



Investigating S. aureus Recognition by Host Receptor Proteins

PhD in Structural biochemistry of Host /Pathogen interaction, Glycobiology (M/W) Aureus -Marie Curie Doctoral Network

Identification du poste :

Fonctions	Doctorant / PhD
Catégorie	A
Corps	Chercheur
Quotité	100 %

- Assignment (place of work): Institute of Structural Biology (IBS - UMR 5075) - Grenoble, France

- Contract dates: from 1/10/2025 to 30/09/2028 (36 months)

Context and working environment

Description de la structure

Located on the international EPN campus (ESRF/ILL/EMBL/IBS), the Institute of Structural Biology (IBS) is a national and international player in the field of integrated structural biology. At the same time a research centre, a technical platform, a reception and scientific training site, the IBS aims to develop research in structural biology, a field of research that is crucial for the understanding of fundamental biological mechanisms. It is based on 12 state-of-the-art platforms. As a joint research unit (CEA-CNRS-UGA) the IBS is composed of 19 research groups, each of these groups offering a multidisciplinary approach, at the frontiers of biology, physics and chemistry, in coherence with 3 research axes. Nearly 300 people work there, researchers, doctoral students, engineers and technicians in a multicultural and international environment. The recruited person will join the Membrane and Pathogens group.

Job duties and main activities :

Precise project name :

Investigating S. aureus Recognition by Host Receptor Proteins.

This position is one of 15 doctoral positions in a European doctoral network, called Aureus, whose members are spread across 9 European countries, and which will be operational from 2022 to 2029. The groups involved range from synthetic chemistry and immunology to structural, computational and cellular biology.

This particular PhD project aims to study in depth the recognition of S. aureus by specific receptor proteins, including Ctype lectin receptors (CLRs) to obtain more in-depth information on the critical molecular motifs recognized that could be used in certain potential therapeutic strategies. The capacity of CLRs to recognize molecular motif from *S. aureus* has been already documented but only for a limited number of CLR and thus it is still a poorly understood aspect of hostpathogen interactions. We have developed expertise in the production of a library of CLRs and the characterization of their interaction with carbohydrate-based motifs from pathogens.

Main activities :

Thus, in this project, the recruited PhD will: 1) produce and engineer different proteins, including lectins at different oligomeric states ; 2) screen and identify the diversity of receptor proteins able to recognize selectively molecular component of S. aureus cell wall (in collaboration with other PhDs, DC1 and DC5 within the European network); 3) characterize proteins interaction with identified ligand investigating their binding affinity and kinetics through biophysical assays, such as ITC, SPR (and/or BLI.

In collaboration with 3 others PhDs within the Aureus Network, the structural basis of receptor/ligand complexes will be elucidated. Cryo-electron microscopy for larger complexes will be considered. The fine characterization of binding

modes, at the atomic level, will drive the future design of potential drugs that could be used in anti-adhesive and vaccine strategies.

The doctoral candidate will work in collaboration with Universiteit Leiden (ULEI), The Netherlands; National Institute for Bioprocessing Research and Training Limited (NIBRT), Ireland; Imperial College of Science Technology and Medicine (ICL), United Kingdom and Glycodiag (GLYD), France.

Job-related restrictions or constraints:

To be eligible to apply for this position under the European AUREUS project, applicants must meet the following criteria. - You have not yet obtained (or successfully defended) a PhD. - You have not resided or carried out your main activity (work, studies, etc.) in France for more than 12 months during the 36 months immediately preceding your date of entry into service. Compulsory national service, short-term stays such as holidays and time spent in a procedure for obtaining refugee status are not taken into account. - The research will be done in French or English, however it is expected that the non-French-speaking candidate will strive to learn the basics of French in order to facilitate communication and integration into the laboratory. The PhD candidate will have to perform secondments in other laboratories of the AUREUS Doctoral network for a duration of 3 to 4 months.

Profile required

Priority skills expected :

• **Professional skills/know-how :** Prior experience in recombinant protein production, biochemistry, biophysics of interaction study (SPR, BLI or ITC) and/or background on structural biology.

• **Personal skills :** Organizational skills, fluency in English (level C1 spoken and written), ability to work independently and as a team player in a multidisciplinary environment. Good communication skills (in the context of a multi-partner project on a European scale).

Supervisory role (hierarchical or functional) : □ Yes ⊠ No

Desired professional experience : ⊠ beginner □ 2 to 5 years

Training, diploma, experience required : Master degree in Biochemistry, Structural biology, Chemical biology or Pharmacy.

Gross salary: 2700 € month + 600 euros of mobility allowance

General information

Contacts for questions :

related to functions :
Dr. Franck Fieschi, Professor at Université Grenoble-Alpes, <u>Franck.fieschi@ibs.fr</u>
about the position :
Valérie LANARI, HR Manager <u>valerie.lanari@ibs.fr</u>

Application to the position :

Please follow this link :

https://emploi.univ-grenoble-alpes.fr/job-offers/phd-in-structural-biochemistry-of-host-pathogen-interactionaureus-marie-curie-doctoral-network-1568438.kjsp?RH=1135797159702996