



SEMINARIO PRESENCIAL

Martes, 19 de abril de 2022

12:30 h. Instituto Cajal (CSIC) Madrid

DR. JOSE ANTONIO NORIEGA PRIETO

UNIVERSITY OF MINNESOTA

USA

Astrocytes control neuronal plasticity and information processing

Abstract

Astrocytes are emerging as key cells involved in synaptic physiology and behaviour. Their role has been related to the plethora of receptors expressed in their membrane. Insulin growth factor receptor I (IGF-IR) is involved in multiple brain functions. I will present recent data showing the activation of IGF-IR expressed in cortical astrocytes is critical for maintaining the excitatory / inhibitory balance, and for the opening a temporal window to favour the generation of associative memories that impact the behavioural performance of barrel cortex-related texture discrimination tasks. I will also present more recent results related to the properties and functional consequences of the endocannabinoid-mediated astrocyte-neuron signalling. I will show that different endocannabinoids specifically signal to either astrocytes or neurons, leading to distinct and contrasting synaptic regulation in single hippocampal synapses. The distinct astrocyte-driven signalling impacts synaptic plasticity and animal behaviour, which further supports the idea astrocyte function influences synaptic activity and animal behaviour.

Affiliation and short bio

Jose Noriega studied Pharmacy at the University of Salamanca (USAL, Spain) where he also performed the master's degree in neuroscience at the Instituto de Neurociencias de Castilla y León (INCYL, Salamanca, Spain). He performed his PhD studies at the Universidad Autónoma de Madrid (Madrid, Spain) under the supervision of Prof. David Fernández de Sevilla. Currently, he is a Post-doctoral associate at the University of Minnesota (Minnesota, USA) in the laboratory of Prof. Alfonso Araque. Since 2019, he is studying the properties of the endocannabinoid-mediated neuron-glia interaction, its role in synaptic physiology, and its impact in animal behaviour. Using innovative techniques, including electrophysiology, fiber photometry, two photon microscopy and animal behaviour, he aims to unravel novel mechanisms underlying astrocyte functions in the central nervous system. He was a discussion leader at the Gordon Research Seminar on Cannabinoid Function in the CNS (GRS. 2021, Ventura, CA, USA). He has been ad hoc reviewer for Neuroscience and FEBS Journal.

Related publications with the topic:

Noriega-Prieto, J.A.; Maglio, L.E.; Zegarra-Valdivia, J.A.; Pignatelli, J.; Fernandez, A.M.; Martinez-Rachadell, L.; Fernandes, J.; Núñez, Á.; Araque, A.; Torres-Alemán, I.; Fernandez de Sevilla, D. Astrocytic IGF-IRs Induce Adenosine-Mediated Inhibitory Downregulation and Improve Sensory Discrimination. The Journal of Neuroscience 2021, 41, 4768–4781.