



# SEMINARIO PRESENCIAL

Viernes, 11 de Abril de 2025 12:30 h. Instituto Cajal - CSIC



Instituto de Neurociencias

# **CORTICAL CIRCUITS REGULATING SOCIAL PREFERENCES**

#### Abstract

Social preference, the decision to interact with one member of the same species over another, is a key feature of optimizing social interactions. Thus, adult rodents favor interacting with novel conspecifics over familiar ones but whether this preference for social novelty stems from neural circuits facilitating interactions with novel conspecifics or suppressing interactions with familiar ones remains unknown. Here, we identify neurons in the infra-limbic area (ILA) of the mouse prefrontal cortex that express the neuropeptide corticotropin-releasing hormone (CRH) and project to the dorsal region of the rostral lateral septum (rLS). We show how release of CRH during familiar encounters disinhibits rLS neurons, thereby suppressing social interactions with familiar mice and contributing to social novelty preference. We further demonstrate how the maturation of CRH expression in ILA during the first two post-natal weeks enables the developmental shift from a preference for littermates in juveniles to a preference for novel mice in adults. Taken together, our findings suggest that the developmental maturation of CRH in ILA and its later release onto rLS is critical for controlling the preference for socially novel encounters exhibited by adult mice.

## Affiliation and short bio

My research focuses on determining cellular- and circuit-based mechanisms by which higher-order brain regions such as the hippocampus and pre-frontal cortex relay cognitive information to the hypothalamus in order to regulate innate motivated behaviors (sociability, aggression, mating, feeding). As alterations in higher brain regions contribute to neuropsychiatric diseases associated with disordered social behaviors, insight into both the normal and abnormal functions of these circuits is of critical importance.

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### **Related publications with the topic**

- Top-down regulation of motivated behaviors via lateral septum sub-circuits. Besnard A., Leroy F\*. Molecular Psychiatry 2022 Aug;27(8):3119-3128. doi: <u>10.1038/s41380-022-01599-3</u>.
- Corticotropin-releasing hormone signaling from prefrontal cortex to lateral septum suppresses interaction with familiar mice. de León Reyes N, Sierra Díaz P, Nogueira R, Ruiz-Pino A, Nomura Y, de Solis C, Schulkin J, Asok A, Leroy F\* Cell 2023 Sep 14;186(19):4152-4171.e31.doi:

#### <u>10.1016/j.cell.2023.08.010</u>

 A circuit from hippocampal CA2 to lateral septum disinhibits social aggression. Leroy F\*, Park J, Asok A, Brann DH, Meira T, Boyle LM, Buss EW, Kandel ER and Siegelbaum SA. Nature 2018 Dec 5; 564(7735):213-218. doi: <u>10.1038/s41586-018-0772-0.</u>

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