

PID2024_155_963NB_I00

Spontaneous_Activity_and_Gene_Programs_in_Cortical_Arealization

The López-Bendito Lab at the Instituto de Neurociencias (UMH–CSIC) is seeking a highly motivated PhD student for a fully funded 4-year position under a newly awarded Spanish Agency of Research project. The project investigates how early spontaneous neural activity interacts with genetic transcriptional programs to shape sensory cortical arealization, using multiomics, bioinformatics, and in vivo CRISPR approaches in rodent models. Applicants should hold a Master's in Neuroscience, Biology, Biomedical Sciences, or related fields, have experience with scRNA-seq, RNA-seq, ATAC-seq or ChIP-seq, proficiency in R, Python, and Linux, and a willingness to work with animals. Strong motivation, critical thinking, and collaborative skills are essential.

Papers:

Martini FJ, Guillamón-Vivancos T, Moreno-Juan V, Valdeolmillos M, López-Bendito G. Spontaneous activity in developing thalamic and cortical sensory networks. *Neuron*. 2021 Aug 18;109(16):2519-2534. doi: 10.1016/j.neuron.2021.06.026. Epub 2021 Jul 21. PMID: 34293296; PMCID: PMC7611560.

Guillamón-Vivancos T, Aníbal-Martínez M, Puche-Aroca L, Moreno-Bravo JA, Valdeolmillos M, Martini FJ, López-Bendito G. Input-dependent segregation of visual and somatosensory circuits in the mouse superior colliculus. *Science*. 2022 Aug 19;377(6608):845-850. doi: 10.1126/science.abq2960. Epub 2022 Aug 18. PMID: 35981041; PMCID: PMC7614159.

Aníbal-Martínez M, Puche-Aroca L, Pérez-Montoyo E, Pumo G, Madrigal MP, Rodríguez-Malmierca LM, Martini FJ, Rijli FM, López-Bendito G. A prenatal window for enhancing spatial resolution of cortical barrel maps. *Nat Commun*. 2025 Mar 6;16(1):1955. doi: 10.1038/s41467-025-57052-w. PMID: 40050657; PMCID: PMC11885613.