



NUS
National University
of Singapore

iHealthtech
Institute for Health Innovation
& Technology

"Innovating Health" Distinguished Speaker Seminar Series

Professor Yang Chaoyong

Distinguished Professor, College of Chemistry and Chemical Engineering, Xiamen University
Professor and Vice-Director, Institute of Molecular Medicine, Shanghai Jiao Tong University



Microfluidic Technologies in Clinical Biopsies: Advancing Precision Healthcare

7 MAY 2025, WED, 11 AM - 12 PM

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

Hosted by: Professor Lim Chwee Teck, iHealthtech Director

Advancements in microfluidics are revolutionizing clinical diagnostics and biomedical research, particularly in addressing challenges in traditional biopsies. This presentation explores how our team has leveraged microfluidic technologies to enhance the efficiency and accuracy of clinical biopsies. We have employed microfluidics to create high-throughput molecular evolution strategies, discovering several classical aptamers widely adopted by the international community. These aptamers have become essential tools for molecular recognition and targeting in diagnostic applications. By integrating molecular recognition with precise microfluidic control, we have developed efficient methods for enriching and detecting circulating tumor cells and exosomes, offering valuable insights into tumor heterogeneity and supporting personalized treatment strategies. Additionally, we have combined fluid control and chemical metabolic labeling to develop single-cell multi-omic sequencing methods, enabling detailed analysis of cellular dynamic response heterogeneity. Finally, we have significantly enhanced the spatial resolution and detection sensitivity of spatial transcriptomic sequencing by merging microfluidic interfacial chemistry with nucleic acid spatial barcoding strategies, providing a powerful tool for dissecting the spatial organization and molecular features of the tumor microenvironment. These technological advances address key challenges in bioanalysis and biomedical research, transforming clinical biopsy procedures and paving the way for a new era of precision healthcare.

Speaker biography:

<https://ihealthtech.nus.edu.sg/event/innovating-health-distinguished-speaker-seminar-series-professor-yang-chaoyong/>



Register
here

[\[Link to the registration form\]](#)



Email: ask.iht@nus.edu.sg