Investigador: **Bruno Catarino**
Proyecto: **Unveiling the Evolutionary Diversity of Light and Temperature Integration in Plants.**

Plants can integrate light and temperature cues into development to finely adjust to their environment. One of the key mechanisms by which these two signals are integrated has been shown to be conserved in land plants. The angiosperm Arabidopsis thaliana and the bryophyte Marchantia polymorpha use a central conserved module comprised of phytochromes, which act as light receptors and temperature sensors, and the transcription factors PIF and HY5 to regulate the responses downstream of light and temperature. However, the transcriptional and regulatory pathways operating downstream of this central module appear to have diversified massively in land plants. It remains elusive what are the lineage-specific pathways that confer this diversification in land plants, which ultimately are underlying the adaptation of plants to different ecological niches.

To answer this question, we propose the following activities: (1) to perform comparative omics analyses of light and temperature responses in land plants; (2) to identify regulatory modules that are specific of each lineage; and (3) to generate and characterize loss-of-function mutants of components of those modules.

The student would learn different methods of plant transformations, perform bioinformatic (omics) analyses, gain experience with molecular cloning and other molecular techniques. Concomitantly, the student would be part of a vibrant group with people studying different aspects of plant signalling and development. Please see our webpage for more information about the lab.

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