



DEPARTMENT OF MECHANICAL ENGINEERING
AND
MEDICAL ENGINEERING PROGRAMME

SEMINAR

Online

Title: Integrated multi-layered, multi-cellular NSCLC organoid model for high throughput drug and immunotherapy screening

Speaker: Miss Mistry Maitraee (PhD candidate)
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Date: 7 May, 2021 (Friday)

Time: 2:30 p.m. (Hong Kong Time)

Zoom Link: 1) Link to join the meeting:

<https://hku.zoom.us/j/2354295349?pwd=MFoxUmJpL2o5aksvNmRiKzk0elpUdz09>

2) Meeting ID: 235 429 5349

3) Password: 447918

Abstract:

Lung cancer is the leading cause of cancer deaths worldwide, contributing to 25% of all cancer deaths, with non-small cell lung cancer (NSCLC) attributing to 85% of all lung cancer cases. While development of drug-targeted therapies and immunotherapies have led to significant advances in cancer treatment, the average 5-year survival rate for NSCLC is still only 25%. The heterogenous nature of NSCLC among different individuals dictate the need for personalized cancer therapy screening platforms, which is currently lacking.

Conventional cancer screening platforms utilize (2D) tumour cell line cultures and/or patient-derived tumour xenografts (PDXs) implanted in immunodeficient animal models. While each method has their distinct advantages, 2D screening tools fails to properly recapitulate the 3D environment inside human bodies, and animal models fail to mimic human responses due to the species variation. In contrast, the recently developed self-assembling 3D organoid technology has been regarded as a candidate for personalized cancer therapy. However, current organoid models lack the incorporation of the tumour microenvironment and the tumour interaction with the surrounding stromal and immune cells, both of which are key to more accurate and personalized cancer therapy screening platforms.

My project aims to overcome the shortcomings of current cancer therapy screening platforms by generating an integrated multi-layered, multi-cellular organoid model which can be used for high throughput drug and immunotherapy screening. The model incorporates lung cancer cells (cell line and primary cells from patients), extracellular matrix, mesenchymal stromal cell and even immune cells, thus providing a more accurate personalized cancer therapy screening platform which takes in account of the tumour's interaction with its microenvironment along with its neighbouring niche cells.

In this talk, I will present my current progress in optimizing the multicellular multi-layered model with cell-lines and will discuss the future steps to be taken to form the personalized multicellular organoid platform.

ALL INTERESTED ARE WELCOME

For further information, please contact Prof. B. Chan at 3917 2632.

Research area: Biomedical Engineering