

**Focused Seminar Series on Microdevices in Biological Studies**  
 25 Jul 2016 – 10 Oct 2016

**THREE DIMENSIONAL MULTICELLULAR  
 MICROFLUIDIC MODELS**

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Research Scientist

Singapore-MIT Alliance for Research and Technology

Date: 26<sup>th</sup> September 2016, Monday

Time: 12pm to 1pm

Venue: Perseverance Room, Enterprise Level 5



***Abstract***

Microfluidic technology has shown enormous promise in studying underlining mechanisms such as cell adhesion, cell migration and cell–cell interactions. Furthermore, microfluidic devices have been used to improve biomedical research by speeding up diagnosis and detection. In particular, my work focuses on developing three dimensional (3D) multicellular microfluidic systems. These microfluidic models may help in understanding the physiological and pathological mechanisms involved in many diseases including cancer.

Specifically for cancer-related applications, I will present 3D models to study tumor–immune system interactions in the contest of epithelial mesenchymal transition (EMT), extravasation as well as T cell cancer immunotherapy. While, as not-cancer-related application of our microfluidic system, I will present a 3D neurovascular model developed with human induced pluripotent stem cells (h-iPSCs).

The ultimate goal is to use patient-derived explants or cells to rationally identify personalised therapeutic strategies and meet the rising demand for fast and reliable preclinical testing.

***Short Biography***

Dr. Giulia Adriani is a Research Scientist at the Singapore-MIT Alliance for Research and Technology (SMART). She got her BS and MS with honors in Mechanical Engineering at Polytechnic of Bari in Italy. She was awarded the Interpolytechnic Doctoral School Fellowship and worked at The Methodist Hospital Research Institute in Houston, Texas (USA). After her PhD in Biomedical and Biomechanical Engineering, she moved to Singapore and worked at the National University of Singapore (NUS) and at the Institute of Molecular and Cell Biology (IMCB, A\*STAR). In SMART she is leading and contributing to multiple projects applying microfluidic technologies to cell and tissue engineering. Her current studies focus on the development of a blood brain barrier model, on cancer immunotherapy as well as on the mechanisms of cancer metastasis, all in 3D multicellular microfluidic systems.