JAMES RENNIE BEQUEST

REPORT ON EXPEDITION / PROJECT / CONFERENCE

Expedition/Project/ Conference Title: Cell Symposia: Structural biology from the nanoscale to cellular mesoscale

Travel Dates: 01/11/2023-14/11/2023

Location: Huangshan, China

Group member(s): Lu Zhang

Aims:

1. Learn the latest cutting-edge developments and advanced techniques in structural biology.
2. Have a good chance to present my work.
3. Network with other researchers.

Photography consent form attached: *(please refer to your award letter)*

☐ Yes
☒ No

OUTCOME (a minimum of 500 words):-

Cell Symposia: Structural biology from the nanoscale to cellular mesoscale was held in Huangshan, China from the 3rd to the 5th of November 2023. It is organised by the Cell Press in partnership with the Biophysical Society of China. This conference highlights the latest cutting-edge developments and breakthroughs in structural biology. It covers a wide range of topics, including membrane proteins and macromolecular machines, structural virology and immunology and *in situ* structural biology.

With the development of cryo-electron microscopy and tomography, structural biology is becoming more comprehensive and dynamic. As a PhD student in my final year working in structural biology, I started with X-ray crystallography and have some experience in cryoEM sample preparation. The conference not only allows me to gain knowledge of the frontiers of scientific progress in this field but also provides me with the opportunity to learn more about advanced techniques.

During the conference, there were many interesting talks. The one that stood out to me was about the proteins involved in the cGAS-STING pathway and the DNA and RNA-induced condensates during host-pathogen interaction. In addition to the presentations given by the speakers, the poster sessions were also exciting, and one particular poster caught my attention. It was about a DNA-dependent RNA polymerase (Pol IV) found in land plants, which is different from other conserved polymerases I, II and III. This specific polymerase interacts with an RNA-dependent RNA polymerase RDR2, producing double-stranded small interfering RNA precursors which are essential for establishing and maintaining DNA methylation in plants.

I had the opportunity to present my work at the conference to people working in the same field. I presented a poster titled ‘Activity and molecular architecture of split T5-like bacteriophage DNA ligases’ and gave a one-minute talk as the poster teaser. It was a challenge to arrange the content in a way that would attract people’s attention within such a short period of time. During the poster session, I received valuable feedback from attendees who stopped by to listen to my poster. I also had the pleasure of meeting people who helped

me with a data-processing problem that I had been stuck on – the multi-states and complex modelling using SAXS data. After the conference, I implemented the method suggested and it worked very well for me.

The conference also allows me to communicate with other researchers working in the same field. We exchanged our thoughts and experiences related to our research work and career choices. The valuable insights and experiences shared by other PhD students and postdocs could be a source of inspiration for me in the future.

I am extremely grateful to the James Rennie Bequest Fund for making it possible for me to attend the Cell Symposia of structural biology in Huangshan. It was an amazing experience where I not only gained knowledge and learned about the latest advancements, but also received valuable feedback on my work. Attending this event helped me establish a wide network of connections that have the potential to assist me in my future career prospects.