The Institute of Evolutionary Biology seeks a: Bioinformatician/Computational Biologist

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 city. 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

About the Metazoa Phylogenomics Lab:

The overarching goal of the lab is to understand how animals reshape their genomes to generate their vast diversity and to adapt to the different environments. For that, we generate and interrogate genomic and transcriptomic data through the lens of phylogenomics. Our favorite creatures are arthropods and annelids, but our interest often transcends the level of phylum to understand animal genome evolution at a macroevolutionary scale. We are committed to maintaining a respectful, inclusive, and friendly working environment for all staff and students, as well as promoting your personal and career development.

Rosa Fernández joined IBE as a Group Leader only a few months ago, so this is a chance to help build a lab from the ground up and contribute your knowledge and passion to the group and its culture. The lab is a part of the Animal Biodiversity and Evolution Program at IBE. This position is funded by an ERC Starting Grant to shed light on the genomic basis of terrestrialization (project SEA2LAND).

Project description:

Land animal evolution: genomic landmarks on the path to terrestrial life (SEA2LAND)

All animals share a common origin: a marine one. To conquer land from marine environments, animals changed radically the way they breathe, reproduce, move or smell. And they did it multiple times in the history of Earth, with terrestrial animals massively outnumbering aquatic ones. Understanding terrestrialization is therefore key to comprehending animal biodiversity and biological adaptation. Despite the relevance of such an episode, the genetic underpinnings orchestrating terrestrialization in animals are largely unexplored. The project will test the hypothesis that animals are equipped with a highly plastic 'terrestrialization genetic toolkit' that allowed their adaptation to the extreme environmental conditions in terrestrial ecosystems. We

will focus on two pivotal questions: which genes facilitated life on land and how do they differ between aquatic and terrestrial animals? and how did animals reshape their genomes to adapt to dry land? Moreover, we will study two case examples of critical processes common to all terrestrial animals -breathing and protection against UV light- to illuminate what molecular and biochemical changes allowed terrestrial animals to breathe and repair their DNA after UV light damage. To achieve this, we will (i) identify the gene repertoire orchestrating the extreme physiological and metabolic changes in aquatic and terrestrial lineages, (ii) characterize the dynamics of these genes to understand the role of gene loss, duplications and horizontal gene transfer, and (iii) discover the adaptive mutations that led respiratory pigments and DNA repair proteins to gain their functions via molecular engineering techniques to resurrect their ancestral 'paleophenotypes'. This project will deliver fundamental insights into a core question in evolutionary biology: what shaped the land animal genetic toolkit. Furthermore, it will provide insights into the evolution of key proteins relevant to human health and industry.

Duties:

- Lead efforts in the lab to develop methods and resources for non-model organisms, and use these resources and pipelines to address novel questions in genome assembly and annotation, phylogenomics and comparative genomics in the context of understanding the genomic basis of animal terrestrialization.

- Work closely with the other team members to advise and help on analysis of sequencing data and other biological 'big data'.

- Manage the computational resources of the lab, including the storage of data generated during the project, computing resources and databases.

Candidate requisites

- PhD in evolutionary biology, computational biology, bioinformatics or a related field, or a Masters degree with at least 3 years of experience with bioinformatics methods.

- Excellent programming skills in languages commonly used in bioinformatics (such as Python or R).

- Fluency with Linux shell scripting and high performance computing.

- Strong background in computational and evolutionary biology.

- High motivation and efficiency; ability to work independently and as part of a team.

- Proficiency in English (oral and written).

What do we offer?

- The position is available for 12 months, with the possibility of further renewal for several consecutive years.

- Starting date is expected in March 2021 or as soon as possible afterwards.

- Salary depending on experience and qualifications.

- Location in Barcelona (Passeig Marítim de la Barceloneta, 37 – 49)

Application process

If you are interested in the position, please send your CV and motivation letter to this link: https://forms.gle/SvZR4VWUdAFJquwj9

IMPORTANT: Please name your documents as follows: 'CV_your_name.pdf' and 'Motivation_letter_your_name.pdf'

The application deadline is **20th December.** Interviews will be held in Late December/early January either in person or via video conference depending on travel needs and current restrictions; no particular preference will be given to candidates who are able to interview in person.