**SEMINARIO PRESENCIAL**

**Viernes, 3 de Noviembre de 2023**
**12:30 h. Instituto Cajal (CSIC)** Madrid


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# INSIGHTS INTO NG2-PROGENITORS: FROM ONTOGENY TO BRAIN ASSEMBLY


## Abstract

The assembly of the brain from a pool of Neural Progenitor Cells (NPCs) is a complex process during mammalian development. Radial Glial Progenitors (RGPs) arise from Neuroepithelial cells (NE), generating neurons, astrocytes, oligodendrocytes, and NG2-glia in distinct temporal waves. Recent research suggests that NPCs constitute a diverse population.

Recognizing the adult NG2-glia's capacity to primarily generate oligodendrocytes but also other cell types, this study explores the potential of embryonic NG2+ cells to function as progenitors. Our primary objective is to unveil the role of NG2-progenitors in mouse brain development and compare them to RGPs. To achieve this, we employed lineage tracking techniques to label individual NG2-progenitors and RGPs. Subsequently, we analyzed the cell progeny, potential, and profiles of both NPCs at different stages.

Our findings reveal that pallial NG2-progenitors produce neurons and glial cells, with changing fates during brain development. In conclusion, this study advances our understanding of brain development, emphasizing the potential of NG2-progenitors and the heterogeneity within the NPC population.


## Affiliation and short bio

I studied biochemistry at Castilla-La Mancha University (UCLM). During my bachelor's thesis, under the expert guidance of mentors Dr. Manuel Nieto Sampedro and Dr. Lorenzo Romero Ramirez, I delved into the study of the anti-inflammatory effects of gangliosides in microglia and astrocytes at the Cajal Institute. Subsequently, I pursued a Master's degree in Neuroscience at UAM, under the supervision of Dr. Diego Clemente López, to explore the role of NG2-glia within a Multiple Sclerosis mouse model at the Hospital Nacional de Parapléjicos in Toledo, Spain.

Recently, I earned a Ph.D. in Neuroscience (cum laude) under the mentorship of Dr. Laura López-Mascaraque at the Instituto Cajal-CSIC, investigating neural progenitor cell heterogeneity through clonal analysis using the innovative StarTrack method. Throughout my academic journey, I gained practical experience during my research stay at King's College London (UK) with Professor Benedikt Berninger and his lab.

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**Related publications with the topic:**

Ojalvo-Sanz AC, López-Mascaraque L. Gliogenic Potential of Single Pallial Radial Glial Cells in Lower Cortical Layers. Cells. 2021 Nov 19;10(11):3237. doi: 10.3390/cells10113237. PMID: 34831460; PMCID: PMC8621618. IF: 7.666; Q1

Sánchez-González R, Figueres-Oñate M, Ojalvo-Sanz AC, López-Mascaraque L. (2020) Cell Progeny in the Olfactory Bulb After Targeting Specific Progenitors with Different UbC-StarTrack Approaches. Genes (Basel). 13;11(3):305. doi: 10.3390/genes11030305. PMID: 32183100; PMCID: PMC7140809. IF: 4.096; Q2

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