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The Diabetes Stem Cell Pipeline: UCSF's Strategic Plan for the Future

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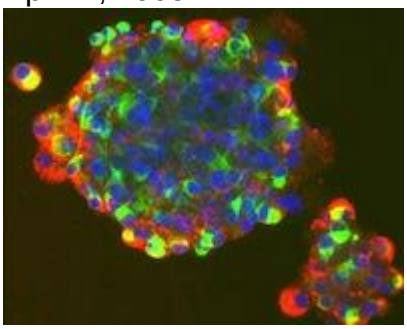

Most families affected by diabetes recognize that islet transplantation represents a very real opportunity for a cure for diabetes. Unfortunately, current experimental treatment protocols require the use of cadaveric pancreas donors. Tragically, only 300 successful islet transplants have been performed in the U.S. in the past three years -- in large part due to a shortage of organs from which to extract these insulin-producing beta cells. Fortunately, with the passing of California's Proposition 71 and the recent formation of the California Institute of Regenerative Medicine, UCSF Diabetes Center researchers and clinicians are optimistic that stem cell research will yield a new, unlimited source of beta cells for use in islet transplantation.

The Diabetes Center has a comprehensive and strategic stem cell therapy program devoted to bringing together basic and clinical research to advance our understanding and treatment of type 1 and type 2 diabetes. Known as the *Diabetes Stem Cell Pipeline*, it is the only such program in the country that combines superb developmental and stem cell research with a dedicated clinical islet transplantation program, plus the immunology efforts needed to move aggressive basic research towards potential cures of this disease.

In order to accomplish our goal of aggressively translating basic research into new therapies, we have established four key programs:

Pancreas Organogenesis

UCSF researchers are studying the fundamental basis for endocrine organ development. This research will generate scientific approaches and targets for clinical development by studying both the developing embryonic stem cell and the pancreatic stem cell.

Islet Cell Regeneration

We hope to develop new sources of human islets for transplantation by researching embryonic and adult stem cells. This program will help us to move towards cell transplant and drug therapies to promote islet cell regeneration and proliferation.

Transplantation Tolerance

A number of our researchers/clinicians are investigating clinical strategies to prevent tissue rejection, by taking advantage of novel immune-tolerance therapies developed at UCSF. This program builds on UCSF research in immunology, angiogenesis and cell migration to adopt new approaches to stem cell transplantation in diabetes.

Clinical Application

This program will apply novel tolerance-inducing islet stem cell transplantation protocols to clinical trials and future therapies for patients with diabetes.

The Diabetes Center's primary focus is to translate laboratory research into clinical therapies for patients. With a goal of making islet transplantation a viable cure, we are poised to make a signficiant impact on the health and welfare of millions of patients with diabetes.

To find out how your financial support will make a difference in our efforts, please contact Suzanne Ritchie at 415-476-6334 or sritchie@support.ucsf.edu [1].

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