



The Singapore Bioimaging Consortium (SBIC)  
presents a seminar

on

**“Growth Hormone and Obesity:  
A Physiological Response to an unhealthy condition”**

**Speaker:     Chen Chen**  
**Professor and Chair of Endocrinology**  
**NHMRC Principle Research Fellow**  
**University of Queensland, Australia**

**Date     :     Monday, 16 September 2013**  
**Time     :     2.00pm – 3.00pm**  
**Venue    :     SBIC Seminar Room**  
**11 Biopolis Way**  
**Level 2, Helios Building**  
**Singapore 138667**  
**(Please use Level 1 entrance)**

**Abstract**

Growth hormone (GH) is thought to modulate insulin-induced lipogenesis throughout periods of positive energy balance. It is thought that impaired GH secretion relative to dietary induced weight gain contributes to improved meal tolerance, insulin responsiveness, and consequently the maintenance of non-esterified free fatty acid (NEFA) flux. To assess this notion, Prof Chen investigated the relationship between pulsatile GH secretion and body weight, fat mass, circulating levels of insulin, and non-esterified free fatty acids (NEFAs) in male mice in response to dietary induced weight gain. Data were collected from wild type (WT) mice following 8 weeks of dietary intervention, and throughout progressive weight gain in hyperphagic melanocortin 4 receptor knock out (MC4R KO) mice. Observations demonstrate an inverse association between pulsatile measures of GH secretion and circulating levels of insulin. This relationship occurred alongside an increase in body weight and adiposity, and the maintenance of circulating levels of NEFAs. We confirm healthy release of GH in MC4R KO mice prior to the development of hyperphagia-associated hyperinsulinemia. GH secretion in MC4R KO mice decline rapidly alongside an elevation in circulating measures of insulin. Collectively, data confirms an inverse relationship between in circulating levels of GH and insulin, and the corresponding maintenance of circulating levels of NEFAs. Moreover, observations from MC4R KO mice highlight the potential role for insulin in sustaining low levels of GH following progressive weight gain, and in obesity. Prof Chen proposes that suppressed GH secretion in obesity does not occur in response to endocrine dysfunction, rather the suppression of GH throughout progressive weight gain is a physiological adaptation

to sustain NEFA balance. He is now validating this premise, and addressing the mechanisms that may account for this interaction.

#### **About the Speaker**

After training as MBBS at Fudan University Shanghai Medical School, Prof Chen completed PhD in Neuroendocrinology at the University of Bordeaux, France. He worked in Glaxo Research Laboratories in the U.S.A. and then headed Endocrine Cell Biology at the Prince Henry's Institute of Medical Research (Melbourne). He took on the current position from 2008 and leads an Endocrinology laboratory at St Lucia Campus of The University of Queensland. His laboratory is working on the metabolic and endocrine disorders, particularly in relation to the regulation of GH, LH, PRL, ghrelin, insulin, IGF, etc. as well as ischemic/diabetic cardiomyopathy and endometrial cancer development. One focus of his research is the pituitary growth hormone pulsatile profiles under positive or negative energy balances in several transgenic mouse models. He has published over 150 articles/chapters in his research fields. He serves as members of many international journal editorial boards and councils of scientific societies.

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