

The applications of spiral microfluidic cell sorting in cell therapy



Dr Yin Lu

Associate Staff Scientist
Stem Cell 2, BTI

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BTI Boardroom
Level 6, Centros

Hosted by Dr Steve Oh

Seminar Abstract

The use of inertial microfluidics in cell separation has been rapidly emerging in recent years. These techniques are label-free, and rely solely on hydrodynamic forces to separate cells in a flow based on their biophysical properties. We specifically study a spiral microchannel chip, which is superior to other inertial microfluidic devices in terms of high throughput, robustness, and easy fabrication. We have demonstrated its unique values in various cell therapy applications. In this presentation, two types of applications will be elaborated. The first type is separation of different cell types to reconstruct complicated tissue structure. The second type is selective culture expansion of stem cells to overcome population heterogeneity.

About the Speaker

Dr. Yin Lu is currently an associate staff scientist at Bioprocessing Technology Institute (BTI), Agency for Science, Technology and Research (A*STAR). Dr. Yin received Bachelor's degree in bioengineering from Nanyang Technological University of Singapore as a recipient of Singapore Ministry of Education scholarship for PRC undergraduate student, followed by Ph.D in computational system biology from NUS, with Singapore-MIT Alliance graduate scholarship. Dr. Yin joint Infectious Disease interdisciplinary group of Singapore-MIT Alliance for Research and Technology Center (SMART) as a postdoctoral associate in 2012 to investigate the cellular mechanisms of lung tissue repair following viral infection. He moved on to Biosystems and Micromechanism group of SMART in 2013, where he explored various applications of microfluidic cell separation technologies in stem cell culture and tissue engineering. He joint Orthopedics Surgery Department, School of Medicine, National University of Singapore (NUS), and NUS tissue engineering program (NUSTEP) in 2018 as a research fellow, to continue his research on mesenchymal stem cell subpopulation selection and zonal chondrocyte isolation for cartilage repair. Dr. Yin has recently joint BTI to further his research on the critical quality attributes of mesenchymal stem cells and novel stem cell production modalities. Dr. Yin's research interests include regenerative medicine, stem cell culture and therapy, biomedical microfluidics, label-free cell isolation and purification, etc.