

# Scientists closer to diabetes cure

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Scientists have coaxed immature pancreatic cells to produce insulin in mice, a result that could lead to a cure for type one diabetes in humans.

The research has been published in today's edition of *Cell*.

Scientists based in Europe and the United States discovered a gene that transforms immature pancreatic 'progenitor' cells into beta cells.

Beta cells produce insulin, but are destroyed by the immune system in diabetics.

Diabetes researcher Dr Dorota Pawlak, of the Juvenile Diabetes Research Foundation, says the scientists identified the over-expression of the gene Pax4 as being responsible for the conversion.

The study found the Pax4 gene also converted pre-existing adult alpha cells into beta cells.

Alpha cells produce glucagon, a hormone that has the opposite function of insulin by raising blood sugar levels when they are low.

She says the beta cells produced by the Pax4 gene were fully functioning and the blood sugar levels in the mice remained normal.

## Diabetic reversal

Dr Pawlak says once the researchers established that Pax4 was responsible for beta cell production they injected the mice with streptozotocin, to chemically induce diabetes.

"They wanted to see if the process would still exist in a mouse that is diabetic," she said.

She says initially the mice became ill from high blood glucose levels.

But with time, new beta cells formed and the mice ceased being diabetic, says Dr Pawlak.

"Having expression of the Pax4 gene meant [the mice] were capable of restoring a functional beta cell mass, when they had an [initial] depletion of beta cells."

Professor Grant Morohan, of the Western Australian Institute of Medical Research, says the exact mechanism of how beta cells are formed still is not known.

"This is an extra piece in that puzzle," he said.

According to Morohan, approximately 130,000 Australians have type one diabetes.

He says that while the research is promising, its application in humans is a long way off.

"It does offer the possibility that there's a way to regenerate beta cells within a person who has type 1 diabetes," he said.

Dr Pawlak says Pax4 may now become a target for future therapeutics in the area.

"If we can confirm that this particular gene is also important in the human development of beta cells, we can target that particular gene and hopefully help people with type one diabetes to restore beta cells and their insulin production."