Microglia activation

Microglia activation is observed in various central nervous system (CNS) diseases and is important for coordinating the immune system's resources during disease-associated neuroinflammation. For example, activated microglia are the main phagocytes observed in early-stage multiple sclerosis (MS) lesions.

Microglia are polarized to the M2 microglia phenotype following stimulation with interleukin 4 or interleukin 13, which are typically released from Th2 cells. M2 microglia secrete anti-inflammatory cytokines and growth factors that promote attenuation of the inflammatory response and repair of damaged tissue.

Sterile alpha and HEAT/Armadillo motif (SARM), a member of the Toll-interleukin-1 receptor (TIR) domain-containing adaptor family, is primarily expressed in the central nervous system. However, the role of SARM in glioma is still undefined. Zhou et al. examined the function of SARM in microglia polarization and glioma progression. The results showed that forced the expression of SARM in GL261 glioma cells inhibited tumor growth, and reduced interleukin 6 secretion in conditioned media. Silencing of SARM in microglia cells inhibited interleukin 4 -induced M2 microglia polarization and enhanced lipopolysaccharide-induced M1 microglial polarization. Furthermore, overexpression of SARM increased the migration of microglia cells upon TGFβ stimulation. These data suggested that SARM is involved in neuroinflammation and microglia activation. This study provides novel insight into the mechanisms of microglia polarization [1].

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Zhou C, Li T, Dong Q, Liang H, Xu L. SARM suppresses glioma progression in GL261 glioma cells and regulates microglial polarization. Cell Biol Int. 2022 Aug 16. doi: 10.1002/cbin.11881. Epub ahead of print. PMID: 35971755.