Type 1 Diabetes - Insulitis Revisited: Cross-Talk between the Immune System and the Beta Cell

Co-organized by: Immunology of Diabetes Society (IDS) and the Juvenile Diabetes Research Foundation International (JDRF)

Recent studies of pancreata/pancreatic biopsies obtained from individuals with type 1 diabetes or those at increased risk for the disease have challenged longstanding dogmas of how type 1 diabetes develops. In addition, these efforts have highlighted multiple similarities, as well as differences, between the pancreatic inflammation (i.e., insulitis) observed in humans and the NOD mouse model of the disease. Based on this, the JDRF has launched nPOD, the Network for Pancreatic Organ donors with Diabetes. The goals of the nPOD initiative are to establish a network to determine the feasibility of procuring and characterizing, in a collaborative manner, pancreata and related tissues from cadaveric organ donors with type 1 diabetes as well as those whom are islet autoantibody positive, to allow researchers world-wide, the ability to address key immunological, histological, viral, and metabolic questions related to how type 1 diabetes develops. This satellite symposium will present recently gained insight from a variety of investigators, including those from nPOD, to (re)define our knowledge of the inflammatory lesion that lies at the heart of how type 1 diabetes develops and the role of both the beta cell and the immune system.

9:00 am to 12:00 pm: Of insulitis in mice and humans (Chair: Mark Atkinson)

9:00 – 9:25 am Insulitis in mice
Jeff Bluestone, PhD, UCSF Diabetes Center, San Francisco, CA

9:25 – 9:50 am Islets in mouse and man
Al Powers, MD, Vanderbilt University, Nashville, TN

9:50 – 10:15 am Recapitulating human insulitis using humanized mouse models
Dale Greiner, PhD, University of Massachusetts, Worcester, MA

10:15 – 10:30 am Coffee Break

Early lessons from nPOD

10:30 – 10:55 am Setting the Stage: The nPOD experience
Martha Campbell Thompson, DVM, PhD, University of Florida, Gainesville, FL

10:55 – 11:20 am Diversity of Insulitis – Lessons from Unique Disease Phenotypes
George Eisenbarth, MD, PhD, Barbara Davis Center for Childhood Diabetes, Denver, CO

11:20 – 11:45 am Beta-cell Replication and Neogenesis
Peter Butler, MD, University of California, Los Angeles, Los Angeles, CA

11:45 am to 12:30 pm Lunch Break
12:30 to 5:00 pm:  Insulitis before and long after diagnosis of T1D (Chair: Bart Roep)

12:30 - 12:55 pm Insulitis in seropositive non-diabetic organ donors
Peter in't Veld, PhD, Free University Brussels, Belgium

12:55- 1:20 pm Insulitis in Long-standing Type 1 Diabetes
Hillary Keenan, PhD, Joslin Diabetes Center, Boston, MA

1:20 - 1:45 pm Immunophenotyping Insulitis in long-standing type 1 diabetes
Matthias von Herrath, MD, La Jolla Institute for Allergy & Immunology, La Jolla, CA

1:45 - 2:10 pm Role of viruses: Summary and Ongoing Research
John Todd, PhD, University of Cambridge, Cambridge, UK

2:10 - 2:20 pm Coffee Break

Future Directions (Chair: Matthias von Herrath)

2:20- 2:45 pm Imaging pancreatic inflammation
Jason Gaglia, MD, Joslin Diabetes Center, Boston, MA

2:45 – 3:10 pm Beta cell-Immune Cross Talk
Decio Eizirik, MD, PhD, Université Libre de Bruxelles, Brussels, Belgium

3:10 - 3:35 pm Immunochip data on nPOD samples
Suna Onengut-Gumuscu, PhD, University of North Carolina, Chapel Hill, NC

3:35- 4:00 pm The future of nPOD
Mark Atkinson, PhD, University of Florida, Gainesville, FL

4:00 to 5:00 pm

Selected short talks from invited IDS abstracts
To be considered for a short talk, please submit an abstract to B.O.Roep@lumc.nl by May 1, 2011

Round Table Discussion:

Which dogma’s on insulitis proved dead dogs? What can nPOD studies teach on the relation between beta-cell function versus mass, beta cell regeneration, metabolic alterations? What new insights do nPOD studies provide on lymphocyte infiltration and specificity in the pancreas at various disease stages? Does novel insight point to new opportunities for immunotherapy (targets for immunotherapy, late prevention in prediabetic subjects, late intervention in longstanding disease)? What studies and emerging approaches should be applied to better understand disease progression? How close are we to being able to effectively stage T1D and what are we missing? Can we define novel markers of insulitis? What current therapies can be used to ameliorate insulitis?

Discussion Leaders: Bart Roep/Matthias von Herrath
Participants: Mark Atkinson, George Eisenbarth, Peter Butler, Peter in’t Veld, Jeff Bluestone