Singaporean Society for Immunology

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SgSI Seminar Series: Infectious Diseases

Date & Time: 27 March 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.
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Dr. Laura Rivino

Senior Research Fellow
Duke-NUS

Dengue-specific CD4+ and CD8+ T cells express the cutaneous lymphocyte-associated antigen and traffic to the skin during a natural human dengue infection

Dengue virus is a mosquito-borne flavivirus that can cause a severe febrile illness for which there is no anti-viral treatment or vaccine available. Patients recovering from a natural dengue infection develop neutralizing antibodies directed against dengue virus accompanied by a broad dengue-specific T cell response. We envisage that a candidate dengue vaccine will need to elicit both the humoral and cellular components of the immune response. Furthermore, the route of immunization is known to impact upon the migratory potential and tissue-localization of antigen-specific T lymphocytes, influencing their protective capacity during infection. In this study we show that during a natural dengue infection the large majority of circulating dengue-specific effector CD4+ and CD8+T cells express the skin homing receptor cutaneous lymphocyte-associated antigen (CLA). In peripheral blood CLA+CD8+T cells specific for NS3 27 are highly activated and proliferating, produce IFN-γ in response to their specific peptide and are capable of lysing virus-infected cells *in vitro*. In contrast, CD8+T cells specific for the human cytomegalovirus (HCMV) are also activated and proliferating (most likely due to bystander T cell activation) but lack CLA expression in the same patient cohort. CLA expression correlates with T cell trafficking to the skin as dengue-specific T cells can be detected in the skin of dengue patients where they are highly enriched as compared to peripheral blood. Our data suggests that, during a self-limiting dengue infection, effector T cells are primed by skin-derived dendritic cells. This is the first report of the expression of tissue-specific adhesion-associated molecules by dengue-specific T cells.

Dr. Yunn-Hwen Gan

Associate Professor
NUS

Oxidative stress influences host immune response to intracellular bacterial infection through IL-12

Type 2 diabetes (T2D) is a growing epidemic globally. T2D patients suffer various complications including increased susceptibility to certain bacterial infections but the mechanisms underlying the association between diabetes and bacterial infections are poorly understood. Up to 60% of melioidosis patients have underlying T2D. This makes melioidosis the most highly associated bacterial infection with diabetes. Melioidosis is endemic in Southeast Asia and Northern Australia and caused by the Gram-negative bacterium *Burkholderia pseudomallei*. We found that blood cells of diabetics with poor glycemic indices cannot control intracellular bacterial replication efficiently due to poor production of IL-12 and IFNγ. This is due to a glutathione deficiency that affected the monocytes' ability to make sufficient IL-12. I will also discuss the results of our clinical trial to improve the glutathione ratio in T2D patients with oral supplementation of N-acetylcysteine and alternative strategies to improve the IL-12 response against the pathogen.

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

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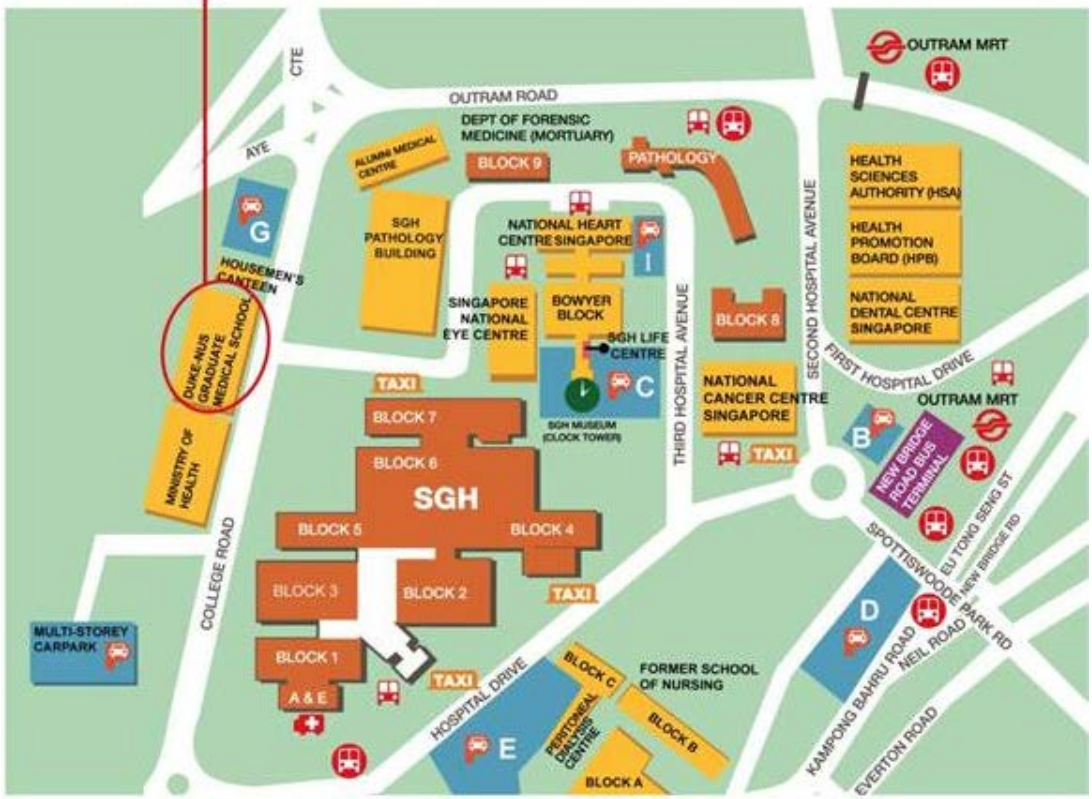

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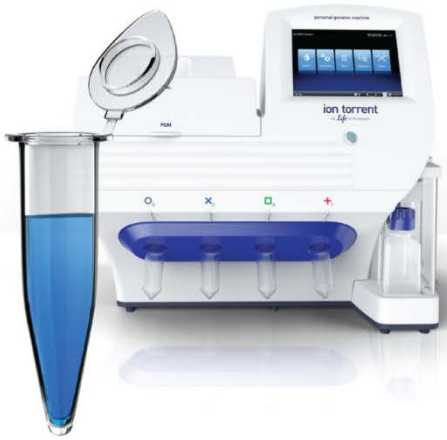

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