The Chinese University of Hong Kong
Department of Biomedical Engineering

Engineering Glycosaminoglycan-Rich Biomimetic Scaffolds for Next-Generation Tissue Regeneration



Dr. YANG Xingxing

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Date: **2 November 2026 (Monday)**
Time: **11:00 am – 12:00 nn**
Venue: **Room 1122, William M.W. Mong Engineering Building, CUHK**

Abstract

Proteoglycans (PGs) and glycosaminoglycans (GAGs) are major components of the extracellular matrix (ECM), where they regulate tissue biomechanics, cellular signalling, and regenerative processes. However, reproducing GAG-rich microenvironments remains a major challenge because of the highly hydrophilic nature of GAGs and their limited retention within engineered biomaterials. To address this challenge, we have developed a series of biomimetic ECM platforms that enable the stable incorporation and precise control of GAGs within three-dimensional scaffolds. These engineered microenvironments recapitulate key biochemical and structural features of native tissues, providing a versatile platform for investigating cell-matrix interactions and directing tissue regeneration. This presentation will outline recent advances in GAG-rich biomaterials and how matrix composition influences stem cell behaviour, tissue-specific differentiation, and extracellular matrix deposition. Applications of the GAG-rich scaffolds in cartilage regeneration, and intervertebral disc repair will be highlighted. This work demonstrates the potential of GAG-rich biomimetic scaffolds as therapeutic platforms and research tools for regenerative medicine and tissue engineering.

Biography

Dr. Xingxing Yang received her B.Sc. in Applied Chemistry and M.Sc. in Biomedical Engineering in China. She obtained her Ph.D. in Biomedical Engineering from The University of Hong Kong (HKU) and subsequently completed postdoctoral training at HKU Inno center. She later served as a Research Assistant Professor in the Department of Mechanical Engineering at HKU. She is currently a Scientist at the Centre for Neuromusculoskeletal Restorative Medicine.

Her research focuses on developing biomaterials that recapitulate the biological and mechanical functions of native extracellular matrix. By integrating materials engineering, stem cell biology, and tissue regeneration, her research aims to establish biomimetic microenvironments for tissue repair and disease modeling. Her current research interests include (1) extracellular matrix engineering and biomimetic biomaterials; (2) stem cell differentiation and engineered microenvironments; and (3) regenerative therapies for diseases. Her long-term goal is to develop next-generation biomaterials and tissue models that bridge fundamental biology and clinical translation.

**** ALL ARE WELCOME ****

For enquiries, please contact Miss Violet Wong (BME) at 3943-8261.