The Singapore Bioimaging Consortium (SBIC)
presents a seminar

on

"Transgenic Expression of the Nuclear Hormone Receptor, NR4A3, is associated with Improved Endurance and Metabolic Phenotype"

Speaker: **Professor George Muscat**
Institute for Molecular Bioscience
The University of Queensland
Date : **Tuesday, 11 September 2012**
Time : **11.00am – 12.00pm**
Venue : **SBIC Seminar Room**
11 Biopolis Way
Level 2, Helios Building
Singapore 138667
(Please use Level 1 entrance)

Abstract

The Nuclear hormone receptor (NR) superfamily function as ligand dependent DNA binding factors that translate endocrine, metabolic, developmental and pathophysiological signals into gene regulation. The NR4A1-3 subgroup are expressed in metabolically demanding tissues including skeletal muscle. beta-adrenergic treatment selectively, and strikingly induces the expression of the NR4A subgroup, and genes that regulate oxidative metabolism. NR4A3/Nor-1 siRNA transfection into muscle cells decreased fatty acid oxidation, and increased lactate accumulation (anaerobic metabolism) suggesting that, Nor-1 expression is necessary for oxidative metabolism (in vitro). Very recently, we developed a mouse line with expression of activated NR4A3 in muscle, this produced a transition towards a more oxidative skeletal muscle fibre type, associated with significantly improved glucose tolerance, oxygen consumption and (treadmill) endurance [Mol. Endocrinol. 2012 (3):372-]. *New analysis of this mouse model* suggests that the endurance phenotype is associated with differential regulation of myofibre vascularization, autophagy, and adiposity/resistance to obesity. This data suggests that Nor-1 signallingmodulates endurance capacity, but also produces synchronous changes in intracellular recycling and fat metabolism.

About the Speaker

George Muscat is a Professorial Research Fellow supported by the Vice Chancellor's Snr Research Fellowship at the Institute for Molecular Bioscience, University of Queensland, and an affiliate of the School of Biomedical Sciences. He completed his undergraduate and graduate training at the University of Sydney. He was a Postdoctoral Research Fellow at Stanford University, CA. (1985-88), and an Assistant Professor of Research at the University of Southern California, Los Angeles (1989). He joined UQ in 1990. He is a member of the NHMRC assigners academy, previously served on thh editorial board of JBC (2003-08), and currently serves on the editorial boards of Endocrinology, and Molecular Endocrinology. His research continues to focus on understanding the molecular role of NRs and coregulators in the regulation of lipid, carbohydrate and energy homeostasis in the context of metabolic disease. Furthermore, the identified links between increased prevalence of metabolic disease (obesity, insulin insensitivity and type II diabetes) and onset, incidence and mortality of several cancers (including breast cancer) drives new ventures into elucidating NR function in breast cancer.

--- Admission is free and all are welcome ---