SIgN Immunology Seminar

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Stromal cells regulate the development of lymph nodes

Host
Dr Katja Fink
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Date
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Time
2.30pm – 3.30pm

Venue
SIgN Seminar Room
Immunos Building
Level 4
Biopolis

The development of lymph nodes (LNs) and formation of LN stromal cell microenvironments depends on lymphotoxin-beta receptor (LTbR)-signaling. In particular, the LTbR-dependent crosstalk between mesenchymal lymphoid tissue organizer and hematopoietic lymphoid tissue inducer cells has been regarded as critical for these processes. Here, we evaluated whether endothelial cell (EC) or mesenchymal cell-restricted LTbR-signaling impacts on LN development and the vascular LN microenvironment. Using lineage-specific ablation of LTbR in mice, we found that conditionally EC-specific LTbR-deficient animals failed to develop a significant proportion of their peripheral LNs, whereas mesenchymal restricted loss of LTbR did not affect peripheral LN formation. Interestingly, remnant LNs in the situation of EC-specific ablation of LTbR showed impaired formation of high endothelial venules (HEVs). LTbR deficient venules failed to develop their cuboidal shape, showed reduced segment length and branching points, and reduced adhesion molecule and constitutive chemokine expression. Due to the altered EC-lymphocyte interaction, homing of lymphocytes to peripheral LNs was significantly impaired. In summary, this study identified ECs as an important LTbR-dependent lymphoid tissue organizer cell population and showed that continuous triggering of the LTbR on LN ECs is critical for lymph node development and lymphocyte homeostasis.