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.