

**M1-Molecular and Cellular Biology (MCB)  
Internship Proposal Form  
Chemistry-Biology Department**

**(Deadline Friday 18th December 2020)**

**Laboratory Address and Affiliation:**

Institut de Biologie Structurale (IBS)  
Univ. Grenoble Alpes, CEA, CNRS  
71 avenue des Martyrs CS 10090  
38044 Grenoble Cedex 9 France  
www.ibs.fr

**Laboratory/Team Research area (Keyword)**

IBS/Membrane and pathogens  
<https://www.ibs.fr/research/research-groups/membrane-and-pathogens-group-f-fieschi/>  
Neutrophilic NADPH oxidase complex. New surfactants for the in vitro study of membrane proteins. Structural study of membrane proteins related to virulence and pathogenicity.

**Summary of the Proposed Internship Project (10 lines)**

Title: Solubilization of SpNOX by Nanoions

**DESCRIPTION:**

Metallacarborans, metal- boron clusters of nm size, were very recently shown to allow solubilizing membrane proteins, thanks to their “*super-chaotropy*” property, *i.e.* their strong tendency -as nano-ions- to adsorb to neutral polar interfaces. We propose to investigate the solubilisation capability of one specific compound (COSAN) toward SpNOX, a bacterial homologous to the NOX proteins involved in immune response, and to measure its activity. In addition, we will characterize the size of the species formed during solubilization process.

**Methodologies and/or Techniques to be used**

Overexpression of SpNOX in E. Coli; Membrane purification; Solubilisation assays; SDS PAGE, with Coomassie staining /Western Blot; activity assays; Characterization of the solubilization process by Analytical ultracentrifugation, size exclusion chromatography coupled to light scattering, and/or negative staining electron microscopy.

**Person to contact:**

Name: Christine EBEL  
Phone: 04 5742 8570  
E-mail: Christine.ebel@ibs.fr

**Additional information**