

Master in Chemistry

Sujet de stage de Master 2

Laboratoire : Institute of Structural Biology(IFS)

Directeur : Winfried Weissenhorn

Intitulé de l'équipe : Mass spectrometry team **Responsable :** Elisabetta Boeri Erba

Nom et Qualité du Responsable du Stage : Elisabetta Boeri Erba, team leader **HDR non**

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Parcours de Master 2 :

Chemistry for Life Sciences (CLS)

Titre du sujet :

Mass spectrometry-based sequencing of proteins using a MALDI-TOF/TOF instrument

Objectifs visés du stage (5 lignes max) :

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

Intérêts pédagogiques et compétences visées (5 lignes max) :

The project should appeal to students with a background in chemistry, who are interested in analytical chemistry and its biological application.

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 team aims to characterise proteins and their PTMs using mass spectrometry (MS). MS can assess the mass of biomolecules with high accuracy, sensitivity and rapidity. In 2017 we plan to acquire 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 (5 lignes max) :

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 (3 lignes max):

Mass spectrometry, analytical chemistry.

Dates du stage : January to June 2018