

INTERNSHIP PROPOSAL

Institute and Group: IBS, group BP

Supervisor: Andrea Dessen

Phone: 04 57 42 85 90

Email: andrea.dessen@ibs.fr

Research project title: Targeting the cell wall of major pathogens for the development of new antibiotics

5 Keywords to describe the project: bacterial infection, protein interactions, membrane proteins, crystallization, protein complexes

Description of the project (aims, experimental techniques, recommended background):

The widespread resistance to antibiotics developed by bacterial pathogens that cause diseases ranging from meningitis to tuberculosis calls for a major effort towards the identification of new antimicrobial development approaches. The bacterial cell wall is the validated target of mainstream antimicrobials such as penicillin and other β -lactams, which act by targeting Penicillin-Binding Proteins (PBPs), enzymes that play key roles in its biosynthesis. The objective of this project is to structurally characterize complexes between PBPs and other cell wall formation partners, using cell-free expression, protein purification, and X-ray crystallography techniques. Candidates with experience in biochemistry and an interest in learning structural biology are encouraged to apply.

Relevant publications of the team:

1. Wong SG, and Dessen, A (2014) **Nature Comm.** 5
2. Gendrin C, Contreras-Martel C, Bouillot S, Elsen S, Lemaire D, Skoufias DA, Huber P, Attree I, Dessen A (2012). **PLoS Pathog.** e1002637.
3. Lebreton, A., Lakisic, G., Job, V., Fritsch, L., Tham, T.N., Camejo, A., et al., Dessen, A., Cossart, P., and Bierne, H. (2011) **Science**, 331, 1319-1320.