The Singapore Bioimaging Consortium (SBIC)
presents a seminar

on

"Misfolding Amylin and Divalent Copper : Emergent targets for Diabetes Therapeutics"

Speaker: **Garth Cooper**
Professor, Biochemistry & Clinical Biochemistry
School of Biological Sciences
University of Auckland
Date : **Monday, 17 November 2014**
Time : **2.00pm – 3.00pm**
Venue : **SBIC Seminar Room**
11 Biopolis Way
Level 2, Helios Building, Singapore 138667
(Please use Level 1 entrance)

Abstract

The number of patients with diabetes mellitus continues to explode. Currently, people affected world-wide top 380 M, and by 2030 numbers will be 500 M. The growth is driven by type-2 diabetes (T2D), and will inevitably lead to overwhelming of health systems that can no longer fund treatments for the complications. No available approach can stop this progression, and new strategies are desperately required. He reviewed evidence concerning two emergent targets that offer the best opportunities to contain the pandemic. Misfolding human amylin causes beta-cell death and T2D in ~95% of cases. We have identified small, orally-active molecules that suppress this mechanism, which will soon be translated. Emergent evidence links dysregulation of divalent copper to causation of complications. A selective copper-binding agent reverses cardiac, renal, arterial, and liver disease in animal models, and is effective against heart disease in patients. These therapeutic approaches have the potential to prevent/reverse T2D.

About the Speaker

Professor Cooper became interested in diabetes while working in Auckland hospitals, which led to his DPhil studies at Oxford, where he discovered the hormone amylin in the pancreatic beta cells. He invented amylin replacement therapy for diabetes, founding Amylin Pharmaceuticals, a NASDAQ-listed corporation. The discovery of amylin led to the creation of its synthetic chimeric agonist pramlintide, which was registered by the USFDA in 2005 as the drug Symlin® (now taken by about 120, 000 patients in the USA) for treatment of diabetes. He then decided to target two hormone pathways with peptide chimaeras that led to the company's success. In particular, the targeting of the amylin and GLP-1 pathways with peptide chimaeras;

this decision led to the production of two further medicines registered by the FDA, Byetta® (based on exendin IV; registered in 2005) and Bydureon® (2012). (Amylin Pharmaceuticals was bought in 2012 for US$5.3Bill by Bristol Myers Squibb, who recently sold it to Astra-Zeneca). In Auckland N.Z., where he now leads a research programme on suppression of diabetes, his team aims to discover and develop new therapeutics for diabetes, its complications, and other metabolic disorders. The lead candidate, a therapeutic copper-binding molecule has undergone Phase I and II clinical trials, for treatment of heart failure in diabetic patients, and has USFDA Fast-Track designation (unmet medical need); work continues on development and clinical trial planning. At CADET in the U.K., he leads a programme which applies proteomics, metabolomics and transcriptomics to the main ageing-related diseases, including diabetes, common forms of heart failure, and neurodegenerative diseases, using both nonclinical models and human clinical trials.

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