

New non-invasive method for studying the development of insulin-producing cells

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Researchers at Karolinska Institutet and Nanyang Technological University in Singapore have produced a unique method for monitoring the development of insulin-producing cells, which play a key part in regulating blood glucose concentration. The method, which is described in the journal *Diabetologia*, might prove to be step on the way to one day manufacturing insulin-producing cells in the laboratory.

The [pancreatic beta cells](#) produce insulin, the hormone that regulates the body's [blood sugar levels](#), and the partial or total loss of their functionality causes diabetes. To understand how our insulin-producing beta cells are formed, they must be studied in vivo; one of the difficulties with this, however, is that the tissue where they reside is so hard to access.

The researchers behind the current study have developed a unique method that is able to circumvent this obstacle by enabling scientists to monitor in detail how the beta cells develop from the embryonic stage to adult, functional cells in mice. In their study, the team shows that tissue from the mouse embryo, when transplanted to the anterior chamber of the eye, quickly establishes itself with a healthy supply of blood vessels. By using the cornea as a natural window into the body and a fluorescing marker for beta cell growth, the researchers are able to non-invasively monitor their [development](#) under a microscope. The researchers report that the embryonic tissue develops into fully functional, mature, insulin-secreting cells.

A valuable tool

"This means that we now have a [valuable tool](#) for studying the development of the hormone-secreting part of the pancreas and establishing in detail how this process is regulated at a molecular level," says study leader Per-Olof Berggren, professor at the Rolf Luft Research Centre for Diabetes and Endocrinology at Karolinska Institutet's Department of Molecular Medicine and Surgery. "This is highly significant and means that we one day might be able to stimulate the development of fully functional [beta cells](#)."

More information: The anterior chamber of the eye is a transplantation site that supports and enables visualisation of beta cell development in mice. *Diabetologia*. 2016 Feb 4. [Epub ahead of print] www.ncbi.nlm.nih.gov/pubmed/26847769

Provided by Karolinska Institutet

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