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iHealthtech
Institute for Health Innovation
& Technology

iHealthtech Seminar

30 JUL, TUE, 11 AM –12 PM

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

Professor Chen Yongming

School of Chemistry and Molecular Science, Henan University
School of Materials Science and Engineering, Sun Yat-sen University
China



Biomaterials for Innovative Vaccines and Inflammation Inhibition

The function of the immune system is to defend against infections from pathogens, such as viruses. Vaccines serve as powerful tools to combat infections by neutralizing or destroying these microbes through eliciting an immune response. However, noninfectious substances and damaged or tumor cells can also trigger immune responses, leading to tissue injury and diseases, including autoimmune diseases and tumour metastasis. In such cases, abnormal immune responses need to be inhibited.

In this talk, I will present how we apply materials to facilitate efficient and safe interventions for virus infections and autoimmune responses. For the first case, we utilise biomaterials and nano-delivery technology to engineer novel nanovaccines, focusing on recombinant protein vaccines and related adjuvants. I will also briefly introduce innovative ionisable lipids for mRNA vaccines. For the latter case, we use polymers or artificial DNases to scavenge or degrade cell-free DNAs that elicit abnormal immune activation in disorders such as autoimmune diseases and tumor metastasis.

Speaker biography:

Professor Chen Yongming received his Master's degree in Chemistry from Northwest University, Xian in 1990 and PhD in Polymer Science from Nankai University, Tianjin in 1993. He did his Postdoctoral studies at the Institute of Chemistry, CAS, the University of Düsseldorf and the University of Mainz between 1994 to 2001. In 2001, he was appointed a Professor at the Institute of Chemistry, CAS. In 2013, he moved to Sun Yat-sen University and in 2024, to Henan University.

He received the "Distinguished Young Scholars" award from the National Science Foundation of China in 2006 and the "Wang Bo-Ren Polymer Research Award" from the Chinese Chemistry Society in 2011. He served as an Associate Editor for the journal Polymer from 2007 to 2018 and was on the Advisory Board Panel of Macromolecules and ACS Macro Letters.

Professor Chen's research interests include polymer synthesis methodology and polymer applications in nanomedicine, particularly in biologics delivery, immune activation, and inhibition. He has published over 300 research articles and holds around 30 approved patents.

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