Postdoc in computational genome biology
Istituto Italiano di Tecnologia (IIT)

WHO WE ARE

At IIT we work enthusiastically to develop human-centered Science and Technology to tackle some of the most pressing societal challenges of our times and transfer these technologies to the production system and society. Our Genoa headquarter is strictly inter-connected with our 11 centers around Italy and two outer-stations based in the US for a truly interdisciplinary experience.

YOUR TEAM

You will be working in a multicultural and multi-disciplinary group, where computational and experimental researcher collaborate, each with their own expertise, to carry out common research.

The Integrative Nuclear Architecture research line is coordinated by Dr. Irene Farabella (Armenise-Harvard CDA), who has extensive experience in integrative modelling, imagining data analysis and 3D genomics.

The overall goal of the lab is to understand how 3D genome organization plasticity (Nir, Farabella, et al. PlosGen 2018) and how multiple components of the nucleus influence gene regulation with a strong focus on RNA-chromatin interactions (Farabella et al. Nat Struct Mol Bio 2021; Mendieta-Esteban et al., NAR genom. bioinform., 2021; Morf et al. Nat. Biotechnol. 2019). To this end, the lab uses and integrates oligo-based FISH imaging for probing the chromosome structure at the single cell level (Nir, Farabella, et al. PlosGen 2018; Flores et al. Curr. Opin. Cell Biol 2023), genomic data, structural bioinformatics, and physical theories.

For more information visit: https://ina.iit.it/

This specific project will focus on applying and implementing computational methods primarily for the analysis of single cell and bulk genomic data (e.g. HiC, Pore-C, Chip-seq, RADICL-seq, single cell chromatin tracing techniques) to identify structural signatures that characterize cell identity, depending on the applicants skillset and desires.

Within the team, your main responsibilities will be:

- Analyze large single cell chromatin tracing dataset and/or "omics" dataset, developing, maintaining, and applying the lab computational tools.
- Working in a highly collaborative spirit, interacting with and supporting the other group members.
- Interact with external and internal collaborators.
- Publishing reproducible research in international conferences and in high-impact, open-access journals.

- We expect all code produced in this project to be developed in Python, released as fully open source, and made publicly available to the research community.

This open position is fully funded by the Giovanni Armenise Harvard Foundation within the project: "Investigating genome structural variability at the nanoscale" (Career Development Award, 2022).

ESSENTIAL CRITERIA

- A PhD (or you are close of finishing your PhD) in Computational Biology or related disciplines, including Mathematics, Bioinformatics, Statistics, Biology, Biotechnology, Physics, Computer Science, and similar disciplines.
- Documented experience in data analysis, 3D modeling, statistics, and/or machine learning.
- Experience in method development, programming (Python) and scripting abilities are highly desirable.
- The ability to properly report, organize and publish research data.
- Fluency in oral and written English

DESIRABLE CRITERIA

- Experience in any of the following: bulk "omics" data analysis, image processing and analysis, data-driven modelling and optimization, molecular dynamic simulations and enhanced sampling methods.
- Prior experience in the field of epigenetics/chromatin biology/3D genome organization.
- Knowledge of version control systems (e.g., GitHub) and/or container systems (e.g., Docker, Singularity)
- Possession of a sense of scientific curiosity, be capable of mastering new computational methods, be interested in method development.
- Good communication skills.
- Strong problem-solving attitude.
- Experience working in a team-oriented environment.
- Able to work independently and collaboratively in a highly interdisciplinary environment.

SALARY & BENEFITS

- Competitive salary package for international standards
- Private health care coverage
- Wide range of staff discounts
- Candidates from abroad or Italian citizens who permanently work abroad and meet specific requirements, may be entitled to a deduction from taxable income of up to 90% from 6 to 13 years.

WHAT'S IN IT FOR YOU?

- an equal, inclusive, and multicultural environment, where applicants are welcome regardless of age, disability, gender, nationality, ethnicity, religion, sexual orientation, or gender identity.
- work in a collaborative and interdisciplinary research environment which fosters scientific independence and innovation.

- A specialized team working to help you with paperwork, especially during your relocation.

Please submit your application using the online form and including:

https://iit.taleo.net/careersection/ex/jobdetail.ftl?lang=it&job=2300005M

1. **a detailed CV**
2. **a brief cover letter (outlining motivation, experience, and qualifications) addressed to Dr. Irene Farabella**
3. **contact details of at least 2 referees.**

Application's deadline: October 31 2023

For more information contact: irene.farabella@iit.it