



PhD position in biophysics at the Institute for Structural Biology, Grenoble, France.

DEVELOPMENT OF ULTRASTABLE FLUORESCENT PROTEINS FOR QUANTITATIVE SUPER RESOLUTION MICROSCOPY AT CRYOGENIC TEMPERATURE.

The recruited student will investigate the behavior of fluorescent proteins used as markers in super resolution microscopy in conditions of cryogenic temperature. The goal will be to engineer a variant that efficiently photoactivates at such low temperature.

Super-resolution fluorescence microscopy (« nanoscopy ») has revolutionized structural and cell biology. A major development in the field is « cryo-nanoscopy », which will offer several key advantages over nanoscopy at ambient temperature, notably optimal preservation of biological samples and perspectives for correlative studies with cryo electron microscopy (cryo-EM). To do so, it is necessary to engineer a fluorescent marker being « photoactivatable » (e.g. change from a nonfluorescent to a fluorescent state, or change color from e.g. green to red) at liquid-nitrogen temperature. The project will concentrate on developing such a marker based on fluorescent proteins of the well-known GFP family. The work will notably involve advanced X-ray crystallography, spectroscopy and single-molecule cryo-imaging to investigate the complex photophysics of fluorescent proteins at cryo temperatures. The project will be carried out in collaboration with the group of J. Enderlein (Göttingen, Germany), expert in optics, and with a local team (I. Gutsche, IBS), expert in cryo-electron tomography. The candidate will also be involved in first biological applications of cryo-nanoscopy.

Grenoble is situated in the middle of the beautiful French Alps, and the IBS provides a unique environment for state-of-the-art integrated cellular and structural biology (<http://www.ibs.fr/>).

Candidates should have a strong background in biophysics and/or biochemistry. Preliminary experience in advanced optical microscopy, protein crystallography and molecular biology will be key advantages.

The project will start in September/October 2019 and is financed by the French “CEA” (“Thèse Phare”): see <http://www-instn.cea.fr/formations/formation-par-la-recherche/doctorat/liste-des-sujets-de-these/developpement-de-marqueurs-fluorescents-ultrastables-pour-la-cryo-microscopie-super-resolution,19-06.html>

Applications are now open. Please send a CV, a motivation letter and 2 reference letters to Dominique Bourgeois (dominique.bourgeois@ibs.fr).

