SIgN Immunology Seminar



Dr Jean-Pierre Gorvel

Centre d'Immunologie de Marseille-Luminy
CIML, Aix Marseille University, Inserm,
CNRS, Marseille, France

Brucella virulence factors, the bad and the good

Host
Prof Laurent Renia
Singapore Immunology Network,

Date
Monday 13 November 2017

Time
11am – 12pm

Venue
SIgN Seminar Room
Immunos Building
Level 4
Biopolis

Pathogenic Brucellae are facultative Gram-negative intracellular bacteria and the causative agents of brucellosis. This economically relevant zoonotic disease causes abortion and infertility in domestic animals and is re-emerging as a febrile illness in humans that can progress towards chronic infection and more serious complications. To persist in the host, these pathogens utilise a diverse weapons to evade innate immune responses and survive and multiply in macrophages and dendritic cells as well as trophoblasts, fibroblasts, endothelial cells and epithelial cells. Its non-conventional LPS is known to participate in *Brucella* entry into host cells. At the same time, LPS has been shown to inhibit early intracellular signalling and maturation in DC which enables the pathogen to express complementary systems, in particular a type IV secretion system, that further divert intracellular trafficking towards reaching a safe replicative niche whilst interfering with TLR4 and TLR2-mediated signalling and modulation of host inflammatory responses. Recent studies comparing smooth and rough strains also suggest a key role for *Brucella* LPS in the induction of programmed cell death in a cell-specific manner. Counterintuitively, *Brucella* can also express other molecules (cyclic beta-glucan and protein effectors) that can selectively inhibit or activate pro-inflammatory responses but in a manner that seems controlled and fashioned towards further enhancing its ability to disseminate and colonise the host. We will examine the cellular mechanisms that underline these processes and their implication for development of novel prevention and therapeutic strategies towards combating brucellosis.