

# Biological and clinical impact of epigenetic memory and evolutionary dynamics in mantle cell lymphomas.

Principal Investigator

**Iñaki Martín-Subero**

## Keywords

DNA methylation, Epigenetic memory, Evolutionary dynamics, Mantle cell lymphoma, Clinical impact, Biostatistics.

## Our research

The Biomedical Epigenomics group of the IDIBAPS is a world-leader in the field of epigenomics of lymphoid tumours. The group has published some of the most influential articles in the field (Nat Genet 2012, Cancer Cell 2016, Nat Med 2018, Nat Cancer 2020, Nat Genet 2022, Immunity 2024, among others). The main goal of the group is to understand the origin, pathogenesis and evolution of lymphoid tumors using omics and computational tools and translate this knowledge into clinically-applicable models.

## What we are looking for

We are looking for a PhD candidate with a strong background and interest in computational tools applied to omics data, including machine learning, statistical modelling and tool development, as well as programming skills in data analysis languages (R, Python...). We would like to receive applications from enthusiastic, open-minded and collaborative candidates with good planning abilities and strong teamwork skills. As the project aims at generating predictive clinical models based on epigenetic memory, a strong motivation towards clinical translation is desirable.



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# Integrative approach to liver cancer: unveiling the impact of high-fat diets and aging.

Principal Investigator

**Mercedes Fernández-Lobato**

## Keywords

Liver cancer, Translational control, High-fat diet, Aging, Non-alcoholic fatty liver disease

## Our research

Our research focuses on an integrative approach to liver cancer, exploring how high-fat diets and aging influence its progression. We aim to identify factors disrupting the chronic integrated stress response (ISR) in the liver, increasing disease vulnerability. Our work, published in top journals like Nature Cell Biology, is conducted in collaboration with leading international researchers and institutions. These collaborations enhance our ability to develop innovative therapies to prevent NAFLD-related liver cancer and improve patient outcomes.

## What we are looking for

We seek a highly motivated PhD candidate with a Bachelor's and Master's degree in biomedical sciences. The ideal candidate should have experience in molecular and cellular biology and working with animal models. An official certificate on animal experimentation is required. Excellent organizational skills, adaptability, teamwork, and a good command of English are essential.



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# Ultraslow cortical dynamics: physiological and pathological mechanisms across different temporal scales.

Principal Investigator

**Maria V. Sanchez-Vives**

## **Our research**

Our research group is dedicated to understanding the investigation of cerebral cortex dynamics, with a particular focus on the generation and propagation of brain rhythms. We are an international team comprised of experts in neuroscience, physics, mathematics, and biomedical engineering. We participate in several international projects. We seek a talented PhD student to join our dynamic research environment. The successful candidate will contribute to a multidisciplinary project investigating the mechanisms underlying brain rhythms. This involves combining neuroscience, advanced imaging techniques, multi-electrode arrays and graphene-based microtransistor recordings, data science, and computational modelling.

## **What we are looking for**

We seek a highly motivated PhD researcher with a deep interest in neuroscience and in particular, in cerebral cortex function. Ideal candidates will have a bachelor's in biomedical engineering, neuroscience, physics or a related science field. Proficiency in programming is essential for the analysis of complex electrophysiological datasets. Prior experience with electrophysiological or imaging techniques is highly desirable, as is a robust computational skill set. Excellent written and spoken English communication is required for a successful collaboration within our international research team.

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# Deciphering the functional microarchitecture of feeding behaviors in the nucleus accumbens during female physiological states.

Principal Investigator

**Roberta Haddad-Tóvulli**

## Keywords

Eating behaviours, Female, Pregnancy, Dopamine, D2R neurons

## Our research

Our team aims to understand how the female brain reshapes its activity during physiological states and drive distinctive feeding, reproductive and social behaviours. In this project, the PhD candidate will investigate how sex hormone-responsive neuronal populations sense variations in female hormonal status and drive altered ingestive behaviours, therefore deciphering the functional microarchitecture of hedonic feeding circuits during female physiological states. The project, combining neuroscience and metabolism, will employ a wide range of cutting-edge technology (mouse intersectional genetics, fiber, photometry, chemogenetics, optogenetics, snRNAseq, etc.) and fields (endocrinology, behaviour, physiology, etc).

## What we are looking for

We are looking for highly motivated, creative, committed and term-oriented candidate interested in the control of feeding behaviour by the female brain. The candidate should hold a M.Sc. or equivalent degree in a relevant area of life science with strong academic record. The following requirements will be valued: previous laboratory experience in molecular biology and neuroscience; adeptness in working with mouse models (with experimental animal handling licence); excellent communication skills in written and spoken English. Basic data analysis and programming skills (R, Python) will be appreciated.



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# Does macrophage-to-cancer cell mitochondrial transfer regulate tumor progression? Role and mechanism in the mutational Landscape, immune evasion, and therapeutic response.

Principal Investigator

**Antonio Postigo**

## Keywords

Cancer, Macrophages, Immunometabolism, Tumor Microenvironment, Metabolic Plasticity

## Our research

We're seeking a candidate for a 4-year PhD contract to join our vibrant and highly international group. We investigate cellular and metabolic plasticity in health and disease using unique transgenic mouse models and cutting-edge single-cell OMICs transcriptomics technologies. Your PhD project will explore the metabolic crosstalk between cancer stem cells (CSCs) and tumor-associated macrophages (TAMs) in suppressing anti-tumor immune responses. You may also contribute to other exciting ongoing projects.

## What we are looking for

We're seeking candidates with a BSc + MSc or a single 300 ECTS degree, and good English communication skills. While not required, candidates with the following qualities will receive higher consideration:

- *Previous laboratory experience*
- *Academic background (MSc) or strong interest in immunology, bioinformatics, and/or cancer*
- *Official certificate to work with experimental mouse models*
- *BSc (Grado) average mark above 8.0/10.0*
- *MSc obtained after 2021*

Join our team to contribute to cutting-edge research in immunometabolism and cancer immunology and gain valuable experience in a highly dynamic scientific environment.



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