



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



Publications: 2 | Q1:1

#### COMPOSITION

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#### STRATEGIC OBJETIVES

- Role of glutamate and glycine transporters in physiological and pathological aspects of glutamatergic and glycinergic neurotransmission.
- Pathologies of glycinergic neurotransmission such as hyperekplexia and pain
- Role of the adult neurogenesis in neurorepair.

#### RESEARCH LINES

- 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.
- Study of plastic adaptations affecting glycine transporters in physiological and pathological nociception. Regulation of GlyTs by receptors modulating nociceptive signaling (P2XR, P2YR, mACh, nACh,  $\alpha$ 2 adrenergic, 5-HT). Signaling pathways.
- Physiological and pathological aspects of Neuronal reparation by adult neurogenesis:
  - Identification of novel regulatory mechanisms of adult neurogenesis by kinases.
  - Identification of novel regulatory mechanisms of adult neurogenesis by microRNAs and other non-coding RNAs.
- 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

- **Arribas-Carreira L, Castro M, García F, Navarrete R, Bravo-Alonso I, Zafra F, Ugarte M, Richard E, Pérez B, Rodríguez-Pombo P.** Metabolic Rewiring and Altered Glial Differentiation in an iPSC-Derived Astrocyte Model Derived from a Nonketotic Hyperglycinemia Patient. *Int J Mol Sci.* 2024; 25(5): 2814. Article. IF: 4.9; Q1
- **Felipe R, Sarmiento-Jiménez J, Camafeita E, Vázquez J, López-Corcuera B.** Role of palmitoylation on the neuronal glycine transporter GlyT2. *J Neurochem.* 2024; 168(9): 2056-72. Article. IF: 4; Q2

##### Research projects

- **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. Management centre: UAM
- **López Corcuera B.** El transportador neuronal de glicina GLYT2 en hiperplexia: una patología glicinérgica del desarrollo. Fundación Ramón Areces. 2021-2024. Management centre: Fundación Severo Ochoa

