

# 2021 GU XIAOCHENG LECTURE

## 顾孝诚讲座

The 2021 GU XIAOCHENG LECTURE is awarded to Dr. Junyu Xiao of Peking University.

The Gu Xiaocheng lecture award was established by the Gu Xiaocheng Memorial Fund in 2012. The lectureship recognizes young investigators showing promises to become future leaders in life science research, especially those who work in China.



Dr. Junyu Xiao obtained a bachelor's degree from the School of Life Sciences, Peking University in 2002; a doctorate degree from the University of Michigan in 2009. From 2009 to 2013, he successively engaged in post-doctoral research and project scientist work the University of California, San Diego. Dr. Xiao joined Peking University in 2014 as an assistant professor and a PI at the Peking University-Tsinghua Joint Center for Life Sciences. He was promoted to Associate Professor in 2020 and appointed as a PI in the Beijing Future Genetic Diagnosis Advanced Innovation Center.

Dr. Xiao is mainly working on the structure and function of new kinases in immunoglobulins and secretory systems, and has achieved internationally influential results. The research team led by Dr. Xiao has carried out in-depth and systematic research on immunoglobulins such as IgM and IgA. They reported the cryo-EM structure of a human IgM-Fc (Fcm) pentamer/J chain/secretory component ternary complex. Structural analysis shows that IgM-Fc forms a pentamer in an asymmetric manner, and the overall shape is similar to a hexagon without a corner. This work overturns the traditional understanding of IgM pentamers in textbooks, clarifies the structural basis for the function of the J chain, and reveals the molecular mechanism by which pIgR specifically recognizes multimeric antibodies including IgM. Dr. Xiao also works on Fam20C, the real casein kinase. It phosphorylates hundreds of secreted proteins and regulates various physiological processes including bone development and blood phosphorus metabolism. Its mutation causes a fatal osteosclerosis disease called "Rain syndrome". Fam20A and Fam20C form a complex to activate its activity. They discovered that Fam20A binds to ATP in an inverted manner, confirming that Fam20A is a protein with no kinase activity.

Recently, the complex structure formed by a series of antibodies and RBD in SARS-CoV-2 S protein solved by Dr. Xiao's group clarified the details of the interaction between highly active IgG antibodies and the S protein. This laid an important foundation for clinical application and treatment of new coronavirus variants that produce "mutation escape". This work has been highly valued and widely recognized by the scientific research community

Dr. Xiao not only delves into scientific research, but also invests great enthusiasm in teaching. He is highly praised by faculty members and students. He has received a number of teaching awards, including the Peking University Teaching Excellence Award in 2018. At the same time, he won the title of 2016-2017 Outstanding Headteacher of Peking University.