



香港城市大學
City University of Hong Kong
三十周年紀念 30th Anniversary

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Department of Mechanical and Biomedical Engineering
Department of Biomedical Sciences
Centre for Biosystems, Neurosciences, and Nanotechnology

Micro- and Nano-scale Engineering of Cell Signaling

By

Prof. Lance Cameron KAM

Department of Biomedical Engineering

Columbia University, USA

Date: 19 May 2014 (Monday)

Time: 11:00 am - 12 noon

Venue: Room B5-211 (*near Lift 8*)
Level 5, Blue Zone, Academic 1
City University of Hong Kong
Tat Chee Avenue, Kowloon Tong

For abstract and biography, please refer to the attached sheet.

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~ All are Welcome ~

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Abstract

Cells are able to recognize and respond to the complex juxtaposition of multiple biological cues in the extracellular space. This occurs over multiple scales, ranging from long-distance pathfinding by neurons and cell-by-cell coordination in the stem cell niche. At the sub-cellular scale, an emerging picture of T cell – antigen presenting cell communication is that the organization of signaling complexes in this interface directs cell function. This seminar focuses on our recent advances in the adaptation of contemporary micro- and nano-scale fabrication methods for use with biomolecules, providing a powerful approach to capturing and manipulating this complexity *in vitro*. We demonstrate this approach in a select set of cellular systems. For example, T lymphocytes are able to recognize micrometer-scale changes in TCR and CD28 signaling, modulating cellular activation in response to specific patterns. The molecular underpinning of this ability as well as functional impacts on cell differentiation will be discussed. Complementary results in the context of neural, epithelial, and lipid membrane systems will also be presented.

Biography

Dr. Lance C. Kam is an Associate Professor with tenure in the department of Biomedical Engineering at Columbia University. He earned his Ph.D. in Biomedical Engineering from Rensselaer Polytechnic Institute then pursued postdoctoral research in molecular biophysics in the department of Chemistry at Stanford University. Since joining the faculty at Columbia University, Dr. Kam has adapted micro- and nano-scale fabrication techniques to advance system-level understanding of living cells including those of neural, epithelial, and immune origin. His work has been supported by the National Institutes of Health (including a Nanomedicine Center for Mechanobiology) and National Science Foundation.