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**Dual angiogenic and immunomodulating nanotechnology for subcutaneous stem cell derived islet transplantation for the treatment of diabetes**

**Grant Award Details**

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Dual angiogenic and immunomodulating nanotechnology for subcutaneous stem cell derived islet transplantation for the treatment of diabetes

**Grant Type:** Quest - Discovery Stage Research Projects

**Grant Number:** DISC2-12124

**Project Objective:** To enable the development of a combination therapeutic candidate composed of an HA hydrogel loaded with heparin nanoparticles, VEGF clusters and hESC-derived human islet-like organoids (HILO) to treat Type I Diabetes.

**Investigator:**

<b>Name:</b>	Eiji Yoshihara
<b>Institution:</b>	Lundquist Institute for Biomedical Innovation at Harbor - UCLA Medical Center
<b>Type:</b>	PI

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**Disease Focus:** Diabetes, Metabolic Disorders, Type 1 diabetes

**Human Stem Cell Use:** Embryonic Stem Cell

**Award Value:** \$250,000

**Status:** Active

**Grant Application Details**

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**Application Title:** Dual angiogenic and immunomodulating nanotechnology for subcutaneous stem cell derived islet transplantation for the treatment of diabetes

**Public Abstract:****Research Objective**

Functional human islet like organoids differentiated from human pluripotent stem cells.

**Impact**

Providing the immediate cell therapeutic candidate for clinical trial of diabetic patients.

**Major Proposed Activities**

- Fabrication and characterization of the injectable immunomodulating and pro-angiogenic material components: HA hydrogel, heparin nanoparticles and VEGF clusters.
- Generation of human islet like organoids from pluripotent stem cells for subcutaneous transplantation
- Subcutaneous HILOs transplantation in pre-vasculature site in NOD-SCID mice.
- Subcutaneous PD-L1 expressing HILOs transplantation in pre-vasculature site in Hu-PBMC-NSG mice

**Statement of Benefit to California:**

The cell and technology products proposed by this diabetes therapeutic study will significantly improve future diabetes treatments in the State of California, particularly benefiting vulnerable populations, such as Hispanics, African-Americans, men, older populations, homeless individuals, and those of lower socioeconomic status. Additionally, this proposed research may create greater research employment opportunities in the South Bay, a region within Los Angeles County.

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