

# 28<sup>th</sup> Stem Cell Club Meeting

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

Date: October, 18th, 2007 (**Thursday!**)

Time: 5:30 pm

Venue: Creation, Matrix, Level 4

Host: Gerald Udolph, IMB

## **Time Title**

**5:30-6:30 Adventures up the nose: from the lab to the clinic**

**6:30 - Wine and Cheese  
(at Invitrogen facilities, 4<sup>th</sup> floor Chromos)**

## **Speaker**

***Alan Mckay-Sim***  
*National Centre for Adult  
Stem Cell Research,  
Griffith University,  
Australia*

This event is sponsored by



# **Adventures up the nose: from the lab to the clinic**

Alan McKay-Sim

National Centre for Adult Stem Cell Research, Griffith University, Nathan, Australia

## **Abstract**

Neurogenesis occurs throughout adult life in the olfactory mucosa, the organ of smell in the nose. This neurogenesis is possible because of a resident stem cell. The identity of this stem cell is not known but our experiments indicate that it is multipotent, giving rise to neurons and glia as well as cell types from many other tissues in the body.

Neurogenesis continues in human adults and the olfactory stem cell can be propagated in neurosphere cultures. When taken from patients, these stem cell cultures provide potential models for neurological disease, which we are investigating using a systems biology approach to identify gene networks and cellular pathways altered in disease. Continual neurogenesis is assisted by a special glial cell of the olfactory nerve, the olfactory ensheathing cell, which is shown to assist recovery after spinal cord injury. We have just completed a Phase I clinical trial of autologous transplantation of olfactory ensheathing cells in human paraplegia.

## Biography

### **Current appointments:**

Professor, School of Biomolecular and Physical Science  
Director, National Centre for Adult Stem Cell Research  
Deputy Director, Eskitis Institute for Cell and Molecular Therapies

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Alan Mackay-Sim has had long interest in regeneration and repair of the nervous system. For many years his passion has been to understand the regeneration and repair of the olfactory mucosa, the organ of the sense of smell in the nose, in which new sensory nerve cells are made throughout adult life. This is a fascinating biological question that has many direct applications to understanding human disease and repairing other parts of the nervous system. Olfactory tissue is easily accessible and provides the scientist and clinician with neural cells and the adult stem cells that give rise to them. In essence the nose provides a “window into the brain” to study cellular processes of disease and also provides adult neural stem cells with the potential to repair the nervous system. Professor Mackay-Sim and his research team are using olfactory stem cells to develop cellular models of diseases such as schizophrenia, Parkinson’s disease and motor neurone disease. They have already identified differences in nerve cell regeneration in schizophrenia and bipolar disorder that help understand how these diseases develop. Professor Mackay-Sim is scientific director of a clinical trial in which cells from the olfactory mucosa (called “olfactory ensheathing cells”) are taken from the nose of people with paraplegia after traumatic spinal cord injury, grown in the lab, and transplanted into their own injured spinal cord. This trial provides a precedent for future trials using adult stem cells. In 2003 Professor Mackay-Sim was named Queenslander of the Year for his work on neuroregeneration. In 2006 he received funding from the Australian Department of Health and Ageing to establish the National Centre for Adult Stem Cell Research.