Department of Biomedical Sciences

presents a seminar

"Advanced combinatorial genetics technology for decoding biological complexity"

Dr. Alan Siu-lun Wong
The University of Hong Kong

Date : 14 August 2017
Time: 4:00pm to 5:30pm
Venue: G4701, 4/F, AC1 (Yeung Kin Man Academic Building)

Abstract

The orchestrated action of genes controls complex biological traits, yet the systematic discovery of gene combinations that modulate these phenotypes in human cells is labor-intensive and challenging to scale. Harnessing the power of synthetic biology and next-generation sequencing technologies, we developed CombiGEM (Combinatorial Genetics En Masse) as a powerful platform for high-throughput functional characterization of combinatorial genetic perturbations in human cells. CombiGEM enables rapid, scalable assembly of high-order barcoded combinatorial genetic libraries, and multiplexed quantification of all library members by using next-generation sequencing technologies. The genetic elements included in CombiGEM libraries can be arbitrary, including microRNAs, gene expression/knockdown constructs, and programmable CRISPR-Cas genome editing tools. We envision that this technology platform will be applicable to a broad range of biological settings, and will enable the systematic identification of genetic combinations that regulate complex biological processes and diseases.

About the Speaker

Dr. Alan Siu-lun Wong is an Assistant Professor of the School of Biomedical Sciences at the University of Hong Kong (HKU). He is also jointly appointed at the Department of Electrical and Electronic Engineering of HKU. Before he joined HKU, he obtained his B.Sc. and M.Phil. degrees in Biochemistry and Molecular Biotechnology from the Chinese University of Hong Kong in 2005 and 2007 respectively, and completed his Ph.D. in Biochemistry at the Hong Kong University of Science and Technology in 2011. He joined the Synthetic Biology Group at Massachusetts Institute of Technology from 2012-2016 for postdoctoral training. Dr. Wong was awarded with the Croucher Foundation Studentship (2008), the Butterfield-Croucher Award (2008), the Croucher Foundation Fellowship (2012), the Hong Kong Institution of Science Young Scientist Award in life science (2011), and the RGC Early Career Award (2016). Dr. Wong's current research focuses on developing and applying cutting-edge technologies for studying complex disease biology and devise new therapeutic strategies. His research takes an integrative approach leveraging on various techniques in synthetic biology, CRISPR-based genome engineering, high-throughput sequencing, molecular biology, and genetics to decode the complex genetic bases of human diseases, as well as rationally design and engineer genetic circuits for providing new biomedical and biotechnological solutions.

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All are welcome!