

Group name: Development, Wiring and Function of Cerebellar Circuits

IP name: Juan Antonio Moreno Bravo

Group web:

<https://in.umh-csic.es/en/grupos/development-wiring-and-function-of-cerebellar-circuits/#info-general>

<https://morenobravoja.wixsite.com/website>

Title of the MRP/TFM: Anatomical and functional characterization of models with abnormal cerebellar development.

Summary of the Project:

The cerebellum has been associated principally to motor functions; however, an increasing number of evidence have demonstrated its implication with higher order functions. It is proposed that the influence of the cerebellum in high-order cognitive processing is via modulatory effects on the cerebral cortex to which it is connected through different pathways. Abnormalities in the connections between these brain structures might underlie the emergence of several neurodevelopmental disorders, such as autism spectrum disorders. Despite the growing understanding of the cerebellum's role in neurodevelopmental disorders, the underlying mechanisms leading to these dysfunctions are still unclear, highlighting the need for further research to elucidate the development of cerebellar long-range circuits.

We are interested in how the functional connectivity between the cerebellum and the cerebral cortex develops at early stages, in order to understand which cortical areas could be influenced by the cerebellar development/activity.

Our goal is to disturb the development of the cerebellum using different transgenic approaches and new developed mouse models. We will thus analyze the connectivity changes focusing mainly on the effects on the cerebral cortex. We will characterize anatomically and functionally these models using different imaging and histological techniques.

Methods and technology involved in the MRP/TFM Project:

Immunohistochemistry, Viral tracings, Clearing methods, 3D reconstruction, in vivo calcium imaging

Member/s of the lab who will act as tutor/co-tutor of the project (if different from the group IP): Martina Riva, Juan Antonio Moreno Bravo

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