

2019-01763 - Post-Doctoral Research Visit F/M Post-doctoral research fellowship in modelling of the immune response to Ebola vaccine

Type de contrat : CDD
Contrat renouvelable : Oui
Niveau de diplôme exigé : Thèse ou équivalent
Fonction : Post-Doctorant
Niveau d'expérience souhaité : Jeune diplômé

A propos du centre ou de la direction fonctionnelle

The challenge is to analyze these BIG DATA to answer clinical and biological questions by using appropriate statistical methods. With data on the machinery of a cell to the clinical status of individuals in any circumstances including in clinical trials, new tools are needed to translate information obtained from complex systems into knowledge. This has led to the field of « systems biology » and « systems medicine » by extension, which naturally takes place in the context of translational medicine that links clinical and biological research.

The statistical analysis of these data is facing several issues:

- There are more parameters (p) to estimate than individuals (n)
- The types/nature of data are various
- The relationship between variables is often complex (e.g. non linear) and can change over time to tackle these issues we are developing specific approaches for these questions, often related to immunology.

The methods are mainly based on either mechanistic modeling using differential equation systems or on statistical learning methods. The general paradigm of our approach is to include as much information as available to answer a given question. This information comes from the available data but also from prior biological information available defining the structure of the model or restricting the space of the parameter values. We develop and apply our methods mainly for applications belonging to clinical research especially HIV immunology. For instance, several projects are devoted to the modelling of the response to antiretroviral treatments, immune interventions or vaccine in HIV infected patients.

Applications are provided by the Vaccine Research Institute (VRI), other teams in the research centre and [the Bordeaux Hospital Clinical Trial Unit \(CTU\)](#).

Contexte et atouts du poste

The EBOVAC3 project aims to assess, through clinical trials in children and adults in Africa, the safety and effectiveness of an Ebola vaccine regimen. As such it will help to improve the world's preparedness to deal with an Ebola outbreak. The project focuses on the 'prime-boost' Ebola vaccine regimen (Ad26.ZEBOV and MVA-BN-Filo) prime-boost' Ebola vaccine regimen, in which patients are first given a dose to prime the immune system, and then a boost dose which is intended to enhance the immune response over time. Building on work carried out under the EBOVAC1 (<http://www.ebovac.org/>) and the EBOVAC2 (<http://www.ebovac2.com/>) projects, EBOVAC3 (will run clinical trials in children in Sierra Leone, Guinea and the Democratic Republic of Congo. It will also follow up people who participated in earlier clinical trials in Sierra Leone, to assess the safety and efficacy of the vaccine in the longer term. Finally, the project aims to characterize the outbreak preparedness of Sierra Leone, Guinea and the Democratic Republic of Congo.

The SISTM (Statistics in Systems and Translational Medicine) team directed by Pr. Rodolphe Thiébaud is involved in EBOVAC1 and EBOVAC3 and coordinates EBOVAC2. In this context one of its main goal is to conduct the analysis and the modelling of the immune response to the Ebola vaccine strategy, using the data produced in Phase I and II clinical trials (in Europe and Africa), including immunological substudies recording many biomarkers (cell phenotype, functionality, gene expression, antibody titers...).

Informations générales

- **Thème/Domaine** : Modélisation et commande pour le vivant
Statistiques (Big data) (BAP E)
- **Ville** : Talence
- **Centre Inria** : [CRI Bordeaux - Sud-Ouest](#)
- **Date de prise de fonction souhaitée** : 2021-03-01
- **Durée de contrat** : 2 ans
- **Date limite pour postuler** : 2021-12-31

Contacts

- **Equipe Inria** : [SISTM](#)
- **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.

L'essentiel pour réussir

The candidate should hold a PhD in mathematics, physics or statistics. We are looking for an highly motivated candidate with an outstanding potential and a strong background in statistics and a deep interest in immunology and biological application. Proven experience in R language is required. The ideal candidates are able to work effectively as part of a team, but also to develop and pursue independent ideas. The successful candidates are expected to conduct innovative research at the highest international level.

Consignes pour postuler

Thank you to send :

- CV
- Cover letter
- Support letters (mandatory)
- List of publication

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.

SISTM is a team belonging to INSERM U1219 [Bordeaux Population Health](#) and [INRIA Bordeaux Sud-Ouest](#) research institutes. The group is dedicated to the analysis and the modelling of the data generated in epidemiology and medicine with a special focus on vaccines and immune interventions in HIV and other infectious diseases. Its expertise is mainly in biostatistics with a special emphasis on dynamical models based on ODE and statistical learning using moderately high dimensional data.

Mission confiée

The main objective of this postdoc position will be to use the data gathered through the EBOVAC projects to build and fit a model of the immune response to the Ebola vaccine in order to better characterize the response (duration) and better understand the mechanism of its establishment.

The candidate will be integrated in a team of biostatisticians and modelers working on related topics: modeling of HIV vaccine response. The candidate will benefit from a very attractive environment with computing facilities and close collaborations with mathematicians (from INRIA and INSERM research centers) and immunologists (from the EBOVAC consortia as well as from the Labex Vaccine Research Institute).

Principales activités

It is expected that the successful candidate will conduct novel research in the proposed topic and will be able to quickly valorize it by writing articles and presenting in conferences. The postdoctoral fellow will be considered as a junior researcher.

Compétences

Experience in modelling and applications in biology is highly recommended and previous work in immunology/Vaccinology, systems biology will be highly appreciated.

The expected starting date can be as soon as possible. Salary will follow Inserm rates and can be negotiated to be higher depending on previous experience and skills.

Avantages

- Subsidized meal
- Public transport partially reimbursed
- Possibility of teleworking (after 6 months of seniority) and organisation of working time
- Professional equipment available (videoconferencing, loan of computer equipment, etc.)
- Social, cultural and sports services (Inria Social Work Management Association)
- Access to vocational training
- Social security

Rémunération

2653€ / month (before taxes)

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.