

December 2024

The Institute of Marine Sciences (ICM-CSIC) is seeking a junior postdoctoral researcher to apply for a *Juan de la Cierva* grant to work on the HOLOSEX project

Project Description

This project wants to enhance our understanding of **sex-dependent epigenetic mechanisms regulating the immune response** and develop biomarkers through holoepigenomic approaches to enhance aquaculture production. Thus, the topic of this project is at research frontier, since studying the trained and heritable immunity has been barely explored in fish. To attain this goal, we will focus on specific tissues: (i) the skin mucus as a non-invasive target to avoid fish slaughtering and increase the viability of being transferred to fish farms, and (ii) examining the gonads, which play a crucial role in epigenetic inheritance and sex identity. The project will use two teleost fish species: the European sea bass (*Dicentrarchus labrax*), a relevant commercial species in Spain and Europe, and zebrafish (*Danio rerio*), a useful animal model worldwide in several research fields, including in aquaculture. State-of-the-art methodologies will be applied, such as single cell (sc)-ATAC seq or scRNA to identify chromatin modification and gene expression alterations from different cellular types. Further, enzymatic methylation sequencing (EM-seq) and Nanopore technologies will help to decipher epigenetics and microbiota alterations after infections. In parallel, functional analysis in cell culture systems will be performed. Finally, we will integrate results from a holo-omic framework by approaching the data from the fish host and its associated microbiota at different molecular levels. Within this project, we expect to better understand the underlying molecular mechanisms involved in sexual dimorphism of the infections in mucus and gonads. We also aim to develop screening methods for desired sexual phenotypes, which include fish that are more resistant to infections and therefore better broodstock — both required to get a sustainable aquaculture.

Our team

We are an international team with strong expertise in epigenetics, microbiota, and fish physiology, and we collaborate with a company that aims to exploit a device to control infections in aquaculture.

Candidates

Candidates should **hold a PhD obtained between January 1st, 2023, and December 31th, 2024** in Biology, Genetics, Epigenetics, Bioinformatics, Aquaculture, or a related field. An excellent level of English is required. Programming skills and bioinformatics knowledge will be considered an advantage.

Funding



What to do?

The applicant will apply a Juan de la Cierva postdoc grant funded from the Spanish Ministry of Science together with Laia Ribas and Jorge Fernandes. The postdoc project will be enrolled with our research project entitled: “A timely holoeypigenomic approach to unravel the sexual dimorphism of the immune response in fish” (HOLOSEX). PID2023-146286OB-I00.

Starting date: middle 2025

Salary: 34.600 € gross salary per year (two years)

Location: Institute of Marine Sciences (ICM-CSIC), Passeig Marítim de la Barceloneta 37-49, Barcelona, Spain

Application steps: Interested candidates should e-mail (lribas@icm.csic.es and jorge.fernandes@icm.csic.es), with the subject line “Postdoc Juan de la Cierva position” and their CV in attachment.

Application deadline: **January 17th, 2025** at 2:00 p.m.

Information of the application:

<https://www.aei.gob.es/ca/convocatories/cercador-convocatories/ayudas-contratos-juan-cierva-2024>

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Funding