26th Stem Cell Club Meeting

(Organised by the Stem Cells Research Singapore Website Committee http://www.stemcell.edu.sg)

Date: August, 14th, 2007 (**Tuesday!**)
Time: 5:30 pm
Venue: Aspiration, Level 2M, Matrix

Host: Justine Burley

Time	Title	Speakers
5:30-6:15	**Myocardial Salvage in Ischemia and Reperfusion Injury: Paracrine Actions of Mesenchymal Stem Cells**	***Leo Timmers*** *University Medical Center Utrecht*
6:15-7:00	***Selection Against Undifferentiated Human Embryonic Stem Cells By A Cytotoxic Antibody Recognizing Podocalyxin-like Protein-1***	**Andre Choo** *BTI, Singapore*
7:00 -	**Wine and Cheese**	

Myocardial Salvage in Ischemia and Reperfusion Injury: Paracrine Actions of Mesenchymal Stem Cells

Leo Timmers

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Patients with acute myocardial infarction (i.e. heart attack) are hurried to the hospital where the occluded coronary artery is opened by balloon angioplasty and blood flow is restored, often accompanied by stent placement. The size of the myocardial infarct is mainly determined by the size of the perfusion territory of the occluded artery and the duration of the occlusion (ischemia). Generally, the larger the myocardial infarct, the larger the impact on cardiac function. Large myocardial infarction may lead to severe loss of cardiac function and eventually to heart failure. Therefore, reduction of infarct size is extremely important for cardiac performance, patient well-being and prognosis. To date, early restoration of blood flow (reperfusion) is the only way to rescue cardiomyocytes within the ischemic area. Ironically, however, the reperfusion itself further contributes to irreversible myocardial tissue loss (infarction), which is referred to as reperfusion injury. Experimental and clinical studies which aimed to reduce infarct size by diminishing reperfusion injury have been disappointing and inconclusive thus far. Therefore, the search for new therapeutic options to reduce reperfusion injury in appropriately designed animal models is of major importance.

Stem cell transplantation, including mesenchymal stem cell (MSC) transplantation, has the potential to limit progression of heart failure and restore cardiac tissue mass. It was recently suggested that MSCs induce reparative effects through secretion of paracrine factors. Therefore, administering secretions from MSC might be as efficacious as MSC transplantation, and will circumvent problems such as immune incompatibility, tumorigenicity, and costs and engender the development of universally available and affordable “off-the-shelf” therapeutics. In this study, we investigated potential infarct size reducing properties of clinically compliant MSC conditioned medium (CM) in a porcine model of ischemia and reperfusion injury. MSC-CM reduced infarct size by 60% and improved cardiac function compared to non-CM and saline. These results support the “paracrine hypothesis” of stem cell therapy and identify MSC-CM as a promising therapeutic option in the treatment of acute myocardial infarction.

Selection Against Undifferentiated Human Embryonic Stem Cells By A Cytotoxic Antibody Recognizing Podocalyxin-like Protein-1

Andre Choo
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Abstract to follow