



Project A03 - G-protein-coupled receptor signaling in immune cells and endothelial cells: implications for neuroinflammation

Subcluster: Immune-regulatory networks and disease initiation

Project Summary: G-protein-coupled receptors have long been known to mediate the effects of various immunomodulatory molecules, but we are only beginning to understand their exact function in neuroinflammatory conditions such as MS/EAE. This is why our goal is to define new functions for specific GPCRs in immune cells and endothelial cells in neuroinflammation.

We are performing a systematic analysis of GPCR expression on the single cell level in various cell populations relevant in EAE. We have already identified GPCRs that show specific expression patterns in subpopulations of naïve or spinal cord infiltrating CD4+ T cells; we will further extend these single cell analyses to macrophages, microglia, and activated endothelial cells. Focusing on those receptors that have not yet been implicated in neuroinflammation, we will use in vitro and in vivo pharmacology as well as conditional knockout models to functionally characterize these GPCRs. We will also extend our GPCR analyses to patient material obtained within the CRC.

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