IN BRIEF

T CELLS

Natural T_H17 cell development in the thymus

Recently, $CD4^+$ single positive (SP) thymocytes that express retinoic acid receptor-related orphan receptor-γt (RORγt) and secrete interleukin-17 (IL-17) were identified (natural T_H17 cells). This study describes the requirements for the development of natural T_H17 cells. Unlike conventional $CD4^+$ SP thymocytes and peripheral T_H17 cells, IL-17-producing $CD4^+$ SP thymocytes showed a skewed expression of the Vβ3 T cell receptor (TCR) chain. Interestingly, MHC class II expression on medullary but not cortical thymic epithelial cells was necessary for the development of natural T_H17 cells. Moreover, defective TCR signalling (owing to a mutation in the gene encoding the TCR signalling adaptor SLP76) resulted in increased numbers of natural T_H17 cells in the thymus, but blocked the differentiation of peripheral $CD4^+$ T cells into effector T_H17 cells in the intestine, suggesting that these two IL-17-producing T cell populations are distinct.

ORIGINAL RESEARCH PAPER Kim, J. S. *et al.* The requirements for natural Th17 cell development are distinct from those of conventional Th17 cells. *J. Exp. Med.* 26 Sep 2011 (doi:10.1084/jem.20110680)

CYTOKINES

IL-1 family member dampens intestinal inflammation

Interleukin-37 (IL-37) is an IL-1 family member found in humans, but a mouse homologue has yet to be identified. Unlike other IL-1 family members, IL-37 has emerged as an anti-inflammatory cytokine. To explore the functions of IL-37 in the intestine, the authors induced dextran sulphate sodium (DSS) colitis in a transgenic mouse strain that expresses human IL-37. Compared with controls, IL-37-transgenic mice developed less severe disease, and this was associated with reduced leukocyte infiltration, decreased levels of IL-1β and tumour necrosis factor, and increased levels of IL-10. Interestingly, despite being under the control of a constitutively active promoter, IL-37 expression was only increased in the transgenic mice following DSS-induced tissue damage. Bone marrow chimaera studies showed that the production of IL-37 by bone marrow-derived cells was sufficient to protect mice from DSS-induced colitis. The authors suggest that inducing IL-37 expression in humans may represent a novel therapeutic approach for treating inflammatory bowel disease.

ORIGINAL RESEARCH PAPER McNamee, E. N. *et al.* Interleukin 37 expression protects mice from colitis. *Proc. Natl Acad. Sci. USA* **108**, 16711–16716 (2011)

INNATE IMMUNITY

The function of innate lymphoid cells in the lung

Innate lymphoid cells (ILCs) are a diverse group of immune cells that lack expression of lymphocyte and myeloid cell surface markers and regulate immune responses through cytokine production. Monticelli *et al.* identified ILCs in the lungs of healthy mice and humans. These cells were $CD90^+$, expressed interleukin-5 (IL-5) and IL-13 in response to IL-33, and were dependent on the transcription factor ID2 for their development. Lung ILC populations were found to expand following infection of mice with influenza virus, and depletion of these cells with a CD90-specific antibody, or the blockade of IL-33 signalling, compromised lung function and airway remodelling. In accordance with this, lung ILCs were found to express several genes implicated in wound repair, including that encoding amphiregulin. Interestingly, administration of amphiregulin to ILC-depleted mice following influenza virus infection ameliorated lung pathology.

ORIGINAL RESEARCH PAPER Monticelli, L. A. *et al.* Innate lymphoid cells promote lung-tissue homeostasis after infection with influenza virus. *Nature Immunol.* 25 Sep 2011 (doi:10.1038/ni.2131)