

# Could turning on a gene prevent diabetes?

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Type 2 diabetes accounts for 90 % of cases of diabetes around the world, afflicting 2.5 million Canadians and costing over 15 billion dollars a year in Canada. It is a severe health condition which makes body cells incapable of taking up and using sugar. Dr. Alexey Pshezhetsky of the Sainte-Justine University Hospital Research Center, affiliated with the University of Montreal, has discovered that the resistance to insulin seen in type 2 diabetics is caused partly by the lack of a protein that has not previously been associated with diabetes. This breakthrough could potentially help to prevent diabetes.

"We discovered that Neu1, a protein nicknamed after "[neuraminidase 1](#)", turns the absorption of sugar "on" or "off" in body cells, by regulating the amount of sialic acid on the surface of cells", Dr. Pshezhetsky explains.

"We are now trying to find a way to restore Neu1 levels and function in diabetes. If we can remove sialic acid residues from the cell surface, this will force the [insulin receptor](#) do its job of absorbing blood sugar properly. This could give doctors an opportunity to reduce the use of [insulin therapy](#), and might help to reduce the diabetes epidemic, says Dr. Pshezhetsky.

The results of his study done on cells and mice were published this month in the journal *Diabetes*. Dr Pshezhetsky and his team are now testing their results in diabetic patients.

Although [type 2 diabetes](#) is initially treated with diet, exercise and

tobacco avoidance, doctors try to restore normal levels of insulin by prescribing it when this fails. The number of cases diagnosed around the world continues to grow incredibly quickly: according to the United States Center Disease Control, cases in that country grew on average by 82% between 1995 and 2010. In Oklahoma, the number increased by 226%. The disease accounts for 90% of diabetes cases around the world, and its prevalence has increased in parallel with the [obesity epidemic](#). Obesity is in fact thought to cause this disease which can in turn lead to heart disease, strokes and even limb amputation due to poor circulation.

Provided by University of Montreal

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