



Elettra Sincrotrone Trieste

# Postdoctoral Research Associate in Structural Biology at ELETTRA

Deadline: 5 June 2023

Ref: DA/23/14

## Background

Elettra Sincrotrone Trieste is an international multidisciplinary research center operated as a user facility, featuring a 2.0/2.4 GeV, third-generation synchrotron light source (Elettra), a new free-electron laser light source (FERMI) and a variety of support laboratories. The extremely high quality of the machines and beamlines has set new performance records and has been producing results of great scientific and technological interest. In order to allow the laboratory to remain competitive in the next 20 years, an entirely new source - Elettra 2.0 - belonging to the new generation of storage rings (DLSR or Diffraction Limited Storage Ring) is being developed. The new source will exhibit a major increase in the brilliance and coherence fraction of the photon beams. The Elettra 2.0 optics is based on our enhanced symmetric six bend achromat structure (S6BA-E) with a 12-fold symmetry and an emittance of 200 pm-rad at 2.4 GeV. The new structure creates also straight sections in the arcs permitting the installation of additional insertion devices, thus increasing the number of beamlines. Existing beamlines will have to be upgraded and new beamlines developed to take full advantage of the characteristics of Elettra 2.0. The new machine is scheduled for commissioning in the second half of 2026. See <http://www.elettra.eu> for more information.

## Beamline/Activity/Project description

The Structural Biology Laboratory (SBL) of Elettra Sincrotrone Trieste applies molecular, biophysical and structural biology tools to study the atomic architecture of proteins that are deregulated in human diseases such as cancer, neurodegeneration, and infections, and are recognized targets for structure-based drug discovery (SBDD) projects. Special emphasis is on protein complexes involved in DNA replication, transcription and DNA repair, underpinning cellular processes with important consequences such as cell proliferation and genome stability. AIRC and EU projects are active in this field. Within the SBL operates a Protein Facility (PF) for protein production and characterization, supporting internal and external researcher from public and private laboratories, including industrial partners, contributing to their scientific and technical developments. The laboratory performs structural determination by x-ray crystallography of proteins in complex with small molecules that are putative candidates for drug discovery and drug development pipelines.

The SBL and its PF are undergoing important upgrades to reinforce the protein production and crystallization pipelines, implementing new instrumentation to ensure high-purity sample preparation and implement highly automated crystallization set-ups. The upgrades are supported by the PNRR project PRP@CERIC, lead by Area Science Park, and run parallel to the implementation of a cryo-EM facility

## Job description

The successful candidate will work on SBL in-house and collaborative projects focusing on the structural characterization of protein targets for drug discovery. The activities will be conducted in collaboration with the Elettra beamlines and laboratories that apply biophysical and structural biology techniques, and in particular with the macromolecular crystallography beamline XRD2 for crystal structure determination. His/her main task will be to ensure the protein crystallization trials, crystals handling, X-ray diffraction data collection, structure determination, and data mining.

The successful candidate will also be involved in the renewal of the crystallization suite, supporting the installation of new instruments and their commissioning. He/she will help in the set-up and validation of crystallization routines to support users that will need access to the crystallization suite. He/she will refer to the Protein Facility Head and will work in close contact with the other scientists of the SBL, with the beamline scientists as well as with external collaborators, including the PRP@CERIC partners, ensuring a proficient exchange of information between the scientists involved in the projects. He/she will be also involved in writing scientific reports and publications, in training young students and reporting results to scientific meetings.

## Qualifications

### Elettra - Sincrotrone Trieste S.C.p.A.

S.S. 14 Km 163,5 in Area Science Park  
34149 Basovizza, Trieste, Italy  
T. +39 040 37581  
F. +39 040 938 0903

P.IVA e C.F. IT00697920320  
Cap. Soc. € 47.632.663,00 i.v.  
PEC: [sincrotrone.trieste.elettra@legalmail.it](mailto:sincrotrone.trieste.elettra@legalmail.it)  
[www.elettra.eu](http://www.elettra.eu)

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A Ph.D. in biochemistry, chemistry, biology or related disciplines, with focus on macromolecular X-ray crystallography applied to drug discovery and a postdoctoral experience of at least 3 years in protein X-ray crystallography are required. Hands-on experience in protein expression and purification, strong knowledge of protein crystallography, from protein crystallization to structure determination using CCP4 Suite, Phenix, and most popular graphical programs of structural bioinformatics are expected. Proven experience in studies of protein-ligand binding and small-molecule development for drug discovery is also a prerequisite.

Experience in organic synthesis, reaction mechanisms, and organic molecule characterization (e.g., by NMR, FT-IR, UV-Vis, CD, and MALDI techniques) would be considered a plus. Skills in biophysical characterization would be a distinctive advantage. Proven experience in supporting and tutoring students/users, as well as supporting lab management and refurbishing will be evaluated as a relevant asset.

Excellent oral and written communication skills in English are essential. A working knowledge of Italian would be desirable, but is not required.

Good time management skills together with the ability to interact with staff and facility users and to work as part of a multi-disciplinary team is expected.

The appointment envisioned is a fixed term contract of initial 12 months, renewable upon agreement by the parties. The salary will be commensurate with the previous experience and qualifications of the candidate.

Applications should include full curriculum vitae, contact information (including electronic mail) of at least two references.

The interviews may be held via video conferencing.

The deadline for the submission of the application is June 5, 2023.

In accordance with the provisions of article 21 of the Italian legislative decree no. 39/2013 and in conjunction with article 53 (subsection 16ter) of Italian legislative decree no. 165/2001, employees or former employees of any Italian Public Entity who have exercised authority over Elettra Sincrotrone Trieste S.C.p.A. or have negotiated with Elettra - Sincrotrone Trieste S.C.p.A. within the last three years will be excluded from the present selection procedure. We thank all applicants in advance.

For more information, please contact Paola Storici (email: [paola.storici@elettra.eu](mailto:paola.storici@elettra.eu)).

To apply for this position please visit the following link:

<https://www.elettra.trieste.it/it/about/careers/working-withus.html?id=3161>

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