The Singapore Bioimaging Consortium (SBIC)
presents a seminar
on

"Regulation of metabolism by PPARs and Angiopoietin like proteins"

Speaker: **Professor Sander Kersten**
Division of Human Nutrition
Wageningen University
The Netherlands
Host : **Dr Han Weiping**
Date : **Monday, 4 September 2017**
Time : **2.00pm – 3.00pm**
Venue : **SBIC Seminar Room**
11 Biopolis Way
Level 2, Helios Building, Singapore 138667
(Please enter via Level 1)

Abstract

In recent years, insights into the mechanisms underlying the biological effects of fatty acids have improved considerably and have provided the foundation for the emerging concept of fatty acid sensing. Fatty acid sensing can be interpreted as the property of fatty acids to influence biological processes by serving as signalling molecules. An important mechanism of fatty acid sensing is via stimulation of DNA transcription via activation of peroxisome proliferators-activated receptors. One of the genes that is consistently and very significantly upregulated by fatty acids via PPARs in numerous organs encodes Angiopoietin like protein 4 (ANGPTL4). ANGPTL4 is a potent inhibitor of lipoprotein lipase, thereby blocking plasma clearance of triglycerides and raising plasma triglycerides. Studies over the past couple of years have shown that ANGPTL4 regulates LPL activity during a variety of physiological conditions, including fasting, cold, and exercise. For example, increased expression of ANGPTL4 (originally called fasting-induced adipose factor) leads to a rapid reduction in adipose tissue LPL activity during fasting. The collective data point to a scenario where ANGPTL4 is the central component of a feedback mechanism that regulates plasma triglyceride hydrolysis and subsequent tissue fatty acid uptake in response to changes in lipid availability and cellular fuel demand. Based on our most recent data, it appears that ANGPTL4 mainly has a local role, at least in adipocytes, by stimulating LPL degradation after LPL processing in the ER. Overall, these data demonstrate the crucial role of ANGPTL4 in the transcriptional and metabolic response to fatty acids and the regulation of fat uptake into cells. The importance of ANGPTL4 in regulation of plasma triglycerides in humans is supported by extensive human genetic studies.

About the Speaker

Prof Sander Kersten is currently Professor of Molecular Nutrition, Wageningen University (The Netherlands). Studies in Prof Kersten's group are geared towards expanding our knowledge of the molecular physiology of nutrient metabolism in health and metabolic diseases and elucidating what key regulatory pathways go awry during disease development and aging. Research in the group covers the following main themes: 1. Molecular regulation of lipid metabolism. The aim is to further understand the molecular regulation of lipid metabolism in liver, adipose tissue, and intestine, partly via elucidating the functional role of specific genes. 2. Immunometabolism, adipose tissue, and metabolic health. The aim is to better understand the role of the adipose tissue and the immune system in metabolic dysregulation caused by overnutrition and characterize the underlying mechanisms using molecular and omics tools. 3. Nutritional regulation of intestinal health. The focus is on the nutritional programming and systems biology of intestinal health, with special interest in dietary fiber, the gut microbiome, food digestion, transcriptomics, and epigenetics.

Admission is free and all are welcome ---