

Joint HKSTAM/MAE Distinguished Seminar

Cell Mechanobiology and Mechanics on Micro Devices

Prof. Yun Sun

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Department of Mechanical and Industrial Engineering
University of Toronto, Canada.

Date: 4 June 2014 (Wednesday)

Time: 4:00 – 5:00 p.m.

Venue: Room 6573 (via Lift 32, 6th Floor), Academic Building
Hong Kong University of Science and Technology

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ABSTRACT

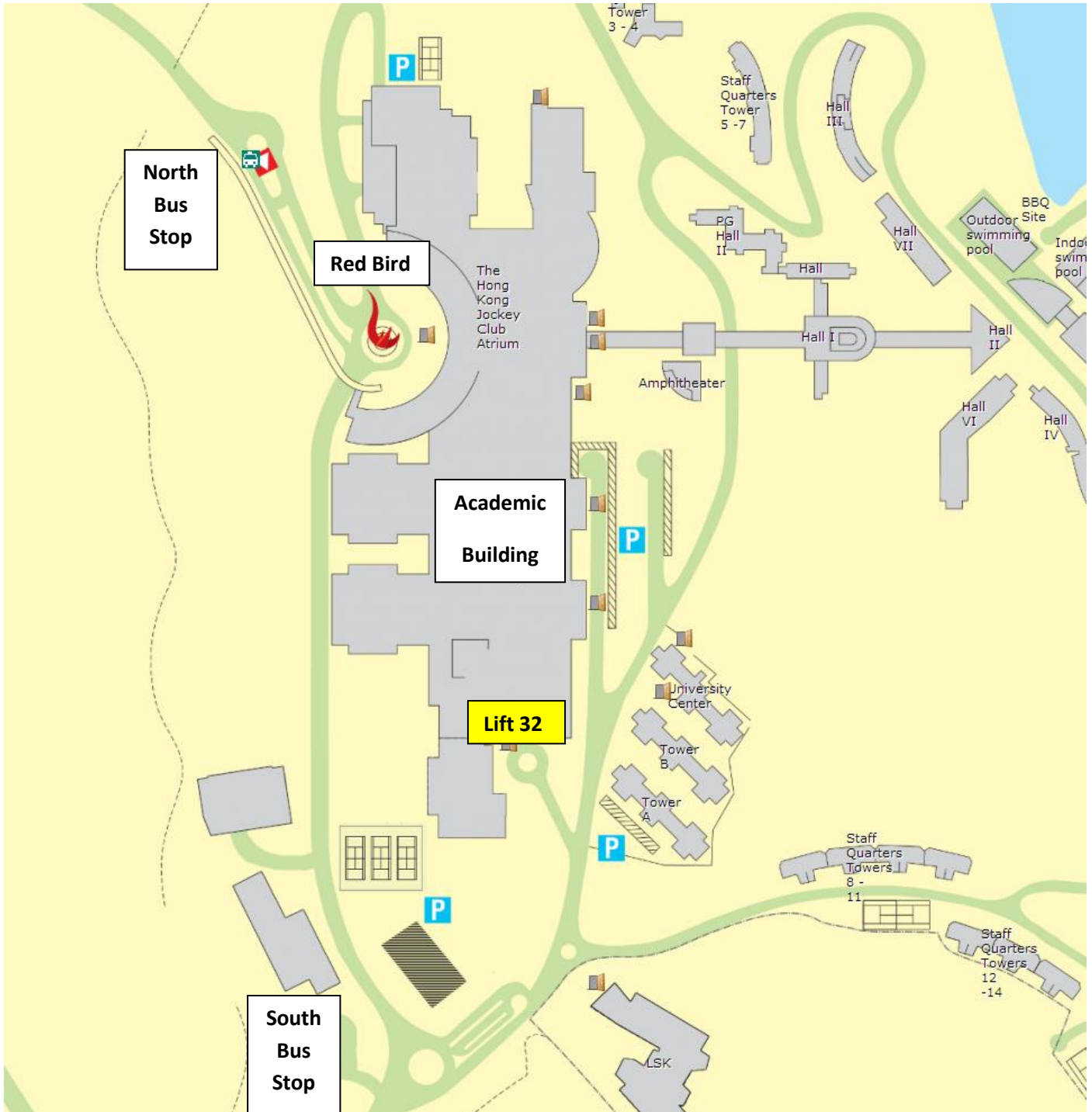
Living cells are a complex, dynamic entity, continuously adapting and responding to biochemical and physical cues. Cellular metabolism and fate can be regulated through various factors, such as the introduction of molecules into cells or through mechanobiological stimuli. Cells change their mechanical behavior and properties during growth and differentiation and under pathological conditions. In this presentation, I will introduce micro device arrays for mechanically stimulating cell culture. Mechanical and biochemical stimuli are used to probe the combinatorial effect on cell response. Together with collaborating hospitals, we perform mechanical characterization on cells from patient samples to understand how disease progression alters cell mechanics. I will introduce our recently developed technologies for quantifying multiple electrical and mechanical parameters of individual blood cells. New findings on property changes of banked blood cells over blood storage will be discussed.

Biography of Speaker

Dr. Yu Sun is a Professor in the Department of Mechanical and Industrial Engineering, with joint appointments in the Institute of Biomaterials and Biomedical Engineering and the Department of Electrical and Computer Engineering at the University of Toronto. His Advanced Micro and Nanosystems Laboratory develops micro devices and micro-nanorobotic systems to manipulate and characterize cells, molecules, and nanomaterials under optical and electron microscopes. His Ph.D. was in mechanical engineering from the University of Minnesota in 2003. He did postdoctoral research at the Swiss Federal Institute of Technology (ETH-Zürich) before he joined Toronto in 2004. He is presently a University of Toronto McLean Senior Faculty Fellow and the Canada Research Chair in Micro and Nano Engineering Systems. He has served on the editorial boards of a number of journals. He is presently a senior editor for IEEE Trans. Automation Science and Engineering and an editorial board member of IOP J. Micromechanics and Microengineering. He is a fellow of the ASME (American Society of Mechanical Engineers) and a fellow of the CAE (Canadian Academy of Engineering).

Map and Direction

(1) HKUST Campus map and Lift 32



(2) Public transport guide to HKUST

https://www.ab.ust.hk/cso/transport_guide.htm