

SgN Immunology Seminar



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Urban life and changing microbial exposures
contribute to low stress-resilience and psychiatric
disorders

The immune system evolved to “anticipate” input from three categories of organism: 1) the symbiotic microbiotas transmitted from mothers and family; 2) organisms (and their genes) from the natural environment; 3) the “Old Infections” that could persist in small hunter-gatherer groups. All three categories had to be tolerated and so co-evolved roles in regulating the immune system. (By contrast the “crowd infections” (such as childhood virus infections) evolved recently when urbanisation led to large communities, and did not evolve immunoregulatory roles because they either killed the host or induced solid immunity: they could not persist in isolated hunter-gatherer groups).

Diminished exposures to these immunoregulatory organisms in high-income (particularly urban) settings contribute to the current “epidemic” of chronic inflammatory disorders including allergies, autoimmunity and inflammatory bowel diseases. Depression, anxiety and reduced stress resilience are comorbid with these conditions, or can occur in individuals with persistently raised circulating levels of inflammatory mediators in the absence of clinically apparent peripheral inflammatory disease. Psychological stress drives additional release of inflammatory mediators and this is exaggerated when immunoregulation is defective, so stress is synergistic with immunoregulatory deficits. Moreover poorly regulated inflammation during pregnancy contributes to brain developmental abnormalities that underlie some cases of autism spectrum disorders and schizophrenia. In summary, faulty immunoregulation and inflammation predispose to psychiatric disease, (including post-traumatic stress disorder in military personnel). There is huge scope for microbial approaches to improved wellbeing in modern urban settings.

Host
Dr Puan Kia Joo
Singapore
Immunology
Network, A*Star

Date
Thursday
23 April 2015

Time
11am – 12pm

Venue
SgN Seminar
Room
Immunos
Building
Level 4
Biopolis