NUS National University of Singapore | Department of Biological Sciences
Faculty of Science

SEMINAR

Friday, 10 July 2015 | 4pm | DBS Conference Room 1

Hosted by A/P Henry Mok

Biology & Biophysics of Bacterial Nanoinjectors

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Many bacterial pathogens assemble nanoscale syringe-like injectors that they use to inject virulence proteins directly into human cells to cause infectious diseases. Bacterial nanoinjectors are the structural parts of the type III secretion system (T3SS), and are absolutely essential in the pathogenesis of many pathogens that cause serious diseases in humans such as bubonic plague (*Yersinia pestis*), lung infections (*Pseudomonas aeruginosa*), and diarrheal illnesses (Shigella and Salmonella). Of particular concern in the region around Singapore is *Burkholderia pseudomallei* found in rice paddies and can be transmitted by inhalation of aerosolized dust to cause meliodosis. Nanoinjectors are assembled from over 20 different proteins to form a 4 megadalton protein assemblage. This seminar will present the current structural biology of nanoinjectors, identify the grand challenges in the field, and suggest opportunities for developing anti-infectives. Emphasis on NMR-based methods used to determine the protein-protein interactions involved in the assembly of bacterial nanoinjectors will be presented.

Artwork by Ann Nee, DBS, NUS