The Chinese University of Hong Kong
Department of Biomedical Engineering

Graduate Seminar – PhD Oral Defence

Student : Ms. XIAO Qinru
Supervisor : Prof. HO Yi Ping, Megan
Date : 14 June 2023
Time : 10:00 am
Venue : ERB 1118, William M. W. Mong Engineering Building
Zoom Link : https://cuhk.zoom.us/j/4585368672?pwd=U0lYQVRKSlJsaitjTHdiM29BVENUZz09
Meeting ID : 458 536 8672
Password : 102550

Title: A high-throughput label-free biophysical approach for the characterization of cells

Cellular mechanical properties play a crucial role in various physiological and pathological processs. Understanding and characterizing these mechanical properties have become increasingly important in the field of cell biology. Based on the current microfluidic-based measurement technique, we have developed a quantitative phase deformability cytometry (QPDC), combining deformability cytometry with a quantitative phase imaging system. The QPDC system is demonstrated with an improved signal-to-noise ratio of the acquired images and mitigated image artifacts, allowing a truthful illustration of cellular contours, especially for cells subjected to actin depolymerization. At the same time, the phase value extracted from captured images may provide an additional biophysical characteristic of cells. We have further utilized the current deformability cytometry to investigate the deformability of mesenchymal stem cells (MSCs) and macrophages. The cellular characterization has suggested that the substrates may affect the mechanical properties of MSCs and subsequently the differentiation capability. On the other hand, mapping the deformability of the pro-inflammatory and anti-inflammatory macrophages has demonstrated a complementary method for the phenotyping of macrophages.

***** ALL ARE WELCOME *****

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