UFR de Chimie et de Biologie
UNIVERSITÉ Grenoble Alpes

Master in Chemistry

Sujet de stage de Master 2

Laboratoire : Institute of Structural Biology (IBS)
Directeur : Winfried Weissenhorn

Intitulé de l'équipe : Mass spectrometry laboratory **Responsable :** Elisabetta Boeri Erba
Nom et Qualité du Responsable du Stage : Elisabetta Boeri Erba **HDR** non
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Parcours de Master 2 (*Rayer la/les mention(s) inutile(s)*) :
Chemistry for Life Sciences (CLS)

Titre du sujet: *Mass spectrometry-based sequencing of proteins using a MALDI-TOF/TOF instrument*

Objectifs visés du stage:
This project aims to set up the use of a novel mass spectrometer to perform sequencing of proteins and their "top-down" investigation (see below).

Intérêts pédagogiques et compétences visées:
The project should appeal to students with a background in chemistry, who are interested in analytical chemistry and its application to answer biological questions.

Résumé :
The primary sequence and post-translational modifications (PTMs) of proteins influence their structure and function, tuning their actions in key cellular processes. The IBS MS laboratory aims to characterise proteins and their PTMs using mass spectrometry (MS). MS can assess the mass of biomolecules with high accuracy, sensitivity and rapidity. We acquired a new mass spectrometer, which allows us to sequence intact proteins and to determine type, number and position of their PTMs using the so-called "top-down approach".

Approches & matériels utilisés:
Using a Matrix Assisted Laser Desorption Ionisation (MALDI) time-of-flight (TOF)/TOF, the student will optimise sample preparation conditions to sequence proteins and localise their PTMs. She/he will assess different types of matrices, sample deposition and matrix crystallisation. She/he tests distinct types and concentration of samples (both soluble and membrane proteins) and laser intensity. Overall, she/he will aim to maximise mass resolution, accuracy, sensitivity and sequence coverage.

Domaines de compétences souhaitées du candidat:
Analytical chemistry, Biological Chemistry

Dates du stage: January 2019- June 2019