

2 Post-Doctoral Positions in X-ray Free Electron Laser Science diffraction on protein fibrils

Project: FELIX - Unraveling Protein Structures in Neurodegenerative Diseases

Location: University of Rome Tor Vergata, Italy with research stays at the European XFEL, Germany

Duration: 12 Months (Starting no later than September 30th, 2024)

Salary: Senior Level

Application form: <https://pica.cineca.it/uniroma2/f4-2024-0004/>

The **FELIX** project, hosted by the University of Rome Tor Vergata, invites applications for two post-doctoral positions focused on exploiting the capabilities of the European XFEL Free Electron Laser (FEL) to investigate the structures of protein fibrils and aggregates. This research is crucial for understanding the molecular underpinnings of neurodegenerative diseases such as Parkinson's and Alzheimer's, with a specific emphasis on α -synuclein and β -amyloids proteins.

Responsibilities:

- **Sample Preparation & Characterization:** Develop and optimize protocols for the preparation of protein samples, including those complexed with metal ions, to ensure high-quality specimens for X-ray experiments. Employ a range of microscopy and bio-physical techniques to thoroughly characterize the structural properties of protein fibrils and aggregates.
- **X-ray Experiments:** Conduct advanced X-ray Coherent Diffraction Imaging (CDI) and Serial Femtosecond X-ray (SFX) fiber diffraction experiments at the SPB/SFX instrument of the European XFEL. This involves utilizing ultrashort X-ray flashes to capture high-resolution images of protein structures in their native, hydrated state without radiation damage.
- **Data Analysis:** Analyse experimental data, also employing novel machine-learning techniques, to extract meaningful structural information, contributing to the understanding of the role of metal ions in protein misfolding and aggregation.

Requirements:

- PhD in Physics, Biophysics, Chemistry, Structural Biology or a closely related field.
- Experience in protein biochemistry and/or familiarity with X-ray diffraction techniques, preferably including experience with Free Electron Laser sources or synchrotron radiation.
- Strong analytical skills, with proficiency in data analysis software.
- Excellent communication skills, with proficiency in English, and the ability to work collaboratively in an international team.

For information, contact: stellatof@roma2.infn.it