Human Technopole

Electron Microscopy Senior\Junior EM Specialists

Milan, Lombardia, Italy Structural Biology National Facility

Job description

APPLICATION CLOSING DATE: September 1st 2023

About the Institute

Human Technopole (HT) is a new interdisciplinary life science research institute, created and supported by the Italian government, with the aim of developing innovative strategies to improve human health. HT has the mission of conducting cutting-edge research and translate innovation into methods available to the entire National scientific community. To this end, HT is opening National Facilities that will provide state-of-the-art research infrastructure for Structural Biology, Light Imaging, Genomics, Genome Engineering, and Data Handling and Analysis. In this context, **the Cryo-Electron Microscopy** (Cryo-EM) **Unit**, as part of the National Facility for Structural Biology, **seeks to recruit two Senior and\or Junior Electron Microscopy (EM) Specialists** that will actively participate in maintaining the national facility, take part in scientific collaborations, and support internal and external users.

About the Cryo-EM Unit

The Cryo-EM Unit workflows span from sample preparation (i.e. negative staining, plunge freezing, high-pressure freezing, freeze substitution, chemical fixation, resin embedding, carbon coating and metal sputtering, cryo-ultramicrotomy, and micropatterning) to imaging techniques (i.e. TEM\STEM imaging at room and cryogenic temperatures on side-entry holder systems, widefield and confocal cryo-CLEM imaging, SEM imaging and FIB-milling, TEM\EF-TEM imaging at cryogenic temperatures on autoloader-equipped systems). Currently, the Cryo-EM Unit owns: a 300kV Thermo Scientific Titan Krios G4i TEM with Falcon 4i, Selectris X energy filter, and Volta phase-plate; a 200kV Thermo Scientific Glacios TEM with Falcon 4i, Selectris X energy filter, Volta phase-plate, and micro-ED package; a 300kV Thermo Scientific Spectra S/TEM with CETA 2 with speed enhancement, HAADF, BF and DF detectors; a 120kV Thermo Scientific Talos L120C TEM with Gatan Elsa cryo-holder; a Thermo Scientific Aquilos 2 DualBeam cryo-FIB system with EasyLift system, AutoSlice-and-View and AutoTEM modules; a Leica Thunder widefield and a Leica Stellaris confocal microscopes with white light laser equipped with cryo-stage for CLEM applications; all ancillary sample preparation equipment including plunge freezing devices, glow discharger units, plasma cleaners, carbon and metal sputter coater, high-pressure freezer, automated freeze substitution device, micropatterning device and ultramicrotome for both resin-embedded and vitrified samples. Our microscopes operate with SerialEM, Thermo Scientific EPU, Tomography, EPU-D, Velox and MAPS. Computing resources for EM-related analyses software packages are also available via VMs and HPC. Expansion of the Cryo-EM Unit with more high-end microscopes and equipment is planned from 2024.

Key tasks and responsibilities

While building a solid expertise in all the above-mentioned techniques, the activity of each Senior\Junior EM Specialist will particularly focus on one of the following applications:

- Single-particle Area, which main activities include sample preparation by negative staining and plunge freezing, imaging by TEM and cryo-TEM, and single-particle analysis;
- Electron tomography Area, which main activities include sample preparation by FIB-milling, micropatterning, cryo-CLEM, cryo-electron tomography, and sub-tomogram averaging;
- Volume EM Area, which main activities include chemical fixation, high-pressure freezing, freeze substitution, resin embedding, CLEM, and electron tomography by TEM\STEM imaging.

Senior\Junior EM Specialist will report directly to Head of the National Facility for Structural Biology and will work in close collaboration with other Units of the National Facility and research groups of the Structural Biology Research Centre.

The Senior\Junior EM Specialist will:

- Actively participate in resource planning and maintenance of the Cryo-EM Unit equipment, tools and consumables;
- Introduce, train and supervise internal and external users to sample preparation, equipment operations and provide evaluation support;
- Interaction with Unit users to facilitate user access, to elaborate experimental protocols and project plans, to provide technical assistance during the project and feedback after delivery of results;
- Perform experiments and provide services for non-autonomous users according to the Unit and National Facility best practices;
- Interact and follow up with manufacturers and field service engineers in case of technical issues and malfunctions of the Unit equipment and tools;
- Interact and follow up with the ICT and Digitisation Area, Campus Development and Facility Management Area in case of building issues and malfunctions;
- Manage research projects whose purpose is to advance the Facility and the institute's scientific environment;
- Actively participate in National Facility and Unit reviews by external and internal experts;
- Promote networks with other national and international Facilities and Units.

Job requirements

Mandatory Requirements

- PhD in a relevant subject (e.g. biology, physics, materials science or a related field of science);
- At least 7 years (for Senior position) or 3 years (for Junior position), including PhD years, of hands-on experience in electron microscope operation and EM applications with particular focus on imaging biological samples;
- Fluency in English – HT is an international research institute;

Preferential requirements

- At least 2 years experience in technical support role in an EM Facility or Unit open to internal and external users;
- Proven (i.e. EMDB and PDB codes, peer-reviewed publications as well as pre-prints) expertise in structural and ultrastructural characterization and analysis of biological samples.

Organizational and social skills:

- Communication, team building and problem-solving skills;
- Ability to interact effectively with other teams and work synergistically to effectively drive projects;
- Highly organized and meticulous work attitude.

Application instructions

Please apply by sending:

- a CV;
- a motivation letter in English (max 1 page long);
- a list of relevant-to-the-call instruments (see above for detailed list of Cryo-EM Unit equipment) for which the applicant is an autonomous operator with published references (e.g. EMDB, EMPIAR, preprints are accepted);
- names and contacts of at least 2 referees.

Any questions concerning the role and/or queries regarding the relevant terms and conditions should be addressed to recruitment@fht.org (this email address should not be used to send applications).

Why Human Technopole

- HT seeks **scientific excellence**, we recruit the best scientific talents through international, open calls;
- Our working environment is **international**, **friendly** and **inclusive**. Our scientists **work together across disciplines** on research topics of biomedical relevance, **leveraging synergies** between their diverse skillsets and methodological approaches;
- We believe that **highly diverse teams yield the best and most innovative results;**
- We engage in **outward-facing scientific activities** aimed at benefiting the national and international **research community.** Training is also at the heart of our activity, with initiatives and opportunities for our staff, including scientific courses, conferences and workshops.

Main benefits

- Welfare plans.
- Canteen service.
- Work-life balance provisions.
- Italian language training for foreigners.
- Parental leave up to 1 year and other support for new parents.
- Counseling.
- Flexible working hours.
- Remote working policy.
- Support for relocation.
- Researchers coming to Italy for the first time, or returning after residing abroad, benefit from very attractive income tax benefits.

Special consideration will be given to candidates who are part of the protected categories list, according to L. 68/99.
Number of positions offered: 2
Contract offered: CCNL Chimico Farmaceutico, Fixed-term 3 years - employee level.
The position is based in **Milan**.