FOR 1336

Understanding the Protective Function of Microglia: Focus on P2X7

Funding Period:
from 2010 to 2017

Project Leader
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Project Description:
ATP is an important extracellular messenger with numerous functions in health and disease. In the brain, ATP is released from neurons and glia cells under physiological conditions (i.e. synaptic transmission) and pathological conditions like excitotoxicity, tissue damage and inflammation. Microglia express a variety of different ATP receptors and an important role of ATP in the control of microglia function is currently discussed. In the first funding period, we have provided evidence for a protective function of microglia in three different brain pathologies: excitotoxicity, cuprizone-induced demyelination and amyloid-β plaque formation. Interestingly, various lines of evidence suggest that the ATP receptor P2X7 in microglia is crucial for the protective activity of these cells. How P2X7 receptor function contributes to the protective function of microglia is not known. In this project, microglia-specific chimeric slices, P2X7-knockout mice and the microglia depletion model (CX3CR1-iDTR) will be used to verify and analyse the role of microglia P2X7 in excitotoxicity and amyloid-β plaque formation in vitro and in vivo. Finally, a microglia-specific P2X7 mutant will be generated to decipher the role of microglia P2X7 in brain disease.

Reference: https://gepris.dfg.de/gepris/projekt/165159588