

IN BRIEF

➔ DENDRITIC CELLS

Flt3L controls the development of radiosensitive dendritic cells in the meninges and choroid plexus of the steady-state mouse brain

Anandasabapathy, N. *et al. J. Exp. Med.* **208**, 1695–1705 (2011)

This study characterizes a dendritic cell (DC) population in the steady-state brain, based on developmental criteria and gene expression analysis. The authors observed that a population of LIN⁺CD45^{hi}CD11c^{hi} cells that highly expressed MHC class II molecules localized in the meninges and choroid plexus of the steady-state brain and expanded in response to the DC-specific developmental factor FMS-related tyrosine kinase 3 ligand (FLT3L). Their cell morphology, radiosensitivity, responsiveness to FLT3L and gene expression (which resembled that of splenic CD8⁺ DCs) distinguished the brain DCs from parenchymal microglia. Interestingly, these brain DCs were shown to originate from blood DC progenitors, and they were able to present antigen and stimulate T cell proliferation *in vitro*.

➔ HIV

HIV-1 adaptation to NK-cell-mediated immune pressure

Alter, G. *et al. Nature* **476**, 96–100 (2011)

Natural killer (NK) cells recognize HIV-1-infected cells through activating and inhibitory KIRs (killer cell immunoglobulin-like receptors), which then control the NK cell response. By studying patients with chronic HIV-1 infection, the authors identified HIV-1 sequence polymorphisms that associated with the presence of a specific KIR gene. They focused on a polymorphism associated with expression of the inhibitory receptor KIR2DL2 and found that replication of an HIV-1 viral variant encoding this polymorphism in infected T cells was inhibited by NK cells from KIR2DL2⁻ individuals but not by NK cells from KIR2DL2⁺ individuals. Further investigation showed that the polymorphism enhances the ability of KIR2DL2 to bind to HIV-1-infected cells, and this inhibits the NK cell antiviral response. So, in KIR2DL2⁺ individuals, HIV-1 can evade the antiviral activity of NK cells by selecting for sequence polymorphisms that enhance the binding of inhibitory KIR2DL2 on NK cells to infected cells.

➔ ANTIBODIES

IgE stimulates human and mouse arterial cell apoptosis and cytokine expression and promotes atherogenesis in *Apoe*^{-/-} mice

Wang, J. *et al. J. Clin. Invest.* 8 Aug 2011 (doi:10.1172/JCI46028)

The accumulation of apoptotic macrophages and subsequent necrotic core formation promote atherosclerotic plaques. Now, Wang *et al.* suggest a role for serum IgE in atherosclerosis, as they found that its levels correlate with the degree of coronary heart disease in humans and of atherosclerosis in disease-prone apolipoprotein E (*Apoe*)^{-/-} mice. Strikingly, macrophages and some cells of the arterial wall in atherosclerotic lesions expressed the high-affinity Fc receptor for IgE (FcεR1), and FcεR1 deficiency reduced disease severity in *Apoe*^{-/-} mice. The pro-atherosclerotic function of IgE required expression of Toll-like receptor 4 (TLR4), and the authors observed complex formation between FcεR1 and TLR4. Moreover, IgE induced macrophage activation, cytokine secretion and apoptosis. Mechanistically, IgE seems to increase the activity of Na⁺/H⁺ exchanger 1 and, thus, to reduce the extracellular pH. This acidic environment (which is also found in atherosclerotic lesions) then leads to increased apoptosis of macrophages and arterial cells.