific research towards prevention, more effective treatment, and cure of type 1 diabetes.

An emerging technology to treat type 1 diabetes, the external artificial pancreas is an automated system that simulates a functional pancreas by using pumps to continuously adapt hormone delivery based on changes in glucose levels, which are measured by glucose sensors. The technology should be available commercially within the next five to seven years.

Dr. Rabasa-Lhoret's artificial pancreas research program is also supported by the Fondation J.A. DeSève, the IRCM Foundation, the Canadian Diabetes Association, JDRF, the Canadian Institutes of Health Research, Diabetes Québec, the Société francophone du diabète and the CMDO Network (Réseau de recherche en santé cardiométaboliques, diabète et obésité).

About Rémi Rabasa-Lhoret

Rémi Rabasa-Lhoret completed his doctoral degree (MD) with a specialization in endocrinology, metabolism and nutrition at the Université Montpellier in France. He then obtained a PhD in food sciences, and completed a postdoctoral fellowship in physiology and molecular biology. At the IRCM, Dr. Rabasa-Lhoret is Director of the Metabolic Diseases research unit; Director of the Diabetes, Metabolism and Obesity clinic; and Director of the research platform on obesity, metabolism and diabetes. He is an associate professor in the Department of Nutrition at the Université de Montréal. He is also adjunct professor in the Department of Medicine (Division of Experimental Medicine) at McGill University. Dr. Rabasa-Lhoret is a Clinical Research Scholar from the Fonds de recherche du Québec – Santé and holds the J.A. DeSève Chair in clinical research. He ensures the care of several hundred adult patients with diabetes. Dr. Rabasa-Lhoret has published numerous scientific articles and has received several awards. His research focuses on the development of new therapeutic approaches to treat type 1 diabetes and, more specifically, on the development of an external artificial pancreas, as well as on diabetes associated with cystic fibrosis. For more information, visit www.ircm.qc.ca/rabasa or www.ircm.qc.ca/pancreas.

About the IRCM

The IRCM (www.ircm.qc.ca) is a renowned biomedical research institute located in the heart of Montréal's university district. Founded in 1967, it is currently comprised of 35 research units and four specialized research clinics (cholesterol, cystic fibrosis, diabetes and obesity, hypertension). The IRCM is affiliated with the Université de Montréal, and the IRCM Clinic is associated to the Centre hospitalier de l'Université de Montréal (CHUM). It also maintains a long-standing association with McGill University. The IRCM is funded by the Quebec ministry of Economy, Innovation and Export Trade (Ministère de l'Économie, de l'Innovation et des Exportations).

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For more information or to schedule an interview with Dr. Rémi Rabasa-Lhoret, please contact:

Julie Langelier, Communications Coordinator (IRCM)
julie.langelier@ircm.qc.ca | (514) 987-5555