Post-Doc Position in Cross-Linking Mass Spectrometry (XL–MS) for the Analysis of Protein Complexes Involved in Microbial Virulence

MSBio Laboratory – Institut Pasteur, Paris, France

About Institut Pasteur: Institut Pasteur is a world-renowned non-profit private foundation with a 135-year legacy of transformative discoveries. Located in the heart of Paris, our international campus unites 130 research units across 11 departments, fostering a uniquely collaborative and interdisciplinary ecosystem. As a global leader in infectious disease research, the Institut Pasteur offers unparalleled access to cutting-edge core facilities (cryo–EM/cryo–ET, high-containment labs, advanced imaging, bioinformatics platforms) and a vibrant scientific community of 3,000 people. You'll be embedded in an environment where fundamental science directly translates to medical and public health impact, with strong ties to the Pasteur International Network spanning 33 institutes worldwide.

Host laboratory: The Mass Spectrometry for Biology Lab https://research.pasteur.fr/en/team/mass-spectrometry-for-biology/) led by Julia Chamot-Rooke, is a dynamic, international, and highly collaborative Institut Pasteur/CNRS Unit, recognized for pioneering method development in top-down and structural proteomics applied to microbial virulence. You will join a team of scientists (post-docs, PhD students, engineers) with deep expertise in mass spectrometric method development.

Instrumentation: Exclusive access to a unique range of state-of-the-art mass spectrometers: Orbitrap Eclipse (UVPD, ETD, EThcD), timsTOF Ultra 2, and timsOmni for deep, large-scale structural proteomics. We also provide dedicated space to manipulate pathogens and equipment for automated proteomic sample preparation.

Starting date: Flexible—ideally within 3 months. We prioritize finding the right candidate and will accommodate your transition timeline, including visa processing or PhD thesis completion.

Job type: 24-month postdoctoral contract (CDD). The position includes full French social security, health insurance, and pension contributions.

Candidate's profile: You hold a PhD (or are completing one) in biological mass spectrometry, proteomics, or structural biology, with demonstrated expertise in LC–MS/MS sample preparation and data analysis. While hands-on experience in cross-linking mass spectrometry (XL–MS) or structural proteomics is a strong advantage, it is not mandatory—we provide extensive, tailored training. You are collaborative, independent, and eager to push methodological boundaries. Strong English communication skills are required; French lessons are offered to support your integration.

Gross Salary: 36-43 k€ / year depending on the experience of the candidate

Project. Cross-linking mass spectrometry has emerged as an innovative and powerful technique for investigating protein–protein interactions. A small chemical linker serves to covalently link two interacting protein sites, preserving critical information about their spatial interaction. Advanced mass spectrometric analysis serves to detect and interpret cross-linked peptides, providing detailed insights into the specific domains and regions involved in protein interactions. In recent years, the field has moved from the analysis of purified complexes to proteome-wide studies thanks to fundamental instrumental and bioinformatic advancements. In this project, we aim to develop cutting-edge XL–MS methods to elucidate the structural organization of protein complexes critical to microbial virulence. We focus on studying the type VI secretion system of enteroaggregative *E. coli*, the type IV piliation machinery of *Neisseria meningitidis*, and rhoptry exocytosis signaling in *Toxoplasma gondii*. These protein complexes represent major targets for understanding bacterial competition, host cell adhesion, and protozoan invasion mechanisms.

If you are interested, please send a CV, motivation letter, and contact details for 2 references to Julia Chamot-Rooke ((julia.chamot-rooke@pasteur.fr). Applications are reviewed continuously until the position is filled. Shortlisted candidates will be invited for a virtual lab meet-and-greet before final interviews.