**Abstract**

The use of nanoparticles in drug delivery systems can confer many advantages to conventional methods such as 1) increasing the stability of the encapsulated drug entity, 2) conferring the ability to restrict exposure of drugs to targeted cells thereby reducing off-target effects and 3) allowing the delivery of the drug to target cells at a controlled rate. It was only recently realised that these carrier systems themselves may impose risks to the patient. As part of a collaborative effort to develop nanoparticles as therapeutics against infectious diseases, we will assess the utility of silica based nanoparticles in an Influenza infection model. In this talk, I will discuss our strategies to develop this system as a potential therapeutic and some preliminary findings pertaining to the toxicity, bio-distribution and clearance of these nanoparticles in mice.

**Biography**

Dr. Zheng obtained his Ph.D. in Cell Biology from the University of Melbourne and trained as former postdoctoral fellow at the Institute of Molecular and Cell Biology where he investigated the pathogenesis of the Hepatitis C virus in humanised mice. He is currently a research fellow in the laboratory of A/P Tan Yee Joo. His research themes are to develop nanoparticles as potential therapeutics against infectious diseases and to investigate the ‘Original Antigenic Sin’ effect in immunised non-human primates.

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**Abstract**

Interferon-regulatory factor (IRF)-3 belongs a family of transcription factors that are known to regulate type I interferons (IFN). IRF3 and its subsequent production of IFNβ has been extensively studied in relation to its function as potent antiviral immunoregulators. However, IRF3 and the type I IFNs responses in bacterial infection show strikingly varying phenotypes, where its activity may be beneficial or detrimental to the host. We aim to unravel the regulatory mechanisms governed by IRF3 in the hosts’ response using *Burkholderia thailandensis*, a surrogate for the highly virulent *Burkholderia pseudomallei*, as a model for intracellular bacterial infection. Our preliminary findings suggest that infected IRF3KO bone-marrow derived macrophages are more viable and inflamed as compared to WT controls yet are comparatively less efficient in controlling *Burkholderia* infection. Our data suggest that bacterial entry and attachment, receptor-mediated phagocytosis and phagosome maturation is independent of IRF3 activity. We will extend our studies further into understanding the bacterial-host interaction to characterise IRF3’s role in bacterial pathogenesis.

**Biography**

Sharol graduated with a Bachelor’s degree with Honours in Life Science from NUS in 2016. She is currently pursuing her PhD in the Department of Microbiology and Immunology, under the joint supervision of A/P Zhang Yong Liang and A/P Sylvie Alonso. Her research interests include pathogen-host interaction and infectious diseases.