

**Aquitaine –Karnataka collaboration
Scientific Project for Pre-PhD student exchange**

Scientific Proposal

Project Title	Chemical Cross-linking and Mass Spectrometry to map protein-protein interactions	
Scientific domain	Biochemistry, Biophysics, Public Health	
Summary (ca. 10 lines)	Chemical crosslinking combined with mass spectrometry is being gradually accepted in structural proteomics thanks to its ability to map three-dimensional structures of proteins and protein complexes. The identification of residues involved in protein-protein or protein-ligand interactions is a challenge that requires the evaluation of a panel of crosslinkers with various levels of sophistication (different active functions, lengths, isotopic labels, affinity tag, yield of reporter ions in MS/MS). This evaluation will be done with model systems (oligomeric protein complexes) and used to address issues of biological interest: retroviral integration of HIV-1, toxicity of A β peptides (Alzheimer's disease) and maturation of mRNA.	
Student profile wished	Biochemist – Analytical chemist with strong interest for biology and protein chemistry	
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Institute/laboratory/industry (full address)	Institute of Chemistry & Biology of Membranes & Nano-objects, Mass spectrometry of Biological Macromolecules Laboratory Functional Genomics Centre, University of Bordeaux, 146, rue Leo Saignat 33076 BORDEAUX	
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Timing & duration for project (give approximate ranges)	From 3 to 6 months, any time of year	
Representative References	<p><i>For review see:</i> Chemical cross-linking and mass spectrometry to map three dimensional protein structures and protein-protein interactions. Sinz A. Mass Spectrometry Reviews 2006, 25, 663-682</p> <p>New affinity-based probes for capturing flavonoid-binding proteins. Carrié H, Tran DT, Rousseau S, Chaignepain S, Schmitter JM, Deffieux D, Quideau S. Chem Commun (Camb). 2014 Aug 25;50(66):9387-9</p> <p>Topological and functional study of subunit h of the F1Fo ATP synthase complex in yeast <i>Saccharomyces cerevisiae</i>. Fronzes R, Chaignepain S, Bathany K, Giraud MF, Arselin G, Schmitter JM, Dautant A, Velours J, Brêthes D. Biochemistry. 2003 Oct 21;42(41):12038-49.</p>	

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