



Department of Chemistry

香港城市大學
City University of Hong Kong

Special Departmental Seminar

By

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***Activation Mechanism and Therapeutic Modulation
of Adhesion G Protein-Coupled Receptors***



Date: 14 August 2026 (Friday)

Time: 10:30 am – 11:30 am

**Venue: P4302 (Purple Zone, 4th Floor)
Yeung Kin Man Academic Building
City University of Hong Kong**



For abstract, please refer to the attached sheet.

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~ All Are Welcome ~

Abstract

Adhesion G protein-coupled receptors (aGPCRs) represent an evolutionarily conserved, structurally distinct subfamily of GPCRs characterized by large extracellular adhesion domains and unique self-activation properties, which mediate diverse physiological and pathological processes. Despite their functional importance, the precise molecular mechanism governing aGPCR activation has long remained elusive, severely hindering the mechanistic understanding and therapeutic targeting of this receptor family. Here, we combine structural biology and pharmacological approaches to dissect the molecular basis of aGPCR function. We structurally unravel the tethered agonist-dependent activation mechanism underlying aGPCR autoactivation and define the previously uncharacterized recognition mechanism for steroidal hormones, greatly expanding the ligand repertoire and mechanistic framework of aGPCRs. Guided by these mechanistic insights, we further develop a panel of aGPCR-targeted agents, including peptide ligands, small-molecule ligands and nanobodies, which exhibit promising druggable potential. Collectively, our study resolves key mechanistic puzzles of aGPCR activation and ligand recognition, fills critical gaps in aGPCR structural pharmacology, and provides actionable targets and druggable candidates for future basic research and translational therapeutics.

Biography



Prof. Xiao holds talent honors supported by the Ministry of Education. He is a recipient of the National Excellent Young Scientists Fund and Shandong Provincial Outstanding Youth Fund.

He earned his PhD in Biochemistry and Molecular Biology from Shandong University, and completed postdoctoral training at Shandong University and Duke University. His research focuses on deciphering the pathogenic mechanisms mediated by G protein-coupled receptors (GPCRs), a superfamily of pivotal therapeutic targets. His studies uncover the molecular mechanisms underlying clinically used drugs and discover new GPCR targets for therapeutic intervention, generating a suite of original discoveries. As first or corresponding author, he has published over 30 papers in top-tier journals, including *Nature* (5), *Cell* (2), *Science*, *Nature Chemical Biology* (3), *Molecular Cell* and *PNAS*.

He was honored with the 3rd Zhong Nanshan Youth Science and Technology Innovation Award in 2024. As a major contributor, he has also received the First Prize of Shandong Provincial Natural Science Award, the First Prize of Natural Science Research Achievement Award of the Ministry of Education, and the Chinese Medical Science and Technology Award.