

IN BRIEF

LYMPHOID ORGANOGENESIS**Lymph node stroma and adipocytes: the link**

Adipocyte progenitors are derived from mesenchymal stem cells and express the transmembrane marker PREF1 (also known as DLK1). Imaging of embryonic lymph nodes and their associated fat pads revealed the presence of PREF1⁺ cells co-expressing lymphoid stromal markers in lymph node anlagen. Moreover, embryonic adipocyte progenitors responded to lymphotoxin- β receptor (LT β R) stimulation, which has a key role in lymph node development, by downregulating their adipogenic transcriptional programme. LT β R-dependent reprogramming of adipocyte progenitors involved the non-canonical NF- κ B pathway, and after LT β R stimulation both embryonic and adult adipocyte progenitors migrated from fat pads to lymph node anlagen and expressed lymphocyte pro-survival factors. So, adult adipocyte progenitors may also drive the formation of tertiary lymphoid structures in the presence of lymphotoxin.

ORIGINAL RESEARCH PAPER Bénézech, C. *et al.* Lymphotoxin- β receptor signaling through NF- κ B2-RelB pathway reprograms adipocyte precursors as lymph node stromal cells. *Immunity* 30 Aug 2012 (doi:10.1016/j.immuni.2012.06.010)

LYMPHOID ARCHITECTURE**Immune cell cartography**

A new technique of multiplex quantitative tissue imaging has now allowed the mapping of dendritic cell (DC) subsets in steady-state lymph nodes. Histo-cytometry involves the use of fluorescence-conjugated antibodies, three-dimensional confocal microscopy and mathematical algorithms to quantitatively visualize various cell populations. Imaging of lymphocyte populations and antigen-induced T cell activation in the lymph nodes established histo-cytometry as a powerful method. So, the authors then used it to trace DC subsets in lymph nodes. Migratory CD11b⁺ DCs were found in the interfollicular zone, and resident CD8⁺ DCs, Langerhans cells and migratory CD103⁺ DCs localized in the T cell zone, whereas resident CD11b⁺ DCs were more predominant in the lymphatic zone. The compartmentalization of DCs reflects their recruitment by specific local cues and may determine the nature of presented antigens and co-stimulation, thereby influencing the type of T cell responses triggered by each DC subset.

ORIGINAL RESEARCH PAPER Gerner, M. Y. *et al.* Histo-cytometry: a method for highly multiplex quantitative tissue imaging analysis applied to dendritic cell subset microanatomy in lymph nodes. *Immunity* 37, 364–376 (2012)

INFECTION**T_{FH} cell dynamics in SIV and HIV infection**

HIV targets CD4⁺ T cells, but two studies now report an accumulation of CD4⁺ T follicular helper (T_{FH}) cells in humans and primates with chronic HIV and SIV infection, respectively. The relative abundance of CXCR5⁺PD1^{hi} T_{FH} cells was increased in the lymph nodes of patients with HIV, with a large fraction of T_{FH} cells being HIV-specific. T_{FH} cell accumulation correlated with the presence of more germinal centre B cells and plasma cells, and increased IgG levels. Similarly, primates with chronic SIV infection had an increased percentage of CCR7^{low}PD1^{hi}COS^{hi}CD150^{low} T_{FH} cells. T_{FH} cell accumulation resulted from the differentiation of naive CD4⁺ T cells into T_{FH} cells, as a result of high IL-6 levels. T_{FH} cell accumulation in SIV-infected primates also correlated with high IgG levels, but how it may influence antibody maturation remains to be determined.

ORIGINAL RESEARCH PAPERS Lindqvist, M. *et al.* Expansion of HIV-specific T follicular helper cells in chronic HIV infection. *J. Clin. Invest.* 122, 3271–3280 (2012) | Petrovas, C. *et al.* CD4 T follicular helper cell dynamics during SIV infection. *J. Clin. Invest.* 122, 3281–3294 (2012)