



PRESS RELEASE

For immediate release

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CHEO Research Institute Study Uses Sophisticated Genetic Engineering to Improve Insulin-producing Beta Cells

OTTAWA – One of the biggest mysteries about diabetes is why specialized cells in the pancreas stop secreting insulin, which the body needs in order to store glucose from food. A team from the Children’s Hospital of Eastern Ontario (CHEO) Research Institute has identified a protein that inhibits insulin production in mice -- work that offers a new way of understanding, and perhaps of one day treating, both Type 1 and Type 2 diabetes.

A study to be published today in the leading international journal **Cell Metabolism** describes how a research group led by Dr. Robert Screaton, who holds the Canada Research Chair in Apoptotic Signaling at the University of Ottawa, used sophisticated genetic engineering to remove or ‘knock out’ the Lkb1 gene from beta cells of laboratory mice. The result was an increase in both the size and number of beta cells, as well as greater amounts of insulin stored and released by the cells.

Importantly, the improved beta cell function lasted for at least five months, even in mice fed a high-fat diet designed to mimic the high caloric intake associated with Metabolic Syndrome and Type 2 diabetes in humans.

“We were surprised by the impressive accumulation of Lkb1 in beta cells of diabetic mice, which suggested that Lkb1 might contribute to their impaired function. After removal of the Lkb1 gene, the beta cells grow larger, proliferate more, and secrete more insulin. It’s a one-stop shop for the much needed insulin”, said Dr. Screaton. “The knockout mice on a high-fat diet have lower blood glucose. If this observation is confirmed in

humans, it may give us another clue into the development of Type 2 diabetes, and perhaps new treatment options”.

“Type 1 and 2 diabetes, already common diseases, are showing disturbingly steady growth in incidence. The two conditions are among Canada’s, and indeed the globe’s, greatest health challenges,” said Dr. Alex MacKenzie, CEO of the CHEO Research Institute and a physician who treats children with diabetes at CHEO. “The findings of Dr. Sreaton’s team introduce a novel and unanticipated potential therapeutic avenue for this costly and serious condition. It is some of the most important work to come out of our institute.”

Contributors to the study were lead author Accalia Fu, Andy Ng, and Dr. Chantal Depatie of the CHEO Research Institute; Dr. Gen-Sheng Wang, Dr. Fraser Scott, Ying He, and Dr. Rhian Touyz of the Ottawa Hospital Research Institute; Nadeeja Wijesekara and Dr. Michael Wheeler of the University of Toronto; and Dr. Nabeel Bardeesy of Harvard University.

The work was supported by grants from the Canadian Institutes of Health Research and the Canadian Foundation for Innovation.

About the CHEO Research Institute: Established in 1984, the [CHEO Research Institute](#) coordinates the research activities of the Children's Hospital of Eastern Ontario (CHEO) and is one of the institutes associated with the University of Ottawa Teaching Hospitals. The Research Institute brings together health professionals from within CHEO to share their efforts in solving paediatric health problems. It also promotes collaborative research outside the hospital with partners from the immediate community, industry and the international scientific world.

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For more information please contact :
CHEO Media Relations: 613-737-2343