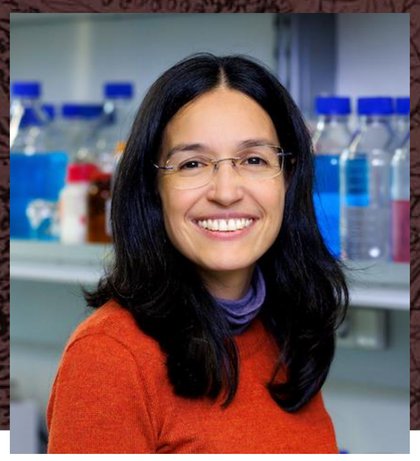
INSTITUTO CAJAL

SEMINARIO PRESENCIAL

Viernes, 17 de Mayo de 2024
12:30 h. Instituto Cajal - CSIC



Dra. NOELIA URBÁN

IMBA – Institute of Molecular Biotechnology GmbH

A FULL, DYNAMIC VIEW OF NEURAL STEM CELL QUIESCENCE

Abstract

Adult neural stem cells (aNSCs) are in a distinct metabolic state of reversible cell cycle exit known as quiescence. The rate of aNSC activation determines the number of new neurons generated and influences the long-term maintenance of neurogenesis. Quiescence exit is believed to involve the gradual awakening of aNSCs from deep quiescence to activation. However, this view fails to explain the variability of aNSC responses to stimuli. In my seminar, I will introduce a new model, where aNSCs dynamically transition through a cloud of highly interlinked cellular states driven by intrinsic and extrinsic cues. Our new perspective enables us to incorporate current results into a coherent framework and aids the formulation of new testable hypothesis. In addition, I will present our results regarding the influence of intermittent fasting on aNSC maintenance and discuss a possible role for the proteasome in quiescence regulation.

Affiliation and short bio

Noelia Urbán started her scientific career in the field of developmental neurobiology in Barcelona, where she investigated how transcription factors drive the differentiation on neural stem cells towards striatal neurons. During her postdoctoral training in London her focus shifted towards the intrinsic control of adult neural stem cells in the hippocampus. By combining lineage tracing with label retention protocols, she highlighted the importance of quiescence for the maintenance of adult neurogenesis over time and the role of non-transcriptional mechanisms in the regulation of adult neural stem cells. In October 2017 Noelia joined IMBA, in Vienna, as a junior group leader. The initial focus of her group was elucidating how adult neural stem cells respond to diet-induced changes and the insulin-IGF system. Current projects include also understanding how heterogeneity determines the response of neural stem cells to activating stimuli and exploring the molecular mechanisms that maintain neural stem cell quiescence. For more information, please visit: https://www.oeaw.ac.at/imba/research/noelia-urban/

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Related publications with the topic

Gabarró-Solanas, R., Davaatseren, A., Kleifeld, J (...) Crespo-Enríquez, I., Urbán, N. (2023). Adult neural stem cells and neurogenesis are resilient to intermittent fasting. EMBO Rep. :e57268

Urbán, N. (2022). Could a Different View of Quiescence Help Us Understand How Neurogenesis Is Regulated? Front Neurosci. 16:878875

Austin, SHL., Gabarró-Solanas, R., Rigo, P (...) Guillemot, F., Urbán, N. (2021). Wnt/β-catenin signalling is dispensable for adult neural stem cell homeostasis and activation. Development. 148(20)

Blomfield, IM., Rocamonde, B., Masdeu, MDM (...) Guillemot, F., Urbán, N. (2019). Id4 promotes the elimination of the pro-activation factor Ascl1 to maintain quiescence of adult hippocampal stem cells. Elife. 8

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