

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

# **Applications of Spiral Microchannel Devices in Biomedical Researches**

Dr. Lu YIN

Singapore-MIT Alliance for Research and Technology (SMART)

Date: 25 Jul 2015, Monday

Time: 12pm to 1pm

Venue: Perseverance Room, Enterprise Level 5



## **Abstract**

We have been developing various spiral microchannel devices to separate cells with different physical properties. The high-throughput and label-free features of this cell separation technology have led to its applications in a wide range of biomedical studies; and in a very new manner it solves many technical difficulties in biology which can hardly be solved by classic methods. In this talk, three distinct applications of spiral microchannel devices are to be elaborated. 1) separation of zonal chondrocytes to regenerate natural-structured cartilage in repair of cartilage damage. 2) development of high-density clogging-free perfusion culture system for production of biologics 3) Purification of hematopoietic stem cell differentiation culture for study of Plasmodium Vivax infection.

## **Short Biography**

Dr. Lu Yin is currently a postdoctoral associate in BioSystems and Micromechanics (BioSyM) Inter-Disciplinary Research Group of Singapore-MIT Alliance for Research and Technology (SMART). Dr. Yin pursued undergraduate study from 2003 to 2007 in the bioengineering department of Nanyang Technological University of Singapore (NTU), followed by PhD study from 2007 to 2012 in the computational systems biology program of Singapore-MIT Alliance (SMA), National University of Singapore (NUS). Dr. Yin joint Infectious Diseases Inter-Disciplinary Research Group of SMART as postdoctoral associate in 2012. He used a combination of genetic lineage tracing and high-content imaging-based tissue informatics approach to study the lung tissue repair mechanism in adult and aged mice after influenza infection. Dr. Yin joint BioSyM in 2013, and started to explore the application of inertial microfluidic devices in a wide range of biomedical researches, including isolating circulating tumour cells in blood for cancer diagnosis, isolating bronchiolar club cells from mouse lung, separating zonal chondrocytes to regenerate stratified cartilage tissue, mesenchymal stem cell culture for chondrogenesis, purifying HSC differentiation culture for plasmodium vivax infection, building high density clogging free perfusion culture system for biologics production, purifying hepatocytes and Kupffer cells, etc.