

## The Institute of Evolutionary Biology seeks a postdoctoral researcher

The Institute of Evolutionary Biology (IBE) is a joint Institute of the Spanish National Research Council (CSIC) and the Pompeu Fabra University (UPF) located in Barcelona. IBE research is focused on the processes and mechanisms that generate biodiversity and on understanding the genetic basis of evolution. The IBE is a center member of Barcelona Biomedical Research Park (PRBB).

### Description Group/Unit

The Evolution of Networks Lab belongs to the Institute for Evolutionary Biology (IBE). Dr. Sergi Valverde, a CSIC Tenured Scientist, leads this group, which examines natural and artificial networks in search of universal evolutionary principles. We are fascinated about the role of emergence, convergence, and environmental fluctuations in the development of evolutionary innovations, as well as how the pattern and process of evolution change when traits are learnt rather than genetically transmitted. The team specializes on complex systems, complex networks, and theoretical ecology.

### Project description

The international project MPA4Sustainability (Enhancing the role of MPAs in restoring biodiversity while maintaining access to ecosystem services) aims to review and improve current policies and guidelines for the design of Marine Protected Areas (MPAs), which influence a series of normative applications of European directives, by publishing a decision support system that is consistent with the ambition and objectives of the European Biodiversity Strategy and the European Green Deal. The overarching goal of the project is to deploy a free, user-friendly simulation platform that guides MPA managers in the development of management plans with the goal of sustainable exploitation of biodiversity and ecosystem services.

**Duties:** We are searching for a motivated, interested, and organized postdoctoral researcher to collaborate with the PI on the development of mathematical models that predict the robustness of ecosystems in the face of external perturbations. The following tasks will be assigned to the candidate:

- Establish suitable management techniques to minimize undesirable transitions by defining robust indicators of slowly decreasing regimes or early warning signals (EWS).
- Metapopulation-level extension of phenomenological models to analyze the impact of fragmented (degraded) or close (connected) MPAs and coastal MPA systems.
- Using the hypergraph formalism to analyze multiscale ecological processes.

### Candidate requisites

- Degree in Biomedical Engineering.
- PhD Thesis.
- Written and spoken English.

## We will valorate

- Experience in the areas of dynamical systems, mathematical modeling of ecological systems, analysis of tipping points, and complex networks.
- Good communicative skills.
- Proven capacity for collaborative teamwork.

## What do we offer?

- A postdoctoral full-time contract. One year extendable to a maximum of 21 months.
- Immediate incorporation.
- Salary according to candidate experience & skills (35.000-39.000 gross salary/year)
- Location in Barcelona (passeig Marítim de la Barceloneta, 37 – 49).

## Application process

Candidates must send their CV to Sergi Valverde [s.valverde@csic.es](mailto:s.valverde@csic.es) before 08 of July 2022