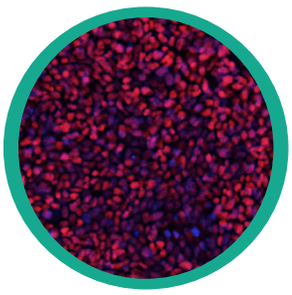
DefiniGEN

DefiniGEN pancreatic beta cells wild-type



The Def-PANC cell products are highly functional iPS-derived pancreatic cells. Yamanaka iPS technology in combination with fully defined differentiation conditions enable the generation of standardized populations of pancreatic cell products. Through a 25 day differentiation process the cells proceed through key developmental stages ultimately producing functional pancreatic cells.

Monolayer culture

Def-PANC WT cells can be grown in monolayer or they can be conveniently cultured as microislets which resemble primary human pancreatic islets in structure and function. The cells are available for key applications including drug discovery and diabetes research. The continual supply of Def-PANC WT cells enabled by iPSC technology ensures that clients do not encounter supply issues often associated with fresh human beta cells.

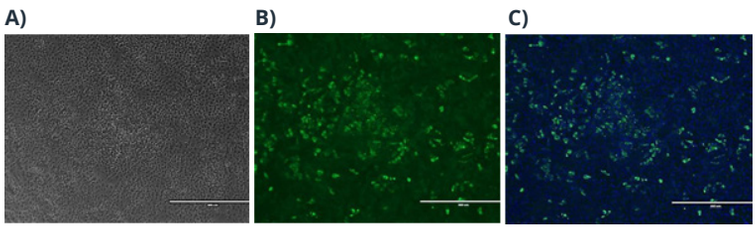


Figure 1. Pancreatic cell type distribution in monolayer. When grown in standard laboratory 96 well plates Def-PANC cells show typical tightly-packed pancreatic cell morphology (A) and a high proportion of C-peptide secretion from beta cells (green) (B). Panel C depicts DAPI staining of nuclear DNA (blue) as well as c-peptide (green).

Microislet formation

When grown on 96 well low adherent plates the Def-PANC cells aggregate and form microislet structures of similar size to primary human islets (Figure 2).

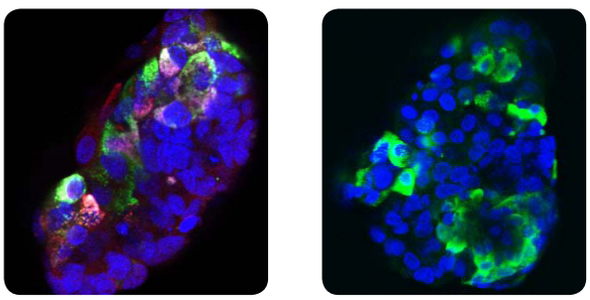


Figure 2. Immunostaining analysis of Def-PANC cells. Microislet formation of Def-PANC in low adherent plates. Insulin secreting beta cells (green) are the dominant cell population observed alongside lower populations of glucagon and somatostatin expressing cells (size 100 - 150 µm)

DefiniGEN's wild-type beta cells are generated using human Induced Pluripotent Stem Cell (hISPC) technology. The resulting cells display a robust Glucose Sensitive Insulin Secretion (GSIS) response over a range of physiologically relevant glucose concentrations and exhibit an elevated GSIS response to key reference drugs in a similar manner to primary human pancreatic islets.

Glucose stimulated insulin secretion assay

A robust GSIS response is observed in Def-PANC cells when thawed from a cryopreserved vial in 96 well low adherent plates and grown as islet-like structures. They have also demonstrated a dose-dependent response to well-known secretagogues such as GLP-1 and Exenatide.

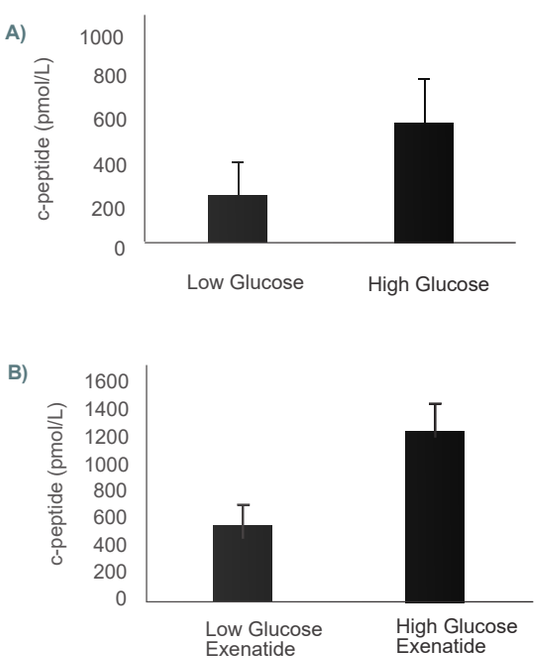


Figure 2. A) GSIS assay results for Def-PANC cells stimulated with low and high concentrations of glucose only. (B) GSIS response of Def-PANC cells stimulated with low and high concentrations of glucose and exenatide. Low glucose concentration 1.6mM, high glucose concentration 16.7mM, exenatide concentration 25nM.

Microislet formation

Def-PANC cells express the insulin gene at very similar levels to primary human pancreatic islets.

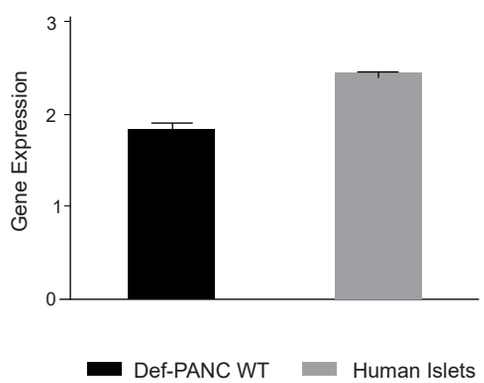


Figure 1. Insulin gene expression marker analysis observed in Def-PANC cells thawed from a cryopreserved vial in 96 well low adherent plates and cultured as microislets.

References:

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