

Project #6

Title: Generation of insulin-secreting beta cells from human induced pluripotent stem cells

Description: The generation of insulin-secreting beta cells from human pluripotent stem cells (hiPSCs/hESCs) has a great potential for treating diabetic patients. Also, those cells can be used to discover new drugs and understand diabetes pathogenesis. Recently, we have established a highly efficient method to generate pancreatic beta-cell precursors that could be differentiated into a large number of insulin-secreting beta-cells in vitro. This project is designed to provide participants with a solid understanding of the basic biology of hPSCs with a specific focus on pancreatic beta differentiation. It will equip participants with hands-on experience in the following areas:

- Culture and maintain hESCs/hiPSCs using a feeder-free system.
- Examine the pluripotency and differentiation markers in undifferentiated and differentiated hiPSCs/hESCs using different techniques.
- Differentiation of hiPSCs/hESCs into pancreatic beta-cell precursors.
- Differentiation of hiPSCs/hESCs into insulin-secreting cells in vitro.

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