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Researchers find new pathway connected to type 2 diabetes

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Scientists at the Children's Hospital of Eastern Ontario (CHEO) Research Institute have discovered a cellular pathway that is responsible for keeping blood sugar levels low in obese or pre-diabetic people, and may prevent the onset of Type 2 diabetes. The discovery published this month in a leading journal *Nature Cell Biology*.

Following a meal, beta cells found in islets of the pancreas secrete insulin that helps to store food energy for future use. The inability of islet beta cells to produce enough insulin leads to diabetes. Unlike other research that has focused on how to replicate beta cells, this study focused on how to make pre-existing beta cells more functional, or better at secreting insulin.

The research team, led by Canada Research Chair Dr. Robert Screaton, senior scientist at the CHEO Research Institute and associate professor at the University of Ottawa, started with a gene "knockout" strategy to remove a protein called SIK2 from all beta cells. They found that mice without SIK2 secrete less insulin during feeding because they fail to turn off a switch protein called p35, which prevents insulin secretion when blood sugar levels are low. The team also found that SIK2 works together with the protein PJA2 to turn off p35.

"We were very excited when we found obese animals had three times the amount of SIK2 in their beta cells, meaning they were working harder to compensate for high blood sugar by turning up SIK2," said Dr. Screaton. "Diabetic mice have lost this ability to turn up SIK2 and compensation is

lost. The SIK2-p35-PJA2 pathway provides us with new targets to try and improve beta cell functionality to prevent and treat Type 2 diabetes."

More information: www.nature.com/ncb/journal/v16 … n3/full/ncb2919.html

Provided by Children's Hospital of Eastern Ontario Research Institute