# Position Offered: POSTDOCTORAL RESEARCHER

Project: Enhancing the computational biology of microorganisms and plants with new methods of artificial intelligence and supercomputing (SuperBioComp)

**Technological and scientific fields:** computational biology, high-performance computing, artificial intelligence, biotech, digital tools in agriculture

Location: PONTEVEDRA, GALICIA, MBG-CSIC, https://mbg.csic.es/

**Research Group/PI:** COMPUTATIONAL BIOLOGY LAB, JULIO RODRIGUEZ BANGA, <u>https://www.bangalab.org</u>

#### **PROJECT SUMMARY**

Computational systems biology uses mathematical models and advanced scientific computing methods (simulation and optimization) to elucidate and understand complex biological processes. A key challenge is to model and study these processes as large dynamical systems. To this end, in this project, we propose the combined use of new methods based on two strategies: (1) High-Performance Computing (HPC), to provide the necessary computational power to calibrate, simulate, and analyze these systems; (2) new Artificial Intelligence (AI) techniques for the automatic discovery of kinetic models from large data sets.

## **PROFESSIONAL PROFILE**

#### Minimum requirements:

Candidates must have:

- a PhD in the areas of Computer Science, Applied Mathematics, Physics, or Engineering (Chemical or Biomedical)
- proficiency in Spanish and English (minimum level B1)

#### Merits to be considered:

We will value previous experience in:

- computational biology: simulation and optimization of biological systems
- supercomputing: basic knowledge of parallel scientific computing
- basic artificial intelligence techniques (and in particular, metaheuristics)

## WHAT IS OFFERED

The training plan will have an estimated effort of 240 ECTS over 48 months, including annual research projects, training stays in top-level groups in Germany and France, and advanced training courses in the topics of (i) High-Performance Computing (HPC), on classical supercomputers and quantum computers, and (ii) Scientific Artificial Intelligence (particularly regarding machine learning methods relevant to model discovery from data). Applications in computational biology of microorganisms and plants will be carried out. This training plan, to be developed over 4 years, will be facilitated by the intense collaboration between Julio R. Banga's group and the Supercomputing Center of Galicia (CESGA), within the framework of their Associated Unit 'COMPUTATIONAL OPTIMIZATION IN SYSTEMS BIOLOGY'.

#### Contract conditions:

Indefinite contract for a Postdoctoral Researcher associated to the Momentum Project of 4 years' duration according to Spanish science law. Gross annual salary ( $41.000 \in -52.000 \in$ ).

## Start of contract: before 31 December 2024

## PRINCIPAL INVESTIGATOR CONTACT

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