



## BIOLOGY COLLOQUIUM

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Hosted by A/P Liou Yih-Cherng

# Structural Characterization of Functional Protein Filaments in Biology

**By Wu Bin**

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Neither prions, nor misfolded aggregate, inside and outside of cells, filamentous protein filaments are abundant, and many of them have functional roles well beyond providing mechanical support. They can be essential players in signal amplification, scaffolding of large molecular complexes, and building blocks of 'hydrogels'-like quasi cellular compartments. Recent advancements in microscopic and imaging technologies helped revealing more details of atomic architecture of these filaments. Increasingly nowadays, it is that these oligomeric inter-crosslinked signaling networks are replacing the classical one-to-one linear signaling pathways as the consensus models. I would like to showcase our group's recent progress in studying CARD domains, ZP domain and Tir domain filaments, and explain how their distinctive filamentous architectures contribute to their unique physiological roles.



### **About the Speaker**

*Completed my SM2 bridging course in NUS, I chose to be the first batch of undergraduates of School of Biological Sciences, NTU. After graduation, I continued in structural biology research during my three-and-half-year PhD in the field of chromatin and nucleosome, in Curt Davey's group. Driven by curiosity and passion, in 2010, I joined in Sun Hur's group at Harvard Medical School, and tremendously benefited from the open lab research environment, with Tim Springer, Stephen Harrison, and Hao Wu as the neighbours on the same floor. Being able to solve the structure of MDA5-dsRNA complex structure, and helical reconstructed the MAVS-CARD filament structure, the first of its kind, using cryo-EM, I wrapped up my training in molecular immunology. Presently, I am now running a group back at NTU endeavoring to assemble a structural encyclopedia of functional protein filaments.*