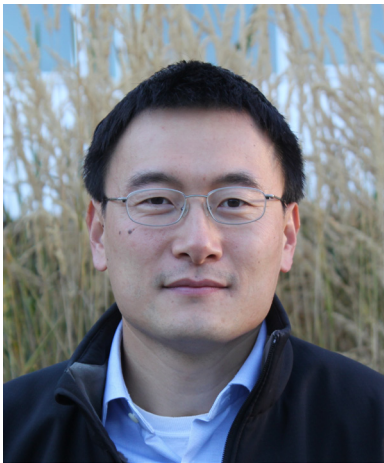


Wednesday, November 7, 2012
12:00 pm
in LSC3

Life Sciences Centre
2350 Health Sciences Mall



Dr. Hongshen Ma

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Departments of Mechanical Engineering and
Urologic Sciences, UBC*

“Microfluidic Technologies for Cell Biomechanics and Cell Separation”

The mechanical properties of human cells can provide valuable insights to the presence and status of many diseases. For example, decreased deformability of infected red blood cells is central to the pathology of falciparum malaria and presents a route to study its pathogenesis and the mechanism of action of potential drugs. Similarly, differences in deformability can be used to distinguish circulating tumor cells from leukocytes in peripheral blood, enabling methods for label-free separation of these cells to evaluate disease status and drug efficacy in many types of cancers.

Microfluidic technologies present the ability to create structures at the length scale of individual cells and precise control over the flow of minute volumes of liquid. Leveraging these capabilities, my group has developed microfluidic devices for measuring the deformability of single cells and for the separation of cells based on their mechanical properties. Specifically, we have developed a device for measuring the deformability of nucleated cells and red blood cells, enabling these studies to be performed on a routine and point-of-care basis. Additionally, we developed a microfluidic ratchet mechanism for deformability-based cell sorting, as well as a bi-stable cell trap mechanism for high-throughput separation of rare cells without clogging. In this talk, I will present the enabling characteristics of microfluidic technologies, our devices for cell deformability studies and cell separation, and the application of these devices to RBC biomechanics, malaria parasitology, and circulating tumor cells.

This Seminar is sponsored by:

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Host: Dr. Ed Conway, CBR Director, Professor of Medicine, UBC

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Refreshments will be served 10 minutes before the seminar
Seminar information: 604 822 7407

