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Use of genetically-engineered pig donors in islet transplantation

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Abstract

Type 1 diabetes (T1D) is an autoimmune disease wherein the pancreas does not produce enough insulin due to islet beta cell destruction. Despite improvements in delivering exogenous insulin to T1D patients, pancreas or islet transplantation remains the best way to regulate their glycaemia. Results from experimental islet transplantation have improved dramatically in the last 15 years, to the point where it can be comparable to pancreas transplantation, but without the accompanying morbidity associated with this procedure. As with other transplants, the limiting factor in islet allotransplantation is the relatively small number of organs made available by deceased human donors throughout the world. A strong case can be made for islet xenotransplantation to fill the gap between supply and demand; however, transplantation across species presents challenges that are unique to that setting. In the search for the most suitable animal for human xenotransplantation, the pig has many advantages that make it the likely animal

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