Project: Initial Training Network for Neurological Disorders orchestrated by cytokines (NeuroKine)

Research Topic: The transcriptional profiles of CNS-invading T cells

We are interested in defining the differential profiles of immune cells that invade the central nervous system (CNS), from the cytokines they secrete to their transcriptomes. Under normal conditions, very few immune cells can enter the CNS due to the blood-brain barrier which restricts entry. However, under neuroinflammatory conditions, the blood-brain barrier is no longer as restrictive, and immune cells can infiltrate the CNS in large numbers. Interestingly, a mouse model in which A20 (a key negative regulator of the canonical NF-kB pathway) is deleted specifically in microglia, shows enhanced infiltration of immune cells into the CNS, without overt symptoms of neuroinflammation. We are characterizing the profile of these immune cells and damage to the CNS under steady state, if any, and comparing this to the profile of activated immune cells invading the CNS during the course of neuroinflammatory disease, using experimental autoimmune encephalomyelitis, a mouse model of multiple sclerosis. Understanding the change in immune cell profiles, particularly that of T cells, during the course of disease will be beneficial to further understanding the contribution of immune cells to the damage caused during neuroinflammation.

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