



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 Biomedical Sciences

Department of Mechanical and Biomedical Engineering

Centre for Biosystems, Neurosciences, and Nanotechnology

Rolling in the Deep: Tumor Cell Adhesion and Treatment in the Bloodstream

By

Prof. Michael KING

Department of Biomedical Engineering

Cornell University, USA

Date: 19 May 2014 (Monday)

Time: 10:00 am – 11:00 am

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.

Contact: Prof. Michael YANG (3442-7797, bhmyang@cityu.edu.hk)

~ All are Welcome ~

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Abstract

Cancer metastasis through the bloodstream is facilitated by adhesive interactions between circulating tumor cells (CTCs) and the blood vessel wall. My laboratory has used a combination of experiments in flow chambers and living mice, and multiscale computational models, to understand the behavior of blood and cancer cells under physiological flow conditions. We have identified some of the critical enzymes and surface proteins that control the fate of CTCs in the bloodstream, and their propensity to metastasize to specific microenvironments such as the bone marrow. Thin coatings of halloysite nanotubes represent a remarkable new biomaterial capable of capturing rare CTCs from patient blood samples while simultaneously repelling most white blood cells. We have applied such nanostructured surfaces for new patient-specific drug sensitivity assays that analyze patient CTCs. Finally, I will present a novel platform technology for the treatment of metastatic cancer, called “Unnatural Killer Cells”. This liposome-based technology employs native circulating leukocytes as a carrier for the apoptosis ligand TRAIL, and has been demonstrated to efficiently target and kill CTCs in flowing blood both in vitro and in mice.

Biography

Michael King is a professor of biomedical engineering at Cornell University. He completed a PhD in chemical engineering at the University of Notre Dame and a postdoctoral fellowship in bioengineering at the University of Pennsylvania. After six years on the faculty of biomedical engineering at the University of Rochester, he moved to Cornell in 2008. He has written textbooks on the subjects of statistical methods and microchannel flows, and has received several awards including the NSF CAREER Award, Outstanding Research Awards from the American Society of Mechanical Engineers and the American Society of Clinical Chemistry, and he is a James D. Watson Investigator of New York State. King is a Fellow of the American Institute for Medical and Biological Engineering (AIMBE), and currently serves as Vice President of the International Society of Bionic Engineering. He is the Editor-in-Chief of Cellular and Molecular Bioengineering, an official journal of the Biomedical Engineering Society.