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DEPARTMENT OF BIOLOGY

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UNIVERSITÀ DEGLI STUDI DI PADOVA

# Is cryptochrome circadian activity regulated by a Ca2+/CaM signalling mechanism?

## POSITION

A 3 years PhD position is available from October 1st 2020 in the Neurogenetics and Chronobiology lab of **Gabriella Mazzotta (gabriella.mazzotta@unipd.it)** at the Department of Biology, University of Padova, Italy.
The candidate should apply for enrolment in the PhD Programme in BIOSCIENCES, curriculum Genetics Genomics and Bioinformatics, at the University of Padova.
**Deadline for application: June 16, 2020 (13.00 CEST).**
For detailed information visit:
- https://www.unipd.it/dottorato/bandi-graduatorie
- https://www.unipd.it/en/phd-programmes-calls-and-admissions
- https://dottorato.biologia.unipd.it/

## PROJECT OUTLINE

Cryptochromes are major regulators of the circadian rhythms in both insects and vertebrates. Drosophila cryptochrome (dCRY) is mainly responsible for the light-synchronization of the circadian clocks, although it appears to have different functions, specific to different organs, tissues and even subset of cells in which it is expressed. In mammals, Cryptochromes have evolved as light-independent negative transcriptional regulators of the circadian clock, although increasing evidences suggest their involvement in numerous additional signalling pathways. Nevertheless, the nature of the transduction signalling involving CRYs remains largely unknown.
The intracellular signalling machinery is often organized around scaffolding proteins localized at the plasma membrane, and multiple PDZ proteins bind to the various constituent of the transduction pathway, bringing them into close proximity and precisely defined stoichiometry, ultimately ensuring a rapid and specific signal transduction. We have previously shown that dCRY interact with the visual system through the PDZ protein Inactivation No Afterpotential D (INAD) and demonstrated that CaM bridges dCRY and INAD to form a ternary complex *in vivo*.
PhD candidate will be involved in a project aimed at characterizing the role of a Ca2+/CaM signalling in the regulation of cryptochrome activity. By using a multiple disciplinary approach (*in silico* analysis, Y2H, *in vitro* binding and Co-IP) we will investigate about a possible involvement of a PDZ scaffolding/CaM mediated signalling pathway in the modulation of CRYs activity. Moreover, by using Drosophila as model, we will be able to perform in vivo experiments that will help to deeply dissect this signalling pathway.

## CANDIDATE REQUIREMENTS

The candidate should hold an M.Sc. in Biology/Molecular Biology (or equivalent) or plan to achieve it by September 2020, and ideally have experience in molecular biology techniques, cell culture, as well as working with *Drosophila melanogaster*. Some experience in bioinformatics would also be advantageous. The ideal candidate should be able to think independently, have excellent technical and organisational skills, have enthusiasm for team work and be fluent in English.

## CONTACT

If interested, please contact **Prof. Gabriella Mazzotta (gabriella.mazzotta@unipd.it)**