

9/6/2007 2:21:48 AM

Diabetes Research Institute Invention Promotes Growth of Stem Cells into Insulin-Producing Cells

[PR Newswire]

PR Newswire via NewsEdge Corporation :

MIAMI, Sept. 5 /PRNewswire/ -- One of the major challenges to islet cell transplantation as the treatment of choice for type 1 diabetes is the shortage of donor tissue supply. Patients often need a re-infusion of islet cells after the initial treatment, and this means another donor pancreas is needed to provide the fragile islet cells for transplant. New findings by researchers at the Diabetes Research Institute (<http://www.diabetesresearch.org>) at the University of Miami could represent a big step forward in possibly alleviating the problem.

Up until now investigators have had only moderate success in differentiating either adult stem cells or embryonic stem cells to become insulin-producing beta cells. A large part of the problem has been inducing the proper culture environment in the laboratory. Researchers know that islets require a high amount of oxygen for optimal health, so UM researchers created a new cell culture device called the "oxygen sandwich" to provide the cells with a more natural oxygen environment than those used in traditional culture methods.

"Using mouse pancreatic stem cells, we were able to show that delivering oxygen in a physiological way enhanced enormously their differentiation into beta cells, with insulin levels exceeding 30-fold those observed in control conditions," said Juan Dominguez-Bendala, Ph.D., research assistant professor of surgery, director of the Stem Cell Development and Translational Research Laboratory at the Diabetes Research Institute, and senior author of the study which was published online in Stem Cells Express.

"It is as though these stem cells were just waiting for us to provide them with the conditions they needed to mature. We believe this is a major step toward the efficient generation of beta cells for clinical transplantation."

The new cell culture device, designed by Chris Fraker, senior research associate in the Tissue Engineering Laboratory at the Diabetes Research Institute, closely mimics the natural oxygen environment. The device "sandwiches" the stem cells with oxygen from two sources, one from the top with air diffusing through the culture medium and the second from the bottom with air diffusing through a silicon membrane mixed with perfluorocarbon, a very powerful oxygen reservoir.

"The use of high oxygen to promote differentiation of insulin-producing cells opens the way to many other applications with different sources of progenitor cells, beyond embryonic stem cells and beyond diabetes," said Camillo Ricordi, M.D., scientific

director of the Diabetes Research Institute.

About the Diabetes Research Institute

The Diabetes Research Institute is a recognized world leader in cure- focused research. Since its inception in the early 1970s, the DRI has made significant contributions to the field of diabetes research, pioneering many of the techniques used in islet transplantation. From innovations in islet isolation and transplant procedures to advances in cell biology and immunology, the DRI is now harnessing the power of emerging technologies to develop new cell-based therapies to restore insulin production. For the millions of families already affected by diabetes who are looking to the world of science for answers, the Diabetes Research Institute is the best hope for a cure.

SOURCE Diabetes Research Institute Foundation

CONTACT: Lori Weintraub of Diabetes Research Institute, +1-954-964-4040,
lweintraub@drif.org

<<PR Newswire -- 09/06/07>>

Copyright © 2007 PR Newswire

[Copyright © 2007 Acquire Media. All rights reserved.](#)

Contact [Customer Support](#).

All quotes delayed a minimum of 20 minutes. Delayed quotes provided by [S&P Comstock](#) and are subject to [terms of use](#).

SEC Filings and Financials are provided by Thomson Financial and are subject to [terms of use](#).

Hoover's Company Capsules ©2002, are provided by [Hoover's Inc.](#) and are subject to [terms of use](#).

Charts and other financial data are provided by Sungard and are subject to [terms of use](#).