Naive B-cell trafficking is shaped by local chemokine availability and LFA-1-independent stromal interactions.

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Abstract

It is not known how naive B cells compute divergent chemoattractant signals of the T-cell area and B-cell follicles during in vivo migration. Here, we used two-photon microscopy of peripheral lymph nodes (PLNs) to analyze the prototype G-protein-coupled receptors (GPCRs) CXCR4, CXCR5, and CCR7 during B-cell migration, as well as the integrin LFA-1 for stromal guidance. CXCR4 and CCR7 did not influence parenchymal B-cell motility and distribution, despite their role during B-cell arrest in venules. In contrast, CXCR5 played a nonredundant role in B-cell motility in follicles and in the T-cell area. B-cell migration in the T-cell area followed a random guided walk model, arguing against directed migration in vivo. LFA-1, but not α4 integrins, contributed to B-cell motility in PLNs. However, stromal network guidance was LFA-1 independent, uncoupling integrin-dependent migration from stromal attachment. Finally, we observed that despite a 20-fold reduction of chemokine expression in virus-challenged PLNs, CXCR5 remained essential for B-cell screening of antigen-presenting cells. Our data provide an overview of the contribution of

prototype GPCRs and integrins during naive B-cell migration and shed light on the local chemokine availability that these cells compute.

Beteiligte Forschungseinheiten

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