IN BRIEF

EVOLUTION

Evolution of genetic networks underlying the emergence of thymopoiesis in vertebrates

Bajoghli, B. *et al. Cell* 25 Jun 2009 (doi:10.1016/j.cell.2009.04.017)

The emergence of the thymus and T cells in vertebrates is thought to have occurred approximately 500 million years ago, but it is not known whether these features arose *de novo* or developed from ancient genetic networks. Bajoghli *et al.* have now examined the evolution of genetic networks involved in thymopoiesis in species that are at key positions of the phylogenetic tree. They found that a Notch ligand homologue, which provides signals for T cell specification in mice, is expressed in pharyngeal epithelium of jawless vertebrates. The expression of CC-chemokine ligand 25 (CCL25) and forkhead box N1 (FOXN1), which are involved in the first wave of embryonic thymus colonization and thymus development, respectively, emerged at the analogous tissue site in cartilaginous fish. Concomitant with this was the expression of the CCL25 receptor (CCR9) by lymphocytes of jawed vertebrates. So, this study shows that a combination of ancestral (Notch signalling) and new (CCR9–CCL25 signalling) genetic networks have contributed to the emergence of thymopoiesis in jawed vertebrates.

DENDRITIC CELLS

Dendritic cell entrapment within the pregnant uterus inhibits immune surveillance of the maternal/fetal interface in mice

Collins, M. K. *et al. J. Clin. Invest.* **119**, 2062–2073 (2009)

In this study the authors examined the role of uterine dendritic cells (DCs) in the induction of T cell responses against the fetus or placenta in pregnant mice. They observed that formation of the decidua during pregnancy inhibited the migration of uterine DCs to the draining lymph nodes, even after the injection of lipopolysaccharide. This was not due to a cell-intrinsic defect, as purified DCs retained the ability to migrate towards CC-chemokine ligand 21 (CCL21; the chemokine required for migration to lymph nodes) *in vitro*. However, when the intact tissue explant was cultured *in vitro* the DCs failed to emigrate. This indicates that the decidua (which also had low *Ccl21* mRNA transcript levels) does not support DC chemotaxis to the lymph nodes and instead 'traps' DCs in the uterus, thereby minimizing the exposure of maternal T cells to fetal and placental antigens.

CYTOKINES

Suppression of interleukin-33 bioactivity through proteolysis by apoptotic caspases

Lüthi, A. U. *et al. Immunity* 25 Jun 2009 (doi:10.1016/j.immuni.2009.05.007)

The interleukin-1 (IL-1) family member IL-33 is a recently described pro-inflammatory cytokine and was thought to be activated by caspase 1-mediated proteolysis. However, this study now shows that IL-33 is not a substrate for inflammatory caspases such as caspase 1. Instead, IL-33 is processed by caspases that are activated during apoptosis (caspase 3 and caspase 7). Caspase-mediated proteolysis of IL-33 was not necessary for its biological activities, such as activation of the transcription factor nuclear factor-κB, but instead attenuated the biological activity of IL-33 *in vitro* and *in vivo* and increased its susceptibility to protease degradation. The authors suggest that proteolysis of IL-33 may help to dampen the potential pro-inflammatory effects of apoptotic cell death.