

**NUS Graduate School for Integrative Sciences and Engineering
Research Project Write-up**

Title of Project : Biology of Fetal Endothelial Progenitor Cells, and their role in vasculogenesis in development and during tissue repair

Name of Supervisor : Dr Jerry Chan

Contact Details: jerrychan@nus.edu.sg

Short Description

Endothelial progenitor cells (EPC) found in post-natal tissues have various clinical utilities, including the treatment of ischaemic diseases. In addition, they serve as cellular models for the assessment of cardiovascular risk and targets for anti-angiogenic cancer therapeutics. However, EPCs remain poorly understood, and very little is known about EPCs during fetal life, and their corresponding role during a time of intense vasculogenesis during development.

My laboratory is working on the isolation of EPC derived from haemopoietic tissues obtained during fetal life, defining their role in development and biological behaviour through in vitro and in vivo assays. Preliminary data suggest that fetal EPC have higher proliferative and vasculogenic potential than those found in post-natal life.

Further studies are focussed upon the delineation of differentiation cues, homing and migration capacities during organogenesis and tissue inflammation, and the interactions between EPC with fetal MSC cell types. We will be using microfluidic systems coupled with real-time confocal imaging, tissue ischaemia and bone graft models to answer these questions.