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SgSI Seminar Series: Infectious Diseases

Date & Time: 18 September 2014 (Thursday), 4.30 - 5.45pm *Venue: Level 2, Amphitheatre, Duke-NUS Graduate Medical School Hosts: Dr Katja Fink, SIgN & Dr Ashley St John, Duke-NUS

Registration is based on first-come first-served. Click <u>here</u> to register now!



Dr. C J Seneviratne

Assistant Professor Faculty of Dentistry, NUS

Crosstalk of Microbial Biofilms and Host: OMICS Perspective

Biofilm formation is the predominant growth mode of microorganisms in nature. Moreover, most of the infectious diseases are related to the biofilm mode of growth. Higher drug resistance of the biofilm communities has posed a huge challenge in the clinical settings and a major contributory factor in therapeutic failure. We have studied the cross-talk of microbial biofilms with human host using in vitro, in vivo and clinical studies. Recent advent of OMICS Biology work on bacterial and fungal biofilms has unraveled new facets of biofilms as well as host response. Has it unlocked the mystery of biofilm infections? Jury is still out there!



Dr. Sebastian Maurer-Stroh Senior PI BII, A*STAR

How to prepare for an influenza pandemic?

There is of course no simple answer to this question but I would like to discuss a few aspects that can help us better understand which influenza viruses possibly could pose a greater risk of causing a pandemic and what we can do to hopefully be better prepared. From the epidemiological point of view, animal influenza strains with recent history of human infection in geographic regions with extensive animal-human interactions are important to be watched. These strains could also be more dangerous if our immune system is naïve to most epitopes if they differ from those in strains that historically and currently infect humans on larger scale. Further at the molecular level, we can look out for specific mutation markers that allow an animal virus to infect human cells. However, given all this together we can still not reliably predict which strain may cause the next big outbreak. Therefore, we need to consider not only advances in strain-specific vaccines but should strive towards universal influenza vaccines that could provide reliable cross-subtype protection. I will discuss different vaccine design strategies including current problems with egg adaptation, universality of epitopes and new approaches. Besides vaccination, drug treatment options for prophylaxis or to reduce disease severity also need to be addressed. Finally, in our deeply connected world it is of utmost importance to detect outbreaks early which requires a multi-pronged surveillance strategy that can also benefit from new technologies including social media and video surveillance.

*Address: 8 College Road, Singapore 169857 Nearest MRT Station: Outram Park EW16/NE3 (walk 10min from Exit A)



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