Context-Dependent Development of Lymphoid Stroma from Adult CD34+ Adventitial Progenitors - DTU Orbit (13/10/2019)

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Despite the key role of primary and secondary lymphoid organ stroma in immunity, our understanding of the heterogeneity and ontogeny of these cells remains limited. Here, we identify a functionally distinct subset of BP3-PDPN-PDGFRβ+/α+CD34+ stromal adventitial cells in both lymph nodes (LNs) and thymus that is located within the vascular niche surrounding PDPN-PDGFRβ+/α-Esam-1+ITGA7+ pericytes. CD34+ adventitial cells developed in late embryonic thymus and in postnatal LNs and in the thymus originated, along with pericytes, from a common anlage-seeding progenitor population. Using lymphoid organ re-aggregate grafts, we demonstrate that adult CD34+ adventitial cells are capable of differentiating into multiple lymphoid stroma-like subsets including pericyte-, FRC-, MRC-, and FDC-like cells, the development of which was lymphoid environment-dependent. These findings extend the current understanding of lymphoid mesenchymal cell heterogeneity and highlight a role of the CD34+ adventitia as a potential ubiquitous source of lymphoid stromal precursors in postnatal tissues.

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