



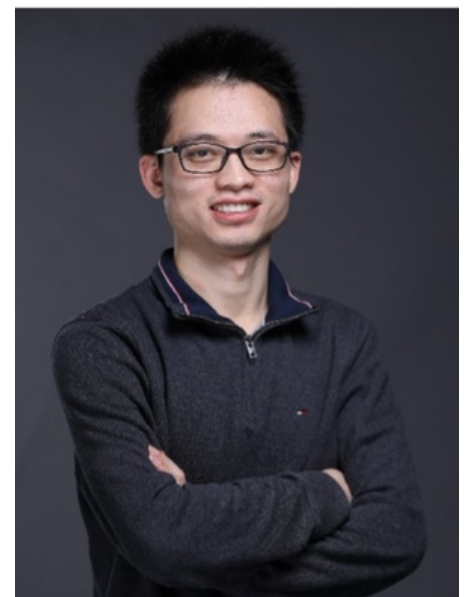
Centre for Cryo-electron
Microscopy of Membrane Proteins

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Dr. Jianping Wu obtained his BS and PhD degrees from Tsinghua University in 2012 and 2017, respectively. He then worked as a postdoc at Princeton University. Jianping Wu has been devoted to the structural studies of important membrane proteins for more than ten years. He reported the first high resolution cryo-EM structure of the eukaryotic voltage-gated calcium channel Cav1.1, and its complex structures with several clinical drugs for the treatment of hypertension. Dr. Wu joined Westlake University as an Assistant Professor since 2019. The current research interests of Wulab focus on the molecular understanding of protein and protein complexes that play essential roles during the fertilization process.



Structural elucidation of CatSper by cryo-EM

The cation channel of sperm (CatSper) is essential for sperm motility and fertility. CatSper is exclusively expressed in testis and dysfunction of CatSper can lead to male infertility. It is therefore an ideal target for the treatment of male infertility and the development of novel non-hormonal contraceptives. CatSper is the most complicated ion channel known, and its structural study has been extremely challenging. I will discuss our recent progress in purifying the native CatSper from the sperm of transgenic knock-in mice. We are further using cryo-EM to elucidate its high-resolution structure. Aside from the exciting unique assembly features of CatSper, the structure also reveals several previously uncharacterized components of CatSper, exemplified by an organic anion transporter SLCO6C1. CatSper thus is a channel-transporter ultracomplex that we termed the CatSpermasome. Our study showcases the power of structural biology in making new discoveries.