NUS National University of Singapore | Department of Biological Sciences, Faculty of Science

ON-SITE BIOLOGY COLLOQUIUM

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Hosted by Assoc Prof Liou Yih-Cherng

Chemical biology-based drug discovery for untargeted kinases

By **Xianming Deng**

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Protein kinases have been a rich source of targets for drug discovery with 74 small molecules as approved therapeutics. However, most academic and industrial research remains focused on only a small fraction of the kinome for which evidence of therapeutic utility already exists. There's an emerging need to explore the untargeted kinome that have received scant attention. Here we presented the new strategies including "pathway-specific" screening and "compound-centric" approach that led to the discovery of first-in-class kinases MST1/2 inhibitor (XMU-MP-1) and serine/threonine kinase STK19 inhibitor (ZT-12-037-01) with in vivo efficacy. These inhibitors will serve as valuable tools to pharmacologically interrogate these untargeted kinase biology, and they provide a starting point for medicinal chemistry efforts aimed at developing related targeted therapeutics.

About the Speaker

Dr. Xianming Deng obtained his BS degree in Chemistry from Xiamen University in 2001 and his Ph.D. degree in Organic Chemistry from Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences in 2006. Then he has been a postdoctoral research fellow under the supervision of Prof. Nathanael S. Gray in the Department of Biological Chemistry and Molecular Pharmacology at Harvard Medical School and Department of Cancer Biology at Dana-Farber Cancer Institute, USA, from 2006 to 2012. In 2012, Dr. Deng joined the faculty of School of Life Sciences, Xiamen University, China. His research focuses on chemical biology-based drug discovery, using synthetic chemistry and functional small molecule discovery to modulate biological pathways important in cancer and the related diseases. Dr. Deng has published 48 papers as corresponding co-corresponding author in prestigious journals such as Cell (2019), Nature (2022), Nature Metabolism (2022), Science Translational Medicine (2016), and Nature Communications (2020), which led to the discovery of couple first-in-class tool compounds such as XMU-MP-1 (MST1/2 inhibitor) and XMU-MP-2 (BRK inhibitor). He also won a number of awards, including Distinguished Young Scholar Award from National Natural Science Foundation of China in 2020 and XPLORER PRIZE from New Cornerstone Science Foundation in 2023.