

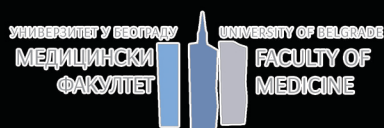


ДНС / SNS  Друштво за неуронауке Србије / Serbian Neuroscience Society

**31 May - 02 June**  
**Belgrade Youth Center**  
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**Congress**  
**Serbian Neuroscience Society**

# Book of Abstracts



**8th CONGRESS OF SERBIAN NEUROSCIENCE SOCIETY with international participation**

**31 May – 2 June 2023. Belgrade, Serbia - BOOK OF ABSTRACTS**

**Published by:**

Serbian Neuroscience Society  
Bulevar despota Stefana 142, 11060 Belgrade, Serbia

**Editors**

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**ISBN: 978-86-917255-4-9**

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## Microglial morphological response to the lack of direct social contact in periadolescent rats

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**Aim:** Microglia are macrophages of the brain with a fundamental role in neuronal homeostasis. Stress-induced activation of microglia leads to rapid morphological changes and it is implicated that these alternations could mediate different aspects of early-life stress psychopathologies. We aimed to examine morphological response of hippocampal microglia to social isolation using peripubertal rats as a rodent model of adolescence.

**Methods:** Male peripubertal *Wistar* rats were randomly selected for group-housing (GH; n=3 per cage) or single-housing (SH; n=1 per cage) at postnatal day 29. After 1<sup>st</sup> and 2<sup>nd</sup> week of defined housing animals' brains were sampled, and used for microglia iba-1 fluorescent labelling and morphology analysis: one field per section per animal (n=4 animals per group) in hippocampal dentate gyrus (HDG). Data for microglia cell shape (FracLac plugin, ImageJ) and cell ramification (Analyze Skeleton plugin, ImageJ) were collected from single cells in photomicrograph visualized with a confocal microscope (Leica Microsystems).

**Results:** Compared to GH peers, SH rats had lower microglial cell density in the HDG after the 1<sup>st</sup> week of defined housing, which was not evident after the 2<sup>nd</sup> week. Other parameters of microglia shape and ramification showed no difference between the groups in neither of the two time points examined.

**Conclusions:** Obtained results showed that change in the cell density in the HDG was the only and transient change in microglia morphology due to the social isolation during adolescence. Further examination of other stress-related brain regions is needed to define in depth the relationship between the microglia phenotype and early-life stress conditions.

**Acknowledgement:** This study was financially supported by Ministry of Science, Technological Development and Innovation of the Republic of Serbia, grant 451-03-47/2023-01/200017.