2023-06720 – Junior Chair Position: Computational modeling of omics data

Contract type: Fixed-term contract
Renewable contract: Yes
Level of qualifications required: PhD or equivalent
Function: Temporary Research Position
Level of experience: From 3 to 5 years

Context
The generalization of new generation sequencing data (i.e., multi-omics: genomics, transcriptomics, proteomics, ..) as well as the emergence of new methods (single cell sequencing, spatial transcriptomics) opens new research horizons on cancer pathologies. These data, of very large dimensions and volume, bring new methodological challenges in terms of statistical and mathematical analysis, as well as computational modeling. The development and numerical implementation of novel methods has become a key issue in modern oncology, both in terms of understanding the biology of cancers and for medical oncology. On the first aspect, the analysis and modeling of these data is, for example, fundamental for the study of key phenomena such as intra- and inter-tumor heterogeneity of cancer cells and their microenvironment. On the other hand, the integration of multi-omics data into predictive artificial intelligence models will allow the development of precision medicine based on personalized treatments.

This junior chair position will aim at developing cutting-edge computational methods to leverage multi-omics and single-cell resolution data into novel and translational discoveries in cancer research. This will be performed in synergistic interaction with the other CRCM teams.

Assignment
Research
- Research in the field of multi- and single-cell omics as well as spatio-temporal transcriptomics
- Strong interactions with the other CRCM’s research teams
- Strong interactions with the CRCM’s bioinformatics platform
- Publications in high-impact peer-reviewed journals
- Active participation in international conferences
- Engagement in science outreach activities by Aix Marseille Université towards the public (Science Festival, European Researchers’ Night, public lectures, citizen science...)
- Involvement in activities related to institutes and the socio-economic sphere (decision-makers, local authorities, businesses...)

Teaching (limited amount of mandatory hours a year)
Engineering and digital science programs offering an in-depth understanding of biological and medical fields require a strong grasp of underlying scientific technologies stemming from the latest advancements, and medical issues and constraints. Since mastering all these skills is rarely accomplished by a single individual, it’s necessary to educate students to instill the scientific culture and open-mindedness required for work in a highly interdisciplinary context. The developed curriculum will leverage research platforms and, more broadly, emphasize the link between education and research. It will also be designed to seamlessly integrate into international programs (Erasmus Mundus Master, CVIS Alliance – European Civic University, etc.). He/she will have the possibility to intervene in existing masters at Aix Marseille Université that involve computational modeling in biology: Artificial intelligence and biomarkers (newly created in 2022), Bioinformatics, Pharmacokinetics and pharmacometrics, Digipharma, CENTURI, as well as Engineering curriculae (e.g., Centrale Marseille).

The teaching-researcher can leverage transformative grant calls on campus, such as TFR (Training through Research Transformation), to enhance the education-research connection.

Software development
- Organization, management and public release of large-scale multi-omics data base
- Development and maintenance of open source code (gitlab / github)

Main activities
Salary
3443€ gross salary minimum, adjusted on the candidate's experience.
Start-up package: 250k€

INSERM is the funder of this contract and will ensure all the employment responsibilities.

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About Inria
Inria is the French national research institute dedicated to digital science and technology. It employs 2,600 people. Its 200 agile project teams, generally run jointly with academic partners, include more than 3,500 scientists and engineers working to meet the challenges of digital technology, often at the interface with other disciplines. The Institute also employs numerous talents in over forty different professions. 900 research support staff contribute to the preparation and development of scientific and entrepreneurial projects that have a worldwide impact.

Instruction to apply
Defence Security:
This position is likely to be situated in a restricted area (ZRR), as defined in Decree No. 2011-1425 relating to the protection of national scientific and technical potential (PSPT). Authorisation to enter an area is granted by the director of the unit, following a favourable Ministerial decision, as defined in the decree of 3 July 2012 relating to the PSPT. An unfavourable Ministerial decision in respect of a position situated in a ZRR would result in the cancellation of the appointment.

Recruitment Policy:
As part of its diversity policy, all Inria positions are accessible to people with disabilities.
Skills
Technical skills and level required
- Ability to propose and lead research projects as a PI
- Excellent programming skills
- Excellent skills in scientific research and publications

Languages
Excellent level of English is required (both oral and written).

Relational skills
- Strong collaborative mindset and implication into the general team's activities
- Excellent ability to communicate with multiple partners from different backgrounds (biology, pharmacology, clinical oncology, computational scientists)

Benefits package
- Subsidized meals
- Partial reimbursement of public transport costs
- Leave: 7 weeks of annual leave + 10 extra days off due to RTT (statutory reduction in working hours) + possibility of exceptional leave (sick children, moving home, etc.)
- Possibility of teleworking (after 6 months of employment) and flexible organization of working hours
- Professional equipment available (videoconferencing, loan of computer equipment, etc.)
- Social, cultural and sports events and activities
- Access to vocational training
- Social security coverage