BioSyM Seminar Series 2017

(1) Automatic tracking of bacteria in early biofilm formation
(2) A robotic micropipette for cell manipulation

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Date	: 06th November 2017, Monday
Time	: 12 pm to 1 pm
Venue	: Level 5, Perseverance Room

Abstract

(1) Biofilms form when free floating bacteria attached to a surface. This attachment can be reversible or irreversible depending on adhesion molecules produced. The attached cell either divides or recruits other cells via cell-cell communication to achieve a critical cell density. Through automatic quantification of time-lapse microscopy images of experimental data, we can determine whether the division vs recruitment rate affects whether a biofilm will form or otherwise.

(2) Conventionally, cell manipulation with a micropipette requires well-trained operators to skilfully operate multiple devices (e.g. microscope stage, micropipette, synchronized pressure and video recording), a time consuming process. Semi automation of single cell aspiration will allow higher throughput measurements to be performed. When integrated with an optical tweezer, our system can measure binding affinity between antibody coated beads and a T-cell and then harvest desired cells for further analysis.

Short Biography

Dr. Sharon Ong Lee Ling received her Ph.D. in Field Robotics from The University of Sydney, Australia in 2008. She joined SMART-BioSyM in 2009 as a Postdoctoral Associate and has been a Research Scientist since 2014. Her research interests include medical image analysis, automation, Bayesian statistics and machine learning.