

**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:** Analysis of the emergence of early cerebellar activity patterns.

**Summary of the Project:**

Despite progress in understanding the function of the adult cerebellum, little is known about how cerebellar neuronal populations develop and organize into functional brain circuits. Particularly, much is unknown about the activity events that occur during early cerebellar development and how their alterations affect the global connectivity of the brain. Transient activity alterations in the cerebellum during crucial periods of development can lead to persistent changes in structural and functional connectivity and could underlie the cerebellar origin of various complex pathophysiological conditions, such as autism spectrum disorders.

In this project we aim to (i) define the activity patterns in the developing cerebellum and (ii) to develop genetic strategies to manipulate them and study the consequence of these aberrant activity patterns.

For that, we will use diverse transgenic tools along with cutting-edge imaging techniques to characterize how the activity of these neurons originates, establishes, and changes during the early stages of mouse development. And define whether this early activity could play an essential role in establishing functional circuits between the cerebellum and other remote brain areas.

**Methods and technology involved in the MRP/TFM Project:**

Calcium imaging, data analysis, Immunohistochemistry, 3D light-sheet microscopy,

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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