

# iHealthtech - BME Department Joint Seminar

27 NOVEMBER, MONDAY, 4 PM - 5:30 PM

NUS, College of Design and Engineering, Building E7, Level 3, Seminar Room 3

## Professor Liu Guozhen

Head of Biomedical Engineering Programme, School of Medicine  
Associate Dean, The Graduate School  
The Chinese University of Hong Kong, Shenzhen (CUHK-SZ)



### Inflammation quantification from point-of-care to in vivo monitoring of cytokines

Inflammation's link to cancer progression is well-established, driven by cytokines from innate immune cells. Unfortunately, tools for in vivo cytokine detection are lacking, hindering timely treatment. Advances in biosensors and nanobiotechnology enable responsive systems for noninvasive real-time monitoring. These innovations enhance precise treatment efficacy by integrating with medical devices for cell interaction. This talk will discuss recent research on cytokine detection systems, quantifying inflammation from point of care to in vivo monitoring in regions like the brain and spinal cord of mice, promising better diagnostics and therapies.



## Dr Steven Cui

Assistant Professor  
Biomedical Engineering Programme, School of Medicine  
The Chinese University of Hong Kong, Shenzhen (CUHK-SZ)

### Cellular and acellular strategies in cardiac and cartilage tissue repair

Joint and cardiovascular diseases like osteoarthritis (OA) and myocardial infarction (MI) are challenging due to limited regenerative capacity. Repairing or regenerating infarcted tissue is crucial for mitigating damage. Cell-based therapy is a primary approach, promoting differentiation or secreting signals for tissue repair. Cellular secretomes, including growth factors, extracellular vesicles (EVs), and decellularized extracellular matrix (dECM), are also being explored. Cell-free therapy offers advantages like reduced immune rejection and ethical simplicity. This talk will highlight our group's developments in both cell and cell-free therapies, along with biomaterials and 3D biofabrication techniques for cartilage and cardiac tissue repair.

## Dr Zhang Duo

Assistant Professor  
Biomedical Engineering Programme, School of Medicine  
The Chinese University of Hong Kong, Shenzhen (CUHK-SZ)



### Manufacturing biomimetic tissue models and functional soft devices with biofabrication techniques

Biofabrication, an interdisciplinary field at the nexus of engineering, biotechnology, and medicine, finds diverse applications in biomimetic devices, regenerative medicine models, diagnostic equipment, and organ-on-a-chips. This seminar offers insights into the latest advances in biofabrication, focusing on in vitro fibril tissue models, micro-fiber characterisation, hydrogel printing, and strategies for creating flexible biomimetic structures. The discussion also includes upcoming research on drug experimental tissue models, implantable bioreactors, and flexible soft robotics.



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