BETA CELL BIOLOGY CONSORTIUM
http://www.betacell.org

Description of project

- The mission of the BCBC is to facilitate interdisciplinary approaches that will advance our understanding of pancreatic islet development and function. The long-term scientific goal is to develop a cell-based therapy to restore normal insulin production and action to diabetic patients.

Accomplishments

- Collaborative research efforts focused on understanding fully how endogenous beta cells are made by studying pancreatic development, with the hope of producing pancreatic islets in tissue culture.

- Infrastructure to collaboratively generate necessary reagents, mouse strains, antibodies, assays, protocols and technologies that are beyond the scope of any single research effort. The BCBC Coordinating Center at Vanderbilt University oversees the BCBC website (www.betacell.org), and coordinates all activities of the BCBC, including scientific cores, reagent databases, steering committee meetings, investigator retreats, the "pilot and feasibility studies" program, and the special "seeding collaborative studies in beta cell biology" program.

    - Antibody Core/Subcommittee that is developing antibodies to mouse and human cell surface antigens and important markers of progenitor cells

    - Mouse ES Core/Subcommittee that is creating a set of genetically modified ES cells that can be used to generate mice for the purpose of studying pancreatic development and diabetes

    - EPConDB, a searchable database that contains information about genes expressed in the mouse and human pancreas during development http://www.cbil.upenn.edu/EPConDB/;
      Kaestner/Stoeckert, University of Pennsylvania

    - Microarray Core that is producing and distributing mouse and human cDNA microarrays http://www.betacell.org/php/microarrays.php;
      Kaestner, University of Pennsylvania

- Ongoing stem cell-related research efforts include the development of key reagents to permit the prospective isolation of stem/progenitor cells in both neonatal and adult animals, and development of protocols to efficiently differentiate embryonic and adult stem cells into pancreatic islet tissue appropriate for transplantation, and the development of assays to test the efficacy of pancreatic stem/progenitor cells as a cure for type 1diabetes. The Human Cell

Culture Committee is working collaboratively to conduct gene expression profiling of human pancreatic progenitor cells.

Future Directions

- The Beta Cell Biology Consortium will continue to work collaboratively to generate and distribute necessary reagents, mouse strains, antibodies, assays, protocols, and technologies that will facilitate research in pancreatic islet development and function.

- Research will be conducted in three areas of scientific focus:

    - Beta Cell Development--understanding developmental pathways required to produce a fully functioning pancreatic islet;

    - Beta Cell Regeneration--understanding the mechanisms of beta cell regeneration in the adult animal and human;

    - Stem Cell Biology--understanding the nature of stem/pancreatic progenitor cells during normal development and in adults.

Materials to be made available to researchers

The PancChip 5.0 is now available for order. For more information, please visit http://www.cbil.upenn.edu/EPConDB/.

Please visit http://www.betacell.org for more information on obtaining the following materials:

- Antibodies
- BAC Clones
- Microarrays of Mouse and Human Islet Genes
- Targeting Vectors
- Transgenic mice

Participants

Sponsor: National Institute of Diabetes and Digestive and Kidney Diseases

Participating Institutions

Hagedorn Research Institute
Harvard University

INSERM, Strasbourg
NIDDK, NIH
University of California, Irvine
University of California, San Francisco
University of California, San Diego
University of Chicago
University of Colorado, Boulder
University of Colorado, Denver
University of Minnesota
University of Pennsylvania
University of Wisconsin
Vanderbilt University
Vrije Universiteit Brussels

Steering Committee

Chair:

Mark Magnuson	Vanderbilt University

Committee Members:

Graeme Bell	University of Chicago
Mike German	University of California, SF
Joel Habener	Harvard University
John Hutton	UCHSC
Klaus Kaestner	University of Pennsylvania
Ole Madsen	Hagedorn Research Institute
Sheryl Sato	NIDDK, NIH
Lori Sussel	UCHSC
Catherine Verfaillie	University of Minnesota
Gordon Weir	Harvard University
Chris Wright	Vanderbilt University

Ex Officio:

Carol Haft	NIDDK, NIH
David Harlan	NIDDK, NIH
Marvin Gershengorn	NIDDK, NIH
Doug Melton	Harvard University
Phil Smith	NIDDK, NIH
Chris Stoeckert	University of Pennsylvania

Program Coordinator:

Lisa Rouse	Vanderbilt University