

2020-02873 - Post-Doctoral Research Visit F/M Quantitative modeling and machine learning for prediction of the response to immunotherapy in lung cancer

Niveau de diplôme exigé : Thèse ou équivalent
Fonction : Post-Doctorant

A propos du centre ou de la direction fonctionnelle

The Inria Sophia Antipolis - Méditerranée center counts 34 research teams as well as 8 support departments. The center's staff (about 500 people including 320 Inria employees) is made up of scientists of different nationalities (250 foreigners of 50 nationalities), engineers, technicians and administrative staff. 1/3 of the staff are civil servants, the others are contractual agents. The majority of the center's research teams are located in Sophia Antipolis and Nice in the Alpes-Maritimes. Four teams are based in Montpellier and two teams are hosted in Bologna in Italy and Athens. The Center is a founding member of Université Côte d'Azur and partner of the I-site MUSE supported by the University of Montpellier.

Contexte et atouts du poste

The postdoc position will take place in the environment of a newly created Inria-Inserm team COMPO (COMputational Pharmacology in Oncology), located in the University Hospital of Marseille. This team is composed of mathematicians, pharmacists and clinicians and is a unique multidisciplinary environment focused on developing novel computational tools for decision-making in clinical oncology.

Specifically, the project is funded by the french National Cancer Institute (INCa) and will consist in developing mechanistic models of the response to immune-checkpoint inhibitors (ICI) with access to unique, large-scale (~450 patients), longitudinal and multi-modal biological data generated by the PIONEER consortium clinical study (RHU program). It will involve strong interactions with clinicians from APHM and biologists, from academy (CIML and CRCM in Marseille) as well as biotech (e.g. HaliDX) and pharma companies (InnatePharma, Imcheck therapeutics).

Travel expenses between Bordeaux and Marseille as well as participation to major international conferences (e.g. AACR, ASCO) will be covered within the limits of the scale in force.

Mission confiée

Missions :

With the help of experts in mathematical modeling in oncology, clinical pharmacology and clinical oncology, the recruited person will be in charge to develop and validate biologically-based models of the response to ICI in non-small cell lung cancer. To this end, large data sets containing multi-modal and longitudinal data from immuno-histochemistry, imaging, pharmacokinetics, immunoprofiling, soluble biomarkers and sequencing data (including circulating DNA) will be used. The models will be based on the current knowledge in the field of immuno-oncology. Advanced statistical learning methods combining machine learning techniques and mixed-effect models will be employed for calibration of the models and confrontation with the data.

For a better knowledge of the proposed research subject :

See the website of the PIONEER project: <https://marseille-immunopole.org/the-pioneer-project/>
For relevant previous publications, see: <http://benzekry.perso.math.cnrs.fr/recherche.html>

Collaboration :

The recruited person will work under the supervision of S. Benzekry and will collaborate with clinical pharmacists and pharmacometricians (Pr J. Ciccolini, COMPO), biotech companies (HaliDX), as well as clinical oncologists from thoracic oncology (Pr L. Greillier, AP-HM, Marseille).

Principales activités

Main activities:

- Biological and clinical literature (immuno-oncology)
- Data analysis and visualization
- Mechanistic modeling
- Programming
- Model calibration
- Statistical learning
- Development of predictive tools

Compétences

Technical skills and level researched :

- Excellent programming skills (python, R or Matlab)
- Familiarity with real-world data analysis
- Statistics (ideally, experience in mixed-effects modeling)
- Mechanistic modeling (differential equations)
- Basic knowledge of cancer biology or medicine is a plus

Languages :

- Proficient in English.

Good relational skills and ability to work and communicate in an interdisciplinary environment are required.

Informations générales

- Ville : Marseille
- Centre Inria : CRI Sophia Antipolis - Méditerranée
- Date de prise de fonction souhaitée : 2020-11-02
- Durée de contrat : 2 ans
- Date limite pour postuler : 2020-08-23

Contacts

- Equipe Inria : AT-SOP AE
- Recruteur :
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A propos d'Inria

Inria est l'institut national de recherche dédié aux sciences et technologies du numérique. Il emploie 2600 personnes. Ses 200 équipes-projets agiles, en général communes avec des partenaires académiques, impliquent plus de 3500 scientifiques pour relever les défis du numérique, souvent à l'interface d'autres disciplines. L'institut fait appel à de nombreux talents dans plus d'une quarantaine de métiers différents. 900 personnels d'appui à la recherche et à l'innovation contribuent à faire émerger et grandir des projets scientifiques ou entrepreneuriaux qui impactent le monde. Inria travaille avec de nombreuses entreprises et a accompagné la création de plus de 180 start-up. L'institut s'efforce ainsi de répondre aux enjeux de la transformation numérique de la science, de la société et de l'économie.

Consignes pour postuler

Sécurité défense :

Ce poste est susceptible d'être affecté dans une zone à régime restrictif (ZRR), telle que définie dans le décret n°2011-1425 relatif à la protection du potentiel scientifique et technique de la nation (PPST). L'autorisation d'accès à une zone est délivrée par le chef d'établissement, après avis ministériel favorable, tel que défini dans l'arrêté du 03 juillet 2012, relatif à la PPST. Un avis ministériel défavorable pour un poste affecté dans une ZRR aurait pour conséquence l'annulation du recrutement.

Politique de recrutement :

Dans le cadre de sa politique diversité, tous les postes Inria sont accessibles aux personnes en situation de handicap.

Attention: Les candidatures doivent être déposées en ligne sur le site Inria. Le traitement des candidatures adressées par d'autres canaux n'est pas garanti.

Avantages

- 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

Rémunération

Gross Salary: 2653 € per month