



Canadian Society of Atherosclerosis, Thrombosis and  
Vascular Biology (CSATVB)/

Société canadienne d'athérosclérose, de thrombose et de  
biologie vasculaire (SCATVB)

## **SYMPOSIUM II**

Monday, October 22, 2007

13:00-15:00

Chair: Dr. Edward O'Brien



### **Efficacy Issues and Therapy Monitoring in Cardiac Cell-Based Regeneration**

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Cell-based therapies are limited by the low implant capability and survival of transplanted cells, and the non-specific delivery of cells to other body tissues constitutes an unwanted potential side effect. In addition, recent evidence including our own suggests that the high prevalence of endothelial dysfunction and decreased bioavailable nitric oxide (NO) is a main reason why therapeutic angiogenesis, and more recently clinical cell therapy, have mostly failed in humans. Finally, for cell therapy investigators it is critical that low stem cell viability and inadequate cellular interactions after delivery be better evaluated in vivo, thus justifying the need to develop new non-invasive imaging modalities. This will allow one to evaluate how adjuncts such as delivery matrices or cell transfection may improve cell viability and engraftment.

In this presentation, we will also go over how an acellular matrix was designed to specifically enhance the engraftment of endogenous circulating progenitor cells at sites of matrix injection, and achieve progenitor "cell-based therapy" without actual cell transplantation. We will also consider how cell-based therapy exhibits dependency on local NO bioavailability from recent data, and examine how the host substrate might be optimized in the presence of endothelial dysfunction. Finally, we will examine recent advances in cell labeling of trafficking stem cells delivered with or without polymer matrices by using Positron Emission Tomography.