



MARTIN-LUTHER-UNIVERSITÄT HALLE-WITTENBERG



Center of Research Competence “HALOmEm - membrane protein structure & dynamics”: Institute of Biochemistry & Biotechnology, Faculty of Natural Sciences I

DETAILS FOR THE POSITION

Electron Microscopy Facility Manager: Cryo-Electron Microscopy

The Official document can be found at:

http://www.verwaltung.uni-halle.de/dezern3/Ausschr/18_138.pdf

Fixed term until end of July 2022, available from April 2018, or as soon as possible thereafter.

Junior Research Group “Cryo-electron microscopy of membrane protein complexes”

Applications are invited for a *BMBF (German Federal Ministry of Education and Research)-funded electron microscopy Facility manager* to join a dynamic, interdisciplinary team focusing on the use of biochemical, computational and structural methods to investigate the molecular mechanisms of enzymatic interactions into phase-separated metabolic complexes *in vitro* and the effects of metabolic complex stability on cellular homeostasis. This large programme involves collaborations within the HALOmEm Research Center for Protein Research and various Institutions across Europe. Ultimately, the programme of research will involve the appointment of 3 Staff scientists in charge (all 3 starting in 2018), 2 PhD students and 1 post-doctoral fellow (all 3 starting in 2019), all located at the newly established Electron Microscopy laboratory of Dr. Panagiotis L. Kastiris.

We are now seeking an electron microscopy facility manager with skills in **Electron microscope operation** to join this team. You will lead the Electron Microscopy Facility, focusing on maintaining and managing the operation and performance of transmission electron microscopes at cryogenic conditions on a daily basis, assist the principal investigator and support the group members in meeting the research goals of the laboratory. You should be creative, curious to learn new skills, keen to provide training to other group members and drive the research of the electron microscopy facility as a staff scientist. You will join an integrated, well-funded team who will use Protein Chemistry, Cryo-Electron Microscopy and Computational Structural Biology to achieve our project aims.

You should have a university or technical school degree in a relevant field (Materials Science, Applied Physics, Electron Optics, Engineering) or the equivalent of four years training in the operation and maintenance of transmission electron microscopes. Applicants with higher degrees will be considered as well depending on experience.

University Grade TV-L E14: 3,982.60 – 5,057.19 € per month (brutto), depending on experience and subject to annual increase.

Informal enquiries may be made to Dr. Panagiotis L. Kastiris, email pk@halomem.de. Formal applicants must attach a CV with all official documents, brief motivation letter and contact details of 3 referees. Motivation letter must include the reference number: Reg.-Nr. 4-885/18-D.

Closing date: 5 March 2018

Ref: Reg.-Nr. 4-885/18-D



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Responsible to: Head of Electron Microscopy
Reports to: Dr. Panagiotis L. Kastritis

Main Duties and Responsibilities

You will:

- Lead the Electron Microscopy Facility and manage the operation of the in-house electron microscopes on a daily basis, be organized and able to work independently
- Interact with the Principal Investigator and the EM Research Support Officer to ensure the smooth operation of the EM Facility
- Administer research projects of lab members aimed at improving the performance, efficiency and usability of the electron microscopes through modification of software or hardware
- Provide high-level assistance and trouble-shooting to microscope users and to develop “best-practice” protocols for microscope use
- Sustain and steer electron microscopy-focused research projects as appropriate, from experimental design to image acquisition
- Maintain and service microscope hardware and software, and maintain the alignment and condition of the microscopes
- Establish and implement a defined maintenance programme, and performance assessment programme for electron microscopes, configuring and installing new instrumentation and software as required
- Arrange and facilitate service engineer visits. This will include interacting with Engineers from microscope manufacturers, with the goal to keep the microscopes maintained under optimal conditions.

You will additionally be expected to:

- Generate and pursue independent and original research ideas in relation to the research project of the laboratory
- Maintain your own continuing professional development and act as a mentor to less experienced colleagues, as appropriate
- Keep up to date with developments in the field, proposing or implementing changes of direction as necessary.
- Maintain a deep personal knowledge of the systems within the EM facility.
- Contribute to lab-wide discussions on developments within the Laboratory, particularly in the use of new techniques.
- Interact effectively with a wide range of staff, students and others to ensure the smooth running of research.
- Take on other communal responsibilities contributing to the smooth running of research within the laboratory.



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Working relationships

You will work directly under the Principal Investigator, Dr. Panagiotis L. Kastiris, alongside the EM Research Support Officer. You will liaise with other Group Leaders, Research Support staff, Post-doctoral Scientists and Students across the HALOmem Research institute. Use of the Facility is driven by academic demand.

Career Expectations, University Values and the HALOmem Research Institute for Protein Research

The Martin-Luther Universität Halle-Wittenberg and the HALOmem Institute are committed to developing its staff. We continue to work with individuals, supporting them to maximize their potential.

Progression to a higher grade is dependent on an individual taking on an increased level of responsibility. Vacancies that arise within the area or across the wider University are advertised on the university website to allow staff to apply for wider career development opportunities. The group is also interconnected within the broader cryo-electron microscopy and computational structural biology communities with frequent collaborations, visits and knowledge exchange, which will further promote development of the individual appointed to the post.

All staff is expected to operate in line with the university's values and standards, which work as an integral part of our strategy and set out the principles of how we work together. More information about the lab, HALOmem and university's strategy and values are available via email and communication with Dr. Panagiotis L. Kastiris, email pk@halomem.de

Person Specification

Essential

Technical Skills

- University or technical school degree in a relevant field (Materials Science, Applied Physics, Electron Optics, Engineering). Applicants with higher degrees will be considered as well
- Experience in the maintenance, repair and operation of transmission electron microscopes
- Knowledge of transmission electron microscopy including understanding of electron optics, vacuum systems and software
- Experience working with high-end transmission electron microscopes combined with knowledge of cryo-electron microscopy
- Experience working independently in creative and insightful way to trouble-shoot complex problems

Personal Skills

- Communication at all levels of technical complexity with both novice and advanced users, as well as experts including Service Engineers
- Good verbal and written communication skills
- A high standard of English
- Commitment to own professional development

Desirable

- Knowledge of the use of cryo-electron microscopy for the determination of the structures of biological samples.
- Knowledge of software used to control electron microscopes.
- Ability to work independently, including prioritizing, planning, assessing and recording of work performed.



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- The ability to self-motivate, to organize work-time efficiently and to perform work accurately using a defined protocol
- Has experience of training others "on the job"
- Excellent standards of professional conduct
- Strong skills and experience in working collaboratively as a member of a team.
- Excellent time management, with an ability to be self-motivated, while working in a small team and having to re-prioritize.

Detailed objectives of this post

The objective of the work to be carried out is to set the fundamental basis for the smooth operation of the Electron Microscopy Laboratory to discover, determine and characterize enzymatic supercomplexes from native cellular extracts and how supercomplexes interact with cellular structures and alter cellular function.

Setting the basis for a smooth operation of the Electron Microscopy Facility will allow the generation of an array of information about the cellular machineries that interact to form enzymatic supercomplexes. In recent work we have used an integrative structural biology and proteomics approach, combined with cryo-electron microscopy (cryo-EM) to show that higher-order assemblies can be captured within fractionated cellular homogenates and are amenable to cryo-electron microscopic analysis at unprecedented resolution. The electron microscopy facility manager, appointed to this position, will set the basis to achieve these goals by:

- Assessing the requirements of the EM facility to acquire equipment together with the principal investigator
- Ensuring smooth EM facility operation by receiving training when needed (e.g. usage and operation of established or purchased equipment), but also teaching and assisting other lab members electron microscope operation, essential for the project

Location of the work

You will be based in large, well-resourced laboratories within the Center of Research Competence (ZIK) "HALOmem" and the Institute of Biochemistry & Biotechnology at Halle (Saale). Dr. Panagiotis L. Kastiris has a large, brand-new laboratory, recently established; funds is not an issue. The project is part of a bigger ZIK HALOmem collaboration among the established laboratories of Professors Dr. Milton Stubbs, Dr. Jochen Balbach, Dr. Kirsten Bacia and Junior Professor Dr. Carla Schmidt. Together, their integrated research groups comprise of a large team of post-doctoral workers and PhD students with a broad range of background and skills. Our vibrant and dynamic group meets regularly both formally and informally to exchange ideas, problem solve and for social occasions.

Equipment and the Electron Microscopy Facility

The electron microscopy facility includes a JEOL JEM-3200FSC electron microscope, which features a 300 keV field emission source with an in-column energy filter and a cartridge-based specimen stage that provides excellent stability at liquid nitrogen temperatures. The microscope is equipped with a Gatan K2 Summit direct electron detector. Funds are available for the acquisition of additional (cryo-)electron microscopes and we are constantly seeking to expand the laboratory equipment.

HALOmem

HALOmem is an interdisciplinary research center at the Martin-Luther-University



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Halle-Wittenberg (MLU). We focus on the structure of membrane proteins, their complexes and their interactions with the surrounding membrane. HALOmEm was founded as a joint effort of the Institute of Biochemistry & Biotechnology (Faculty of Natural Sciences I) and the Institutes of Physics and Chemistry (Faculty of Natural Sciences II). The research center brings together resources and special expertise from both Institutes, such as recombinant protein production, biophysical methods for studying membranes, and protein structure determination by crystallography, NMR and cryo-Electron microscopy. HALOmEm is supported by the federal Zentrum für Innovationskompetenz (ZIK, Center for Innovation Competence) initiative of the German Federal Ministry of Education and Research (Bundesministerium für Bildung und Forschung, BMBF) and by the state of Sachsen-Anhalt.

HALOmEm and the Institutes of Biochemistry & Biotechnology (Faculty of Natural Sciences I), Physics and Chemistry (Faculty of Natural Sciences II) are dynamic, multidisciplinary research Centres involving academic staff spanning physics, chemistry and the biological sciences at the MLU. HALOmEm houses excellent research infrastructure for the purification and the biophysical and biochemical analysis of biomolecules.

For more information please contact Dr. Panagiotis L. Kastiris. (pk@halomem.de). **Applicants must attach a CV with all official documents, brief motivation letter and contact details of 3 referees.** Motivation letter must include the reference number: Reg.-Nr. 4-885/18-D.

The official german advertisement for the position can be found at:
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