City University of Hong Kong

Department of Biomedical Sciences

presents a seminar on

Microfluidic Tools for Cellular Delivery and Analysis

Dr Chang Lu

Department of Chemical Engineering

Virginia Tech, USA

Date: 24 September 2014 (Wednesday)

Time: 3:00–4:00 pm

Venue: G5-216, Green Zone (near Lift 7)
5/F Academic 1
City University of Hong Kong

Abstract

Microfluidics provides a versatile platform for manipulating and analyzing cells down to single cell level. In this talk, I will discuss a variety of microfluidic devices we developed for gene delivery and cellular analysis. We developed a simple microfluidic flow-through technique that conducts electroporation under constant voltage for gene delivery. We showed that hydrodynamics such as Dean flows could be introduced to dramatically influence gene uptake and its distribution on the cell surface. By combining electroporation or other permeabilization methods with single cell fluorescence screening, cytometric tools were developed to study the subcellular localization of proteins and its dynamics. On the other front, we have also been developing devices and techniques for probing molecular biology of cells involved in disease processes. Our studies have been focused on genetic and epigenetic analysis of cells with ultrahigh sensitivity and compatibility with animal/clinical samples. These devices and techniques add to the biotechnological toolkit, generate insights into disease processes, and help create personalized treatment strategy.

About the Speaker

Dr Chang Lu is an associate professor of Chemical Engineering and Biomedical Engineering (by courtesy) at Virginia Tech. Dr Lu obtained his B.S. in Chemistry with honors from Peking University, M.S. and PhD in Chemical Engineering from University of Illinois at Urbana-Champaign. He spent 2 years as a postdoc in Applied Physics at Cornell. He was an assistant and associate professor of Biological Engineering at Purdue University before moving to Virginia Tech. He is the author of 60+ peer-reviewed journal papers and the inventor of several patents. Dr Lu received Wallace Coulter Foundation Early Career Award and NSF CAREER Award among a number of honors. He was named a faculty fellow by College of Engineering at Virginia Tech in 2012. His work has been supported by NIH (RO1 and R21), NSF and USDA grants.

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All are welcome!