

## The Institute of Evolutionary Biology is looking for a Postdoctoral researcher

The IBE is a joint research center of the Higher Council for Scientific Research (CSIC) and the Pompeu Fabra University (UPF). IBE research focuses on the processes and mechanisms that generate biodiversity, and among the topics studied are genetic and molecular evolution, diversity and population biology, the biology of complex systems and the recovery of ancient DNA. The IBE is the only research center in Catalonia and the rest of the State that is entirely dedicated to evolutionary biology, and is a benchmark in this field in southern Europe. The IBE is a member center of the Barcelona Biomedical Research Park (PRBB).

### Description of the scientific project

This project presents the exciting opportunity to be at the forefront of the application of artificial intelligence to understand the evolutionary history of species. Key objectives: i) Develop interpretable statistics using Genetic Programming (GP) to solve complex population genomics questions; ii) Research and apply advanced AI techniques to evolutionary biology; iii) Explore deep learning (DL) methods and address their interpretability challenges; iv) Leverage GP in biological evolution to produce human-readable solutions.

The main researchers of the project are Oscar Lao and Elena Bosch:

Research group “*Algorithms for population genomics*”, Oscar Lao, <https://www.ibe.upf-csic.es/lao>  
Evolutionary Population Genomics” research group Elena Bosch, <https://www.ibe.upf-csic.es/bosch>

### Candidate requirements

- 1) PhD in Computing, Bioinformatics, Evolutionary Biology or a related field.
- 2) Mastery of the JAVA and other programming languages such as Python, R or C++.
- 3) Experience with machine learning (ML) and DL frameworks (TensorFlow, PyTorch).
- 4) Familiarity with GP and other evolutionary algorithms.

### It will be valued

- 1) Demonstrated research experience in AI, ML or computational biology.
- 2) Publications in peer-reviewed journals or conferences of relevant work.
- 3) Familiarity with adaptive selection detection and demographic scenario analysis.
- 4) Experience in developing software packages for research. Knowledge of best practices, including version control (e.g. Git) and documentation.

### What is offered?

Indefinite Postdoctoral Researcher contract associated with the Momentum Project of 4 years duration in accordance with the Spanish Science Law. Gross annual salary (€41,000 - €52,000).

Start of contract: before December 31, 2024

Location: Barcelona, Catalonia, Institute of Evolutionary Biology, <https://www.ibe.upf-csic.es/>

The postdoctoral hire will be able to carry out cutting-edge research in addition to accessing a comprehensive training program to improve both scientific experience and personal growth. The candidate will engage in pioneering research using DL and GP to address complex population genomics challenges. You will have access to cutting-edge computing resources and collaborate with leading experts in AI and genomics. The project offers a Training Plan (240 ECTS in four years), where the candidate will carry out a minimum of one stay in the Integrative Genomics Laboratory directed by Dr. U Martínez-Marigorta, will periodically report on their progress, will attend specialized courses on evolutionary population genomics and digital competence, as well as Interval courses (<https://intervals.prbb.org/>) to improve their critical thinking, time management, teamwork and communication skills. It will also participate in international conferences such as those of the SMBE, the ESSHE and the ASHG.

## How to apply?

Send Curriculum Vitae to: [oscar.lao@ibe.upf-csic.es](mailto:oscar.lao@ibe.upf-csic.es) (contact phone number: 0034933160840);  
Deadline: August 26, 2024