NUS National University of Singapore

Department of Biological Sciences
Faculty of Science

SEMINAR

Thu, 12 Nov 2026 | 10:30 am | DBS Conference Room 1

Hosted by Assist Profs Qu Kun & Tan Yong Zi

From Tail to Capsid: Whole-Particle Structures of Bacteriophages

Bacteriophages are the most abundant biological entities on Earth, and their structures reveal how form dictates function. Using cryo-EM, we resolved whole phage particles by reconstructing each module in its native symmetry by using a new approach handling symmetry mismatches. We describe podophage, siphophage and myophage tails, including the contraction mechanism of a myophage. Turning to the capsid, we show how the HK97 fold generates varied sizes, handedness and inserts, and how decoration proteins, from tulip folds to novel folds, expand capsid function.

About the Speaker

Dr. Mihnea Bostina is an Associate Professor in the Department of Microbiology and Immunology at the University of Otago, where he also serves as the Academic Lead of the Electron Microscopy Unit at the Otago Micro and Nano Imaging Center.

He holds an MSc from Bucharest University, Romania, and a PhD in Biophysics from the Max Planck Institute and Goethe University in Frankfurt, Germany. After completing postdoctoral research at Harvard Medical School and McGill University, he joined the University of Otago in 2013.

The Bostina Lab uses advanced electron microscopy to study viral structures and virus-host interactions, linking fundamental virology to practical applications. Research focuses on (i) oncolytic viruses, including engineering Seneca Valley Virus into a cancer therapy; (ii) volume electron microscopy of patient tumorspheres and biopsies; and (iii) bacteriophage structures.



By **Mihnea Bostina**

The University of Otago