SIgN Immunology Seminar



Dr Edwin Leeansyah

Center for Infectious Medicine,
Karolinska Institutet

Exploring the immunobiology of human MAIT cells: are they our friends in sickness and health?

Host
Prof Laurent Renia
Singapore Immunology Network, A*Star

Date
Wednesday 8 July 2015

Time
11am – 12pm

Venue
SIgN Seminar Room
Immunos Building
Level 4
Biopolis

Mucosal-associated invariant T (MAIT) cells are a newly described subset of innate-like antimicrobial T cells that are abundant in mucosal tissues, the liver, and circulation of healthy humans. MAIT cells recognise the very recently discovered microbial vitamin B_2 metabolites derived from a wide range of microbes presented by the highly evolutionarily conserved MHC class I-like MR1 molecules. They mediate antimicrobial activities against a vast array of microbes through killing of infected cells, inhibition of microbial growth, and secretion of pro-inflammatory cytokines. Therefore, MAIT cells represent an arm of cell-mediated immunity that can recognise and respond to a principally novel and conserved type of antigenic structure.

The study of human MAIT cells is still in its infancy, and many aspects of MAIT cells immunobiology in health and disease remain unexplored. Here, we will explore their biology in state of health, including their development in the human foetus where these cells gradually acquire their innate-like antimicrobial responsiveness in the mucosa before birth and exposure to environmental microbes and the commensal microflora, their distribution and distinct functional profile in different adult human tissues, and the antigen-independent arming of their cytolytic function and enhanced sensitivity to low levels of bacteria. We will also discuss their potential role in states of disease, including their progressive and persistent depletion, activation, and broad functional defects in HIV disease. Finally, we will evaluate strategies to rescue or boost MAIT cell functions that can be applicable not only to this chronic viral infection, but also potentially to other infectious diseases.