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Exploratory Immuno-Oncology

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Stromal cells have long been recognized as key structural components of lymphoid organs. In fact, for many years, stromal cells were believed to play purely structural roles in constructing and maintaining lymphoid organs environment. Recently, however, we have come to understand many ways in which stromal cells interact with hematopoietic populations, actively influencing immune responses. Using a genetically-engineered mouse model to target fibroblastic reticular cells (FRC), the most abundant stromal population in lymph nodes, we have demonstrated that FRC ablation profoundly impairs T cell homeostasis, with detrimental consequences on anti-viral T cell immunity. Moreover, our studies revealed that FRC loss significantly impairs B cell viability and follicular organization, uncovering a previously unrecognized role for FRCs in humoral responses. As the complexity of the stromal cellular constituents of lymphoid organs continues to grow, our understanding of their developmental origins and functional interactions remains incomplete. In our group, we combine cutting-edge technologies (in vivo and in vitro models, genomic analysis, multiplexed imaging) for the isolation, manipulation and characterization of rare stromal cells from lymph nodes, as well as from extranodal tissues. Our work aims at broadening our current understanding of stroma-immune cell crosstalk in lymphoid organs, with the potential of revealing novel regulatory nodes to modulate inflammatory responses. As stromal cells are no longer considered inert bystanders during immune responses, a better understanding of their biology is essential for the development of innovative strategies to boost natural immunity as well as immunity generated in response to therapeutic intervention during pathologic conditions.

Selected Publications

Immunological hallmarks of stromal cells in the tumour microenvironment.
Turley SJ, Cremasco V, Astarita JL.
Nat Rev Immunol. 2015 Nov;15(11):669-82.

The CLEC-2-podoplanin axis controls the contractility of fibroblastic reticular cells and lymph node microarchitecture.
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Nat Immunol. 2015 Jan;16(1):75-84.

B cell homeostasis and follicle confines are governed by fibroblastic reticular cells.
Cremasco V, Woodruff MC, Onder L, Cupovic J, Nieves-Bonilla JM, Schildberg FA, Chang J, Cremasco F, Harvey CJ, Wucherpfennig K, Ludewig B, Carroll MC, Turley SJ.
Nat Immunol. 2014 Oct;15(10):973-81.

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