

Position	One-year full time Post-doctorate (funded between 2023 and 2025)
Research Project	<p>The research project concerns the fundamental investigation of peptides gas phase fragmentation pathways to enhance the reliability of peptide de novo sequencing and protein identifications. In this aim, we will study the fragmentation of Penetratin analogues, as a first model peptide, which CID fragmentation spectrum shows a predominant unexpected c-ion where only b/y ions should be produced.</p> <p>First, various peptide analogues of the Penetratin will be analyzed to understand the effect of sequence and gas-phase structure of the peptide ions, on the c-ion production, using ion-mobility coupled to mass spectrometry (IM-MS).</p> <p>In parallel, thermodynamic and kinetic parameters of the dissociation reaction will be measured using the MS methodology implemented by our collaborators at the IPCM laboratory and at the UMONS University (Belgium, Mons).</p> <p>Based on these results, fragmentation pathways will be proposed and validated experimentally and theoretically using computational chemistry.</p> <p>New peptide syntheses, linear or cyclic, will be carried out to validate the proposed mechanisms.</p> <p>This project will allow to decipher at the molecular, thermodynamic and mechanistic level, the production of c-ions in CID spectra, which is the most routinely used activation technique. It will surely lead to the improvement of de novo softwares which are needed to characterize new natural peptides.</p>
Mission	<p>The successful candidate will join the pole 2 of the LBM laboratory (Biomolecules: analysis, molecular and cellular interactions of the Laboratoire des BioMolécules, UMR 7203) and will work on the Mass Spectrometry platform facility of Sorbonne University in collaboration with researchers from the LBM host laboratory (A. Walrant, L Rocard and E. Sachon) and the IPCM laboratory (D. Lesage), both located in the same building, at Sorbonne Université.</p> <p>She/he will be in charge of mass spectrometry (MS) and ion mobility (IM-MS) data acquisition and interpretation. She/he is expected to propose new peptide fragmentation pathways based on the MS and IM-MS data and the energetic and kinetic parameters measured.</p>
Required Qualifications	<ul style="list-style-type: none"> • PhD in analytical chemistry (more than 2 years old PhD, preferred). • Knowledge in mass spectrometry and ion mobility coupled to mass spectrometry. • Knowledge in gas phase reactivity and peptide fragmentation. • Record of high quality research output. • High degree of intellectual independence and creative thinking. • Ability to work collaboratively.
Location	<p>Sorbonne Université Campus Jussieu 4 place Jussieu 75252 Paris Cedex 05 Mass Spectrometry platforms (IBPS and IPCM) Laboratoire des BioMolécules (LBM, UMR CNRS7203) Pole 2 « Biomolécules: analysis, molecular and cellular interactions»</p>
Contract	Full time post-doctorate researcher of 12 months.
Contacts	Emmanuelle Sachon: emmanuelle.sachon@sorbonne-universite.fr