

# BORSA DE CURRÍCULUMS VITAE FOR PREDOCTORAL POSITION (Ref. 2308 - WELZ)

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## OFFERS

The Intercellular Communication in Cancer and Ageing group (Cancer Research Programme) at Hospital del Mar Medical Research Institute (IMIM) offers a position for a master student as a PhD candidate to work on the role of circadian disruption in the microbiota – gut – brain axis in inflammatory diseases and colorectal cancer. The successful candidate will apply for PhD fellowships together with the host laboratory.

Principal Investigator: Dr. Patrick-Simon Welz.

Key words: Colorectal cancer, Alzheimer's Disease, microbiota – gut – brain axis, circadian clock, shotgun sequencing, transcriptomics, metabolomics

## Requirements of the candidates:

- Bachelor Degree with outstanding qualifications in biology or related fields
- Master Degree or admitted to a Master Degree program
- Ability to communicate in English (equivalent to level B2)
- Licence to work with animals and/or previous experience working with mice is highly desirable
- Candidates should be admitted to a Doctorate Program by academic course 2023-24

## Exclusion criteria

- Candidate with PhD degree

## Summary of the project:

The microbiota – gut – brain axis is a bidirectional signalling network integrating host – microbiota interactions with brain physiology and behaviour. Signalling cues along this communication axis can be of immune, metabolic or nervous nature. Interestingly, all tissues along the microbiota – gut – brain axis, as well as the signalling nodes, exhibit daily rhythmicity in their molecular functions. These daily rhythms are regulated by the circadian clock network, which incorporates daily variations in the external environment into the organization of organismal physiology. Circadian clock function is disturbed and circadian rhythmicity is being lost in inflamed tissues and tumours. However, how impaired timing in the microbiota – gut – brain axis might impact on Alzheimer's Disease (AD) and colorectal cancer (CRC) development, is not known.

In this project the level of circadian disruption along the microbiota – gut – brain axis in CRC and AD mouse models will be evaluated, and the impact of lost rhythmicity on disease development will be investigated. These studies will include the analysis of microbiome constitution, intestinal immune function, systemic signalling cues, and brain physiology along the day. Transgenic mouse models will be used for determining the impact of disturbed circadian clock function along the microbiota – gut – brain axis on cognition and cancer development. This project aims for a mechanistic understanding of how disrupted timing in the microbiota – gut – brain axis impacts on CRC and AD, as well as for the identification of new therapeutic avenues for treating these two devastating diseases.

Research in the Intercellular Communication in Cancer and Ageing laboratory is supported by Fundación BBVA and the Agencia Estatal de Investigación.

### **Contact**

Please submit a full **Curriculum Vitae** and **motivation letter** to [pwelz@imim.es](mailto:pwelz@imim.es)

**Deadline for submission of CV:** Applications will be evaluated on a rolling basis and as soon as an excellent match is made, the position will be filled.