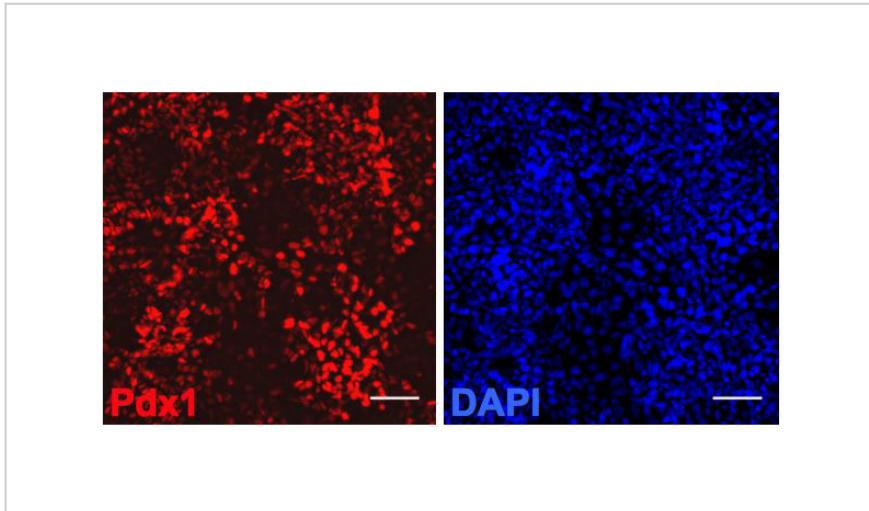


Generation of Human Pancreatic Progenitors from Pluripotent Stem Cells

ID# 2018-4800



Differentiation to PDX1 + PP Cells

Technology Summary

Penn State researchers have recently developed small molecule-based methods of using human pluripotent stem cells (hPSCs) as a source to generate pancreatic progenitors (PPs) and insulin-producing beta cells for disease modeling and treatment of type 1 diabetes (T1D). Several multistep differentiation protocols designed to mimic *in vivo* pancreatic organogenesis have been successfully developed for pancreatic differentiation without the need of growth factors to guide cell differentiation. Accordingly, this technology allows for large-scale and cost-effective production of quality-controlled PPs and beta cells from hPSCs for use in cell therapy and drug discovery in chemically defined, growth-factor-free differentiation systems. The picture above illustrates growth-factor-free differentiation of hPSCs to PDX1 + PP cells.

Application & Market Utility

The present invention is a growth-factor free protocol that generates PP cells by optimizing the definitive endoderm (DE) differentiation under growth-factor-free conditions, followed by growth-factor-free differentiation of DE cells to PP cells. Furthermore, this invention is robust and efficient for multiple hPSC lines. As a result, this technology enables cost-effective and reproducible production of pancreatic cells with high efficiency suitable for cell therapy, drug discovery, research, and/or diabetes treatment.

Next Steps

Seeking research collaboration and licensing opportunities.

TECHNOLOGY READINESS LEVEL

1-3

Seeking

Investment | Licensing | Research

Keywords

- stem cell
- pancreatic progenitor
- diabetes

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