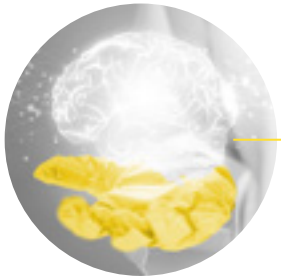

3.1.4 Involvement of Glycinergic and Glutamatergic Systems in Central Nervous System Pathologies Group

Publications: 3
Q1: 2

COMPOSITION

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STRATEGIC OBJECTIVE

Role of glutamate and glycine transporters in physiological and pathological aspects of glutamatergic and glycinergic neurotransmission.

Involvement of glutamate transporters in excitotoxicity, ischemia and traumatic brain injury.

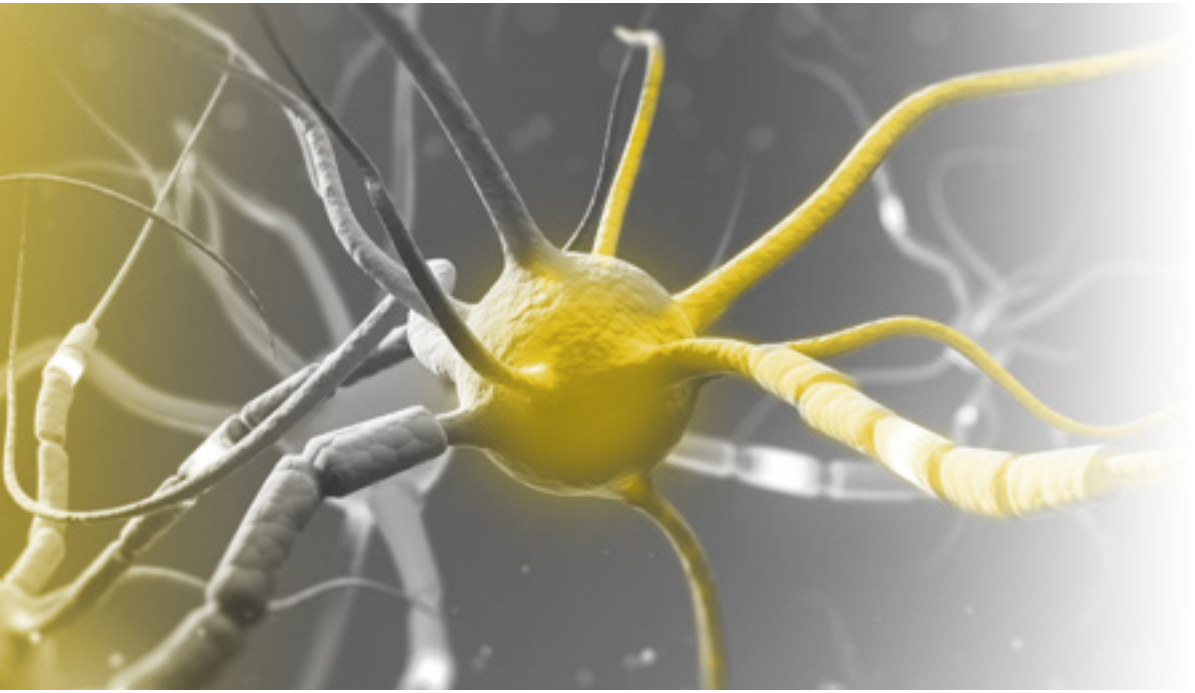
Pathologies of glycinergic neurotransmission such as hyperekplexia and pain

Role of the adult neurogenesis in neurorepair.

Role of microRNAs in ischemic tolerance.

RESEARCH LINES

1. Physiological and pathological aspects of glutamate fuxes in brain as potential targets to prevent excitotoxicity, associated with brain disfunctions like ischemia, o traumatic brain injury, with special interest in intracellular traffic and characterization of interactomes of transporters and receptors of glutamatergic synapses.
2 Glycinergic neurotransmission. Identification and characterization of new GlyT2 mutations (SLC6A5 gene) associated to human hyperekplexia. Effects of the mutations on transporter structure, function, proteostasis and glycinergic neurotransmission. Role in presynaptic hyperekplexia of different genes related to GlyT2 trafficking, interactoma, posttranslational modifications. Rescue interventions.
3 Study of plastic adaptations affecting glycine transporters in physiological and pathological nociception. Regulation of GlyTs by receptors modulating nociceptive signaling (P2XR, P2YR, mAch, nAch, a2 adrenergic, 5-HT). Signaling pathways.
4 Neuron-glia crosstalk through microRNAS and exosomes.
5 Physiological and pathological aspects of Neuronal reparation by adult neurogenesis:
A) Identification of novel regulatory mechanisms of adult neurogenesis by kinases.
B) Identification of novel regulatory mechanisms of adult neurogenesis by microRNAs and other non-coding RNAs.
6 GABAergic neurotransmission. Identification and characterization of new mutations in SLC6A1 gene (GABA transporter GAT-1) associated to epilepsy. Effects of the mutations on transporter structure, function in GABAergic neurotransmission. Pharmacological treatments with pharmacochaperones.



RESEARCH ACTIVITY

Publications

- González-Martínez J, Cwetsch AW, Gilabert-Juan J, Gómez J, Garaulet G, Schneider P, de Carcer G, Mulero F, Caleiras E, Megias D, Porlan E, Malumbres M. Genetic interaction between PLK1 and downstream MCPH proteins in the control of centrosome asymmetry and cell fate during neural progenitor division. Cell Death Differ. 2022; 29(8): 1474-85. Article. IF: 12.4; D1
- Martínez-Lozada Z, Hewett SJ, Zafra F, Ortega A. Editorial: The known, the unknown, and the future of glutamate transporters. Front Cell Neurosci. 2022; 16: 1005834. Editorial Material. IF: 5.3; Q1
- Zafra F, Piniella D. Proximity labeling methods for proteomic analysis of membrane proteins. J Proteomics. 2022; 264: 104620. Article. IF: 3.3; Q2

Research projects

Porlan Alonso E. Nuevos reguladores farmacológicos de la neurogénesis adulta y la reprogramación directa (PID2019-104763RB-I00). Ministerio de Economía, Industria y Competitividad. 2020-2023.

Managment centre: UAM

López Corcuera B. El transportador neuronal de glicina glyt2 en dolor y en hiperplexia. Implicaciones patológicas en desarrollo (PID2020-119399RB-I00). Ministerio de Economía, Industria y Competitividad. 2021-2024.

Managment centre: UAM

López Corcuera B. El transportador neuronal de glicina GlyT2 en hiperplexia: una patología glicinérgica del desarrollo. Fundación Ramón Areces. 2021-2024.

Managment centre: Fundación Severo Ochoa