

**Date / Time:**  
**Thursday 17 November 2011**  
**12pm to 1pm**

**Venue:**  
**CeLS Auditorium**  
**@ Centre for Life Sciences**  
**Building, Level 1,**  
**28 Medical Drive**  
**Singapore 117456**

**Convener:**  
**Dr Zhang Yongliang**

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## **Strategies For Rejuvenating Immunity During Ageing**

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### **Abstract**

Repeated antigenic stimulation throughout life may compromise specific T cells in two ways. First the cells may become functionally exhausted whereby memory T cells lose essential functional activity that is necessary for immune protection. Second, repeated T cell stimulation can lead to loss of replicative capacity of some antigen-specific populations through telomere erosion (replicative senescence)<sup>6-8</sup>. While there has been substantive progress in identifying the mechanisms that regulate both processes they are normally investigated independently of each other and it is not clear if exhausted T cells also exhibit proliferative arrest and other signs of senescence senesce and vice versa. An exciting finding is that both exhaustion and senescence are not passive events but are controlled by active signalling processes. There is therefore the potential to manipulate specific signalling pathways to reverse either senescence and /or exhaustion to boost T cell function. In this talk I will discuss mechanisms for enhancing immunity in T cells with a view to boosting immune function during ageing.

### **Selected Publications**

Akbar AN, Henson SM (2011). Are senescence and exhaustion intertwined or unrelated processes that compromise immunity?. *Nat Rev Immunol*, 11(4), 289 - 295.

Vukmanovic-Stejic M, Rustin MH, Nikolich-Zugich J, Akbar AN (2011). Immune responses in the skin in old age.. *Curr Opin Immunol*, 23(4), 525 - 531.

Di Mitri D, Azevedo RI, Henson SM, Libri V, Riddell NE, Macaulay R, Kipling D, Soares MV, Battistini L, Akbar AN (2011). Reversible Senescence in Human CD4<sup>+</sup>CD45RA<sup>+</sup>CD27<sup>-</sup> Memory T Cells.. *J Immunol*, 187(5), 2093 - 2100.

Vukmanovic-Stejic M, Zhang Y, Akbar AN, Macallan DC (2011). Measurement of proliferation and disappearance of regulatory T cells in human studies using deuterium-labeled glucose.. *Methods Mol Biol*, 707, 243 - 261.

Libri V, Azevedo RI, Jackson SE, Di Mitri D, Lachmann R, Fuhrmann S, Vukmanovic-Stejic M, Yong K, Battistini L, Kern F, Soares MV, Akbar AN (2011). Cytomegalovirus infection induces the accumulation of short-lived, multifunctional CD4<sup>+</sup> CD45RA<sup>+</sup> CD27<sup>-</sup> T cells: the potential involvement of interleukin-7 in this process.. *Immunology*, 132(3), 326 - 339.