STEM CELL SOCIETY
SINGAPORE

STEM CELL CLUB

Friday 26 February 2010 • Breakthrough Theatrette, Matrix Building Level 4,
30 Biopolis Street, Singapore 138671

PROGRAMME

5.00 - 6.00pm

Professor Catherine M Verfaillie
Director, Stamcelinstituut, K U Leuven

"Mechanisms underlying increased potency of postnatal cells and uses of such cells"

6.00pm

Network Social
Provided by Singapore Stem Cell Society

Only for members of Stem Cell Society Singapore ; Non-members who wish to attend Social could sign up for membership at the seminar

Hosted by

Dr Andre Choo
Bioprocessing Technology Institute

SPEAKER

Professor Catherine M Verfaillie

Mechanisms underlying increased potency of postnatal cells and uses of such cells

Abstract

During the last 5--7 years we and others demonstrated that cells can be cultured from bone marrow, cord blood, testis and perhaps other postnatal tissues that have the ability to differentiate into multiple cell types, including mesoderm, endoderm and ectoderm. We termed these cells multipotent adult progenitor cells (MAPC). However, the greater potency of MAPC and other cells from somatic tissues is still less than that of Embryonic Stem Cells (ESC). Transcriptome analysis demonstrated that rodent MAPC differ significantly from other mesenchymal stem cells (MSC), but that rodent MAPC express a number, but not all, genes specifically expressed in ESC, which are known to be important for their pluripotency (MAPC express e.g. Oct4; not Nanog and Sox2), even though rodent MAPC also express genes known to be associated with primitive endoderm. Interestingly, rodent MAPC express four of the six factors recently identified to be capable of reprogramming mouse and human fibroblasts to induced pluripotent stem cells (iPSC).Studies aimed at further delineating the mechanism underlying thegreater potency of MAPC, whether pre--existingin vivo or induced in culture, will be di cussed, as well as studies aimed at identifying the developmental stage with which MAPC can be compared. In addition, studies aimed at inducing lineage specification of (near) pluripotent stem cells and the possible uses of such differentiated progeny in medicine with emphasis on use of hepatocytes and other liver cells in pharmaceutical setting or as BAL, will be presented.

Biography

Catherine Verfaillie received her Medical degree from the K.U.Leuven in 1982. She then trained as an internist/hematologist at the K.U.Leuven between 1982 and 1987. She went to the U. of Minnesota in 1987 for a postdoctoral fellowship. After completing her postdoctoral fellowship, she was appointed consecutively as Instructor, assistant professor, associate professor and full professor of Medicine in 1998. In 2001, she became the first Director of the University of Minnesota's Stem Cell Institute. In 2006, she returned to her home country as the director of the Interdepartementeel Stamcel Instituut at the K.U.Leuven. She has a longstanding career in stem cell biology, initially focusing on normal hematopoietic stem cells and leukemic stem cells, and the role played by the microenvironment in regulating their selfrenewal and differentiation ability. Since 1997 she has also focused extensively on more pluripotent stem cells. Her group described in 2002 a novel cell population culture from rodent and human bone marrow samples with greater expansion and differentiation potency, named multipotent adult progenitor cells or MAPC. The current research of the Verfaillie lab is focused on understanding what regulates selfrenewal and differentiation of adult as well as embryonic pluripotent stem cells, and testing the possible use of stem cell based and stem cell derived therapies in animal models of hematopoietic, vascular, liver, CNS-degenerative and metabolic (diabetes) disorders, and as tools for drug discovery and metabolization studies.