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Japanese Scientists Try to Grow Human Organs in Pigs for Transplants

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A professor at the University of Tokyo and Stanford University in the United States, Nakauchi will conduct the tests at Stanford, the findings of which may be used in regenerative medicine within five to 10 years.

His laboratory will use pluripotent stem (iPS) cells which have the capacity to convert into any kind of tissue and then develop into complete organs.

The first step is to introduce human iPS cells engineered to grow pancreatic tissue, for example, in a pig embryo that was modified to lack the corresponding organ, in this case, a pancreas.

The embryo would then be implanted into a female pig, which would carry the embryo to term with a fully developed human pancreas.

Nakauchi has already managed to use pig iPS cells to develop a pancreas in a pig engineered not to have one.

According to the scientist, the technique would not be used for a total pancreas transplant, but only to transplant pancreatic islet cells, an easier technique than that currently used by diabetics.

Once transplanted, islet cells can begin producing insulin that helps regulate blood sugar levels.

Nakauchi's experiments are similar to those currently being carried out by Spanish biochemist Juan Carlos Izpisua at the Salk Institute in La Jolla, U.S., who is also working to introduce human stem cells in pig embryos to grow other cells that can be used for transplantation.