Type I interferon induces CXCL13 to support ectopic germinal center formation

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Ectopic lymphoid structures form in a wide range of inflammatory conditions, including infection, autoimmune disease, and cancer. In the context of infection, this response can be beneficial for the host: influenza A virus infection-induced pulmonary ectopic germinal centers give rise to more broadly cross-reactive antibody responses, thereby generating cross-strain protection. However, despite the ubiquity of ectopic lymphoid structures and their role in both health and disease, little is known about the mechanisms by which inflammation is able to convert a peripheral tissue into one that resembles a secondary lymphoid organ. Here, we show that type I IFN produced after viral infection can induce CXCL13 expression in a phenotypically distinct population of lung fibroblasts, driving CXCR5-dependent recruitment of B cells and initiating ectopic germinal center formation. This identifies type I IFN as a novel inducer of CXCL13, which, in combination with other stimuli, can promote lung remodeling, converting a nonlymphoid tissue into one permissive to functional tertiary lymphoid structure formation.

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