



Looking for a new challenge in Science?



Sanofi, a global healthcare company committed to discover, develop and distribute therapeutic solutions focused on patients' needs.

The ESRF, the European Synchrotron, is an international research facility based in Grenoble, France.

PhD CIFRE Thesis Student

High resolution structural studies of Antibodies / Antigen complexes using CryoEM

3 years CDD position – starts in autumn 2017

JOB DESCRIPTION

Context: More and more research focus is being put on biologics and their development as drugs. These molecules are usually large and flexible and they can interact with various targets located on the surface of cells; Bi-specific antibodies can potentially bind to two different antigens and which have gained attention due to their potential application in cancer immunotherapy and drug delivery. To fully understand their mechanism, structural knowledge at an atomic level is needed. While low resolution studies can be obtained using traditional microscopy, high resolution studies of these interactions are usually performed by protein crystallography (or by Hydrogen deuterium exchange studies) using only fragments of both antibody and antigen.

A new cryo-EM microscope is being installed at ESRF as a complementary tool to the structural biology beamlines. This Titan Krios microscope is equipped with a direct electron detector and a Volta phase plate and will reinforce the ongoing EM activity at the IBS and at the EMBL on the EPN campus. First users experiments on this new instrument are planned in late autumn 2017.

The project: The proposed project will focus on developing applications using cryo-electron microscopy. This method permits to visualize directly at medium to high resolution the interactions of free protein complexes or attached to the surface of cells. Furthermore, recent advances obtained in this field suggest that these complexes could be studied at resolutions similar to the ones obtained with protein crystallography.

The successful candidate will characterise Ag/Biologics complexes from Sanofi, using state-of-the-art microscopes at the cryo-EM platform of the Partnership for Structural Biology (PSB) and will determine the high-resolution structure of one or more of these complexes.

PROFILE, SKILLS AND EXPERIENCE

- Master Degree (Master2 or MSc) in integrated structural biology or biophysics
- Experience in molecular and cell biology
- Background in Cryo-electron microscopy is desirable
- English proficiency (working language at the ESRF)
- Team player and good communication skills.

WORK CONDITIONS

The PhD thesis will last 3 years starting in autumn 2017, in collaboration between Sanofi (Vitry sur Seine, France) and ESRF (Grenoble, France) under the co-supervision of Dr Magali Mathieu (Sanofi) and Dr Gordon Leonard (ESRF). This thesis will be CIFRE (Conventions Industrielles de Formation par la REcherche) and the student will be a Sanofi employee (CDD) for the duration of the thesis. Most of his (her) work will be performed at the ESRF.

If you are interested in this position, please send you CV and cover letter at magali.mathieu@sanofi.com and christoph.mueller_dieckmann@esrf.fr by July 7, 2017.