INSTITUTO CAJAL

SEMINARIO PRESENCIAL

Viernes, 24 de Noviembre de 2023
12:30 h. Instituto Cajal - CSIC

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REGULATORS OF NEURAL STEM CELLS AND ADULT NEUROGENESIS: SOME UNUSUAL SUSPECTS

Abstract

The phenomenon of adult cytogenesis is a fascinating biological process in which functional mature neural cells are generated from somatic stem cells and progenitors, incorporating to the brain circuitry once neurodevelopment has concluded. The factors that govern neural stem cell stemness, regulate their proliferation and commitment to a certain cellular fate, their survival and differentiation are under exhaustive investigation. In this seminar we will discuss recent findings on this topic, specifically the role of the protein Kidins220 modulating of survival of stem cells and progenitors. Also, we will discuss unpublished observations on the role of other factors and their unexpected roles in the regulation of adult neurogenesis, and the possible implications for regeneration and reprogramming.

Affiliation and short bio

Eva Porlan joined the Centro de Biología Molecular Severo Ochoa (CBMSO) as a Ramón y Cajal Fellow at the Molecular Biology Dpt. UAM in 2016. Since 2021, she is an Associate Professor at the Molecular Biology Dpt. where she has lectured in Molecular Neurobiology, Advanced Molecular Biology Laboratory, Basic Principles of Biochemistry and Methods in Biochemistry, and is an International Mobility Program Coordinator for Biochemistry Degree students. At CBMSO she leads a research group studying the molecular regulators of neural stem cell activation and mode of division in adult neurogenic niches. Along her career she has contributed to the field with the identification of intrinsic and niche-derived regulators of neural stem cells, such as the cell cycle inhibitor $p21^{Cip1}$ (regulating the morphogen Bmp2 and the pluripotency factor Sox2), NT-3 and the metalloproteinase MT5-MMP (as key molecules in neural stem cell quiescence), the APC/C cofactor Cdh1 and Ink4 and Cip/Kip cell-cycle inhibitors (in replicative stress in neural progenitors), and Kidins220 (regulating stem and progenitor-cell survival). One of the main interests of her lab is investigating factors susceptible of pharmacological regulation for the control of stem cell activation and neural fate commitment and differentiation.

Related publications with the topic:

Kidins220 sets the threshold for survival of neural stem cells and progenitors to sustain adult neurogenesis. Del Puerto A, Lopez-Fonseca C, Simón-García A, Martí-Prado B, Barrios-Muñoz AL, Pose-Utrilla J, López-Menéndez C, Alcover-Sanchez B, Cesca F, Schiavo G, Campanero MR, Fariñas I, Iglesias T, Porlan E. Cell Death Dis. 2023 Aug 4;14(8):500. doi: 10.1038/s41419-023-05995-7. PMID: 37542079

Genetic interaction between PLK1 and downstream MCPH proteins in the control of centrosome asymmetry and cell fate during neural progenitor division. González-Martínez J, Cwetsch AW, Gilabert-Juan J, Gómez J, Garaulet G, Schneider P, de Cárcer G, Mulero F, Caleiras E, Megías D, Porlan E, Malumbres M. Cell Death Differ. 2022 Aug;29(8):1474-1485. doi: 10.1038/s41418-022-00937-w. Epub 2022 Jan 20. PMID: 35058575 Free PMC article.

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