Compartmentalization of myeloid cell responses in neuroinflammation

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Neuroinflammation is a common feature of autoimmune diseases of the central nervous system (CNS) such as multiple sclerosis (MS), in which the pathologies are associated with various immune responses in different body compartments e.g. local inflammation, microglial activation, and CNS infiltration of circulating immune cells. Characterization of more diverse immune cell types residing in different body compartments including peripheral blood, cerebrospinal fluid (CSF), gut, brain interface and brain parenchyma is required for better understanding dynamic compartmentalization of these cells in early as well as in the progressive stages of diseases. Apart from immune responses, evaluating changes in metabolome and protein expression profiles of tissue and fluidic compartment and investigating how these changes associate with functional and phenotypic changes of immune cells in different body compartments will provide us more insights in dynamic cell signalling of immune cells from/between different compartments towards the CNS and will further unravel neuroinflammation-associated phenotypic/functional transmission of immune cells and how they are involved in CNS homeostasis and disease progression/severity.