

Voltage gated sodium channel modulation of microglia activity in Alzheimer's disease (NCmicroAD)

<https://www.neurodegenerationresearch.eu/survey/voltage-gated-sodium-channel-modulation-of-microglia-activity-in-alzheimers-disease-ncmicroad/>

Principal Investigators

Catalin Bogdan

Institution

University of Medicine and Pharmacy "Carol Davila" of Bucharest

Contact information of lead PI

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Romania

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Voltage gated sodium channel modulation of microglia activity in Alzheimer's disease (NCmicroAD)

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Research Abstract

Alzheimer's disease (AD) is a progressive neurodegenerative disorder of the brain accounting for more than 60% of cases of dementia. To date, the pathogenic mechanisms in AD remain elusive and treatment options remain unsatisfactory. Accumulating evidence suggests that AD disease is associated with a microglial dysfunction, a resident immune cell that provides

continuous surveillance within the brain. Recently it was recognized that microglia express voltage-gated Na⁺ channels (VGSC). Pharmacological block of VGSC has been attempted symptomatically in AD to control the epileptic features often associated with AD. The success of VGSC treatment in AD was unexpectedly variable. This could not be explained solely by the neuronal effects. My central hypothesis is that the effect of VGSC modulation in AD reflects the modulation of microglia activation. As such, the timing of the VGSC block in relation to inflammatory response becomes essential for its effectiveness. The aim of this proposal is to directly explore the effect of VGSC modulation on microglia activity by in vivo and chronic imaging combined with electrophysiological method I recently developed based on peripheral axon excitability threshold tracking to characterize the impact of VGSC on microglia. If successful, these studies will establish a suitable time-window for effective neuroprotection using VGSC blockers in AD which could be readily translated to clinical setting.

Further information available at:

<http://www.umfcv.ro/ncmicroad>

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