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LUXEMBOURG
INSTITUTE OF SCIENCE
AND TECHNOLOGY



M-22110 – PHD PROJECT IN MULTIMODAL IMAGING OF NEURODEGENERATION-RELATED NEUROMELANINS

Temporary contract | 48 months | Fulltime/40h | Belvaux

Are you passionate about research? So are we! Come and join us

The Luxembourg Institute of Science and Technology (LIST) is a Research and Technology Organization (RTO) active in the fields of materials, environment and IT. By transforming scientific knowledge into technologies, smart data and tools, LIST empowers citizens in their choices, public authorities in their decisions and businesses in their strategies.

<https://www.list.lu/>

You 'd like to contribute as a PhD student? Join our Materials Research and Technology department

Through its research into advanced materials and processes, the “Materials Research and Technology” (MRT) department, with its 200 researchers and engineers, contributes to the emergence of enabling technologies that underpin the innovation processes of local and international industry. MRT's activities hinge on four thematic pillars: nanomaterials and nanotechnology, scientific instrumentation and process technology, structural composites, and functional polymers.

The department also includes four high-tech platforms, focusing on composites, prototyping, characterization and testing. These platforms serve both LIST research staff, and other stakeholders in Luxembourg.

The Advanced Instrumentation for Nano-Analytics (AINA) group within the Scientific Instrumentation and Process Technology (SIPT) unit of MRT is renowned for developing innovative nano-analytical techniques for materials characterization and life science applications. During the past few years we have been developing in particular Secondary Ion Mass Spectrometry (SIMS) add-on systems for analytical instrument such as the Helium Ion Microscope (HIM), Focussed Ion Beam (FIB) instruments and the Transmission Electron Microscope (TEM), allowing correlative high spatial resolution imaging and high sensitivity chemical information for nano-analytics.

In this context and in collaboration with experts from Laboratoire National de Santé (LNS), Luxembourg Institute of Health (LIH), Luxembourg Centre for Systems Biomedicine (LCSB) and the Institute of Biomedical Technologies at the National Research Council in Italy, we are launching the highly interdisciplinary project PANSIMS. It aims at the development and application of a novel multimodal imaging approach for the improved investigation of neuromelanin organelles (NM) in the human brain and their role in Parkinson's disease. Insight into the structure and composition of NM in different brain regions will provide information on neurodegenerative processes and suggest novel perspectives for diagnosis and therapeutic strategies.

How will you contribute?

The PhD candidate will acquire skills in the applications of advanced electron and ion microscopy, histopathology and biochemistry. The successful candidate will take a main role in the PANSIMS project, further developing respective workflows on AINAs prototype instruments yielding highest lateral resolution and chemical sensitivity and use them to investigate brain samples provided by the project partners. The PhD candidate will coordinate the local research efforts together with input from the partners. In consultation with the project leader, the PhD candidate will design and perform relevant experiments, analyse and interpret the results, write scientific articles and disseminate the results in international conferences. The candidate will work together with highly skilled scientists and engineers in the dynamic environment of the AINA group (PI Dr. Antje Biesemeier), but will also be embedded in Prof. Mittelbronn's group at LNS/LIH/LCSB where the histopathological work will be performed.

The Luxembourg Institute of Science and Technology (LIST) is a mission-driven Research and Technology Organisation (RTO) that develops advanced technologies and delivers innovative products and services to industry and society. Located at the heart of Luxembourg's vibrant Research and Innovation Campus in Esch-Belval, LIST can ideally connect its over 500 specialists in materials, the environment and IT with virtually all of Luxembourg's other main research players such as the University of Luxembourg, LIH, LISER, Technoport, Luxinnovation and the National Research Fund. **LIST.lu**

The LIST is committed with equality of opportunities and gender balance



Is Your profile described below? Are you our future colleague? Apply now!

You hold a Master's degree in Biochemistry, Biology, Natural Sciences or equivalent with excellent grades and curiosity for biomedical research.

Team spirit and the wish to work in a highly interdisciplinary work environment, including the willingness to commute between different local lab sites (at LIST and LNS/LIH/LCSB) are key to a successful application.

You also have an interest in working with prototype instruments.

On top of this, you are fluent in English (both written and oral). You're the one we're looking for!

Furthermore, we consider as an asset:

- Previous knowledge or expertise in the histopathology of Parkinson's disease, electron microscopy or chemical analytics
- Knowledge of German, Luxembourgish or French

Your LIST benefits

An organization with a passion for impact and strong RDI partnerships in Luxembourg and Europe that works on responsible and independent research projects;

Sustainable by design, empowering our belief that we play an essential role in paving the way to a green society;

Innovative infrastructures and exceptional labs occupying more than 5,000 square metres, including innovations such as our Viswall, high-scale incubators and top of the range 3D/4D printings that are part of our toolkit for excelling in all we do;

Multicultural and international work environment with more than 45 nationalities represented in our workforce;

Diverse and inclusive work environment empowering our people to fulfil their personal and professional ambitions;

Gender-friendly environment with multiple actions to attract, develop and retain women in science;

32 days paid annual leave, 11 public holidays, flexible working hours, 13-month salary, statutory health insurance and access to lunch vouchers;

Personalized learning programme to foster our staff's soft and technical skills;

An environment encouraging curiosity, innovation and entrepreneurship in all areas.

Apply online

<https://www.list.lu/en/jobs/>

Your application must include:

- A motivation letter oriented towards the position and detailing your experience;
- A scientific CV with contact details;
- List of publications (and patents, if applicable);
- Contact details of 2 references.

Application procedure and conditions:

- LIST is an equal opportunity employer and is committed to hiring and retaining diverse personnel. We value all applicants and will consider all competent candidates for employment without regard to national origin, race, colour, gender, sexual orientation, gender identity, marital status, religion, age or disability;
- Applications will be reviewed on an ongoing basis until the position is filled;
- An assessment committee will review the applications and select candidates based on guidelines that aim to ensure equal opportunities;

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- The main criteria for selection will be the correspondence of the existing skills and expertise of the applicant with the requirements mentioned above.

PhD additional conditions:

- Supervisor at LIST: Antje Bieseemeier
- Work location: Luxembourg Institute of Science and Technology (LIST), Belvaux, Luxembourg
- PhD enrolment: University of Luxembourg, Doctoral School in Science and Engineering (DSSE): Systems and Molecular Biomedicine

Please note the universities costs are at the charge of the student.

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