SIgN Immunology Seminar

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The vulnerable newborn – new insights into neonatal and adult immunology

Host
Prof Paola Castagnoli
Singapore Immunology Network, A*Star

Date
Tuesday,
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Time
4pm – 5pm

Venue
SIgN Seminar Room,
Immunos Building
Level 4
Biopolis

Birth presents possibly the most precipitous encounter with the environment. Moreover, there is appropriate pressure to vaccinate babies against major pathogens. Despite this, there is relatively little study of the neonatal immune system which is often regarded simply as a poorly developed version of the adult with which it is in continuum. By contrast, this presentation will consider that the fetus in both mice and humans uniquely gives rise to specific subsets of T cells. Some of these are sustained throughout life by processes of self-renewal, while others – including unique human $CD4^+$ T cells - may be diluted out by qualitatively distinct, post-natal bone-marrow-derived cells. Some fetus-derived cells appear to be self-reactive and are innate-like in their rapid responses to tissue dysregulation. These cells undergo unique fetal thymic selection events that limit their potential to cause autoimmunity, but conversely may be the sources of immunopathology in adults if retained in a dysregulated fashion. In sum, the neonatal immune system is qualitatively distinct and contains immune competences that cannot be replaced by bone-marrow derived progenitors. This perspective has implications for the pathophysiology of newborns, for bone-marrow transplantation, for tumour immunology, and for autoimmune and auto-inflammatory diseases.