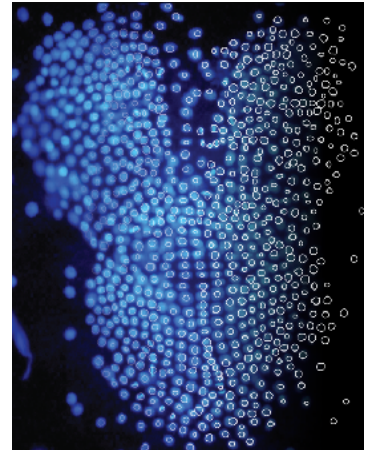


Interdisciplinary Ph.D. - Computational developmental biology

The role:

Join our dynamic and collaborative research consortium as an Interdisciplinary Scientist, at the exciting crossroads of **Computer Science** and **Developmental Biology**. In collaboration with leading labs in Greece and the USA, you will contribute to an exciting **HFSP-funded** project, aimed at unraveling the intricate **molecular and mechanical mechanisms governing ectoderm bilateral symmetry in the crustacean *Parhyale hawaiensis* embryos**. This position offers a unique opportunity to drive innovation at the interface of cutting-edge computational techniques and biological insights.

We look forward to welcoming a passionate and creative scientist to our consortium, driving transformative discoveries in the field of developmental biology through computational innovation.



Key Responsibilities:

1. Algorithm Development (Python)

- Utilise and enhance existing algorithms to analyse of both morphological and molecular data, acquired through light-sheet fluorescence microscopy and near single cell spatial transcriptomics, respectively.
- Develop innovative computational methods for creating average atlases of *Parhyale hawaiensis* ectoderm development during embryogenesis.
- Pioneer the creation of algorithms that seamlessly integrate morphological and molecular information within the atlases, pushing the boundaries of interdisciplinary research.

2. Big Data Analysis

- Implement machine learning techniques to analyse complex datasets and identify patterns, trends, and potential mechanisms underlying symmetry acquisition and maintenance.

3. Collaborative Research

- Collaborate closely with international partners, including the labs of [A. Pavlopoulos in Crete, Greece](#), and [F. Xie in Cleveland, Ohio, USA](#).
- Attending to the biannual consortium meetings in Marseille, Crete or Cleveland.

4. Communication

- Clearly present findings and insights through regular presentations, reports, and publications.
- Engage with both the scientific community and the public to share the project's progress and impact.

Qualifications:

- A Master's in Computer Science, Computational Biology, Bioinformatics, or a related field.
 - *Application from Master's in biology will also be considered*
- Programming skills, with knowledge in languages such as Python, R, or similar.
- Experience in data analysis, particularly in the context of biological data.
- Knowledge about machine learning techniques and data integration approaches.
- Excellent communication skills, both written and verbal, for effective collaboration and dissemination of results.
- Ability to work in interdisciplinary teams and adapt to new challenges.
- English fluency (at least B2 on the CEFR).

The Offer:

- Contract duration: 3-year position, extension possible.
- Target start date: whenever possible.
- The salary will be based on Aix-Marseille University's salary scale, depending on the candidate's profile and experience.

Benefits:

- Engage in cutting-edge research at the crossroads of Computer Science and Developmental Biology.
- Collaborate with leading international researchers and labs.
- Contribute to advancing our understanding of complex biological processes.
- Opportunity for professional growth and development.

Application Process:

Interested candidates are invited to submit their **CV**, a **cover letter** detailing their research interests and relevant experience, and contact information for **two references** to leo.guignard@univ-amu.fr by October 2023.

Selection Process:

- **Pre-selection:** The pre-selection process will be based on qualifications and expertise reflected in the candidates CV and motivation letter. It will be merit-based. All candidates will be informed whether they have been pre-selected or not.
- **Interview:** Pre-selected candidates will be contacted to coordinate a set of interviews with Léo Guignard and the group.

Relevant publications

- [Wolff et al. eLife 7:e34410 \(2018\)](#)
- [Kumar et al. Nat Genetics, 55, 1176–1185 \(2023\)](#)
- [McDole et al. Cell, 175, 3, 859 - 876.e33 \(2018\)](#)

About the team

We are a group of scientists with a large set skills: computer science, biology, statistics, physics. What ties us together is our strong interest in biology in general and more specifically in developmental biology. We develop novel computational methods and models that allow the analysis of very large 3D datasets (image or omics) of development. We work closely with biologists to tailor our methods so that they help to address fundamental biological questions.

For further information about the lab you can visit our website guignardlab.com, our twitter [@guignardlab](https://twitter.com/guignardlab), our GitHub [@GuignardLab](https://github.com/GuignardLab) or contact directly Léo via email: leo.guignard@univ-amu.fr.

The Institute

The [Turing Centre for Living Systems](#) (CENTURI) is an interdisciplinary project located in Marseille (France).

CENTURI aims at developing an integrated interdisciplinary community, to decipher the complexity of biological systems through the understanding of how biological function emerges from the organisation and dynamics of living systems.

The project federates 15 teaching and research institutes in biology, physics, mathematics, computer science, engineering and focuses on Research, Education and Engineering, 3 missions that hold interdisciplinary as their core principle.