



STEM CELL SOCIETY
SINGAPORE

STEM CELL SOCIETY SEMINAR

Tuesday 24 May 2011 • Creation Theatrette, Matrix Building Level 4,
30 Biopolis Street, Singapore 138671

PROGRAMME

4.30 - 5.00pm

Dr Shigeki Sugii

Singapore Bioimaging Consortium & Duke-NUS Graduate Medical School

**“Adipose Tissue as Sources for Regenerative Medicine:
Potential for Metabolic Reprogramming”**

5.00 - 5.30pm

Ang Yen Sin

Mount Sinai School of Medicine, New York

**“Integrated Epigenetic and Transcriptional Control of
Pluripotency”**

5.30pm onwards

Network Social

Provided by Stem Cell Society Singapore

Only for members of Stem Cell Society Singapore; Non-members who wish to attend Network Social are welcome to sign up for membership at www.stemcell.org.sg/scss_membership.php.

Hosted by

Dr Ng Huck Hui

President of Stem Cell Society Singapore

Senior Group Leader, Genome Institute of Singapore

SPEAKER

Dr Shigeki Sugii

Adipose Tissue as Sources for Regenerative Medicine:
Potential for Metabolic Reprogramming

Abstract

Adipose tissue is an expandable and readily attainable source of proliferating, multipotent stem cells. We explored the fat tissue's potential for use in regenerative medicine by upgrading 'multipotency' of the stem cells to 'pluripotency.' We found that adult human and mouse adipose-derived stem cells can be reprogrammed to induced pluripotent stem (iPS) cells, with substantially higher efficiencies than those reported for other cell types. Unexpectedly, both human and mouse iPS cells can be obtained in feeder-free conditions. Adipose-derived stem cells intrinsically express high levels of self-renewal factors, and can serve as feeders for pluripotent cells. These results demonstrate a great potential for fat-derived cells in regenerative therapeutics and as a model for studying the molecular mechanisms of de-differentiation processes. Using this model, epigenetic changes in DNA methylation and histone modifications, and potential roles of nuclear receptor superfamily will be discussed.

Biography

Dr. Sugii graduated from Kyoto University, Japan. He received his Ph.D. in Molecular and Cellular Biology at Dartmouth College / Dartmouth Medical School (U.S.A.), where he studied intracellular cholesterol homeostasis and transport. He then moved to the Salk Institute for Biological Studies and Howard Hughes Medical Institute (San Diego, California) to conduct his post-doctoral research on roles of nuclear receptors in adipocyte biology and metabolism with Professor Ronald Evans. In January 2011, he assumed a joint appointment as Scientist at Singapore Bioimaging Consortium and as Assistant Professor at Duke-NUS Graduate Medical School. His current research interests include the developmental origin of adipocytes and clinical application of adipose-derived stem cells. He was a recipient of Kakiuchi Yoshinobu Memorial Award from Japanese Society for Science and Technology Studies in 2009.



SPEAKER

Ang Yen Sin

Integrated Epigenetic and Transcriptional Control of Pluripotency



Abstract

Embryonic stem cells (ESC) and induced pluripotent stem cells (iPSC) hold great promise for regenerative medicine. Derivatives of human ESC/iPSC could provide material for transplantation therapies, avenues to develop improved diagnostic and pharmaceutical compounds and model systems to understand etiologies of complex diseases. While numerous molecular components of the ESC fate regulatory machinery have emerged, it remains largely unclear how regulatory networks are “wired” and how they process information to maintain or change a cellular state. Epigenetic regulation of gene network expression lies at the heart of how a single zygote develops into a complex organism; or how a skin cell can be reprogrammed back to an ESC-like state. To date, some significant efforts have begun to elucidate the roles played by the network of transcription factors in programming and maintaining pluripotency. Intriguingly, how epigenetic regulatory networks, specifically those that “write” and “read” the histone modification code, functionally cooper-

ate with the transcriptional network remains largely enigmatic. Collectively, our work seeks to elucidate the integration between the transcriptional and epigenetic regulatory machineries for pluripotency control; thereby facilitating future human ESC/iPSC-based clinical applications.

Biography

Yen-Sin graduated from the National University of Singapore before embarking on a productive and exciting research tenure with Dr Bing Lim, as a Research Assistant, at the Genome Institute of Singapore back in 2003. He then moved to Mount Sinai School of Medicine, New York in 2006 to pursue his Ph.D. under the tutelage of Dr Ihor Lemischka. His graduate work focused on the elucidation of several histone modifiers involved in the regulation of ESC self-renewal, lineage commitment and reprogramming. He will be completing his Ph.D. in Developmental and Stem Cell Biology this July and then further pursue his post-doctoral training with Dr Deepak Srivastava at Gladstone/

UCSF this Fall working on topics of cardiac development and cardiac stem cell fate regulation. Yen-Sin aspires to be a strong proponent in realizing the promises of adult and embryonic stem cells in the advancement of biomedicine.