



Speaker Profile

Speaker Shee-Mei Lok

Designation **Professor**, Programme in Emerging Infectious Diseases
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Title The interplay between dengue morphological diversity and antibody recognition.

Abstract Dengue virus (DENV) is a major human pathogen infecting ~400 million people annually worldwide. However, currently there is no highly effective vaccine and therapeutics. Here we show that DENV in addition to the presence of four different serotypes, within each serotypes, there is also a variety of different particle morphologies between strains. The changes in particle morphology thus antigenicity, is due to the rearrangement of the surface viral envelope (E) proteins allowing DENV to evade host immunity. This will thus complicate the development of effective vaccines and therapeutics. We will discuss the extensive studies that we have done to examine the different morphologies displayed by various DENV strains. By studying the different morphological variants displayed by strains within each serotypes, we may be able to incorporate “representative morphologies” for each serotypes to make a more effective vaccine with greater coverage against all DENV serotypes antigenic structures. We will also discuss how highly potent human antibodies can neutralize all or some of the morphological variants of four DENV serotypes.

Biography Dr Shee-Mei Lok is a Professor in the Emerging Infectious Diseases program (EID) in Duke-NUS, Singapore. She was also a National Research Foundation (NRF) fellow (2009-2014) and is now a NRF Investigator. She is a structural virologist specializing in x-ray crystallography and cryo-electron microscopy. Her research interest focus on the structural changes of flavivirus particles during its infection cycle and the effect of anti-viral therapeutics on them. She obtained her Msc and PhD in NUS and did her post-doctoral training in Purdue University under the supervision of the late Hanley Distinguished Professor Michael Rossmann. Prof. Shee-Mei`s laboratory has made significant discoveries in the understanding of the structures of the Zika and Dengue viruses, the morphological variants of Dengue viruses and also how potent human antibodies neutralize flaviviruses and the structural changes of flavivirus during maturation.

Research interests Pathology of dengue virus infection and the mechanism of neutralization by antibodies and other molecules
Vaccines and therapeutics development

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