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Vacancy

Postdoctoral research fellowship – neutron imaging for biomaterials

We are seeking a highly motivated postdoctoral research fellow to advance bio-mechanical materials research at the structural level using the Institut Laue Langevin's Neutron and X-ray Tomograph (NeXT) instrument. This position will focus on pushing the boundaries of high-resolution imaging for biomaterials and investigating the potential of neutron imaging techniques for micro-structural analysis. The successful candidate will work closely with Dr. Alessandro Tengattini, co-responsible for the neutron imaging instruments NeXT and MoTo at ILL, to develop innovative approaches in this cutting-edge research area.

Candidates must submit a research plan (3-5 pages, maximum 10 pages) directly related to this research topic, outlining work to be conducted during the fellowship period.

This research fellow position is part of the EU cofund research project AMBER, Advanced Multiscale Biological imaging using European Research infrastructures, will address scientific and sectoral gaps in biological imaging ranging from molecular, through cellular, to tissue, organ and organism levels of organisation, and is coordinated by LINXS Institute of advanced Neutron and X-ray Science.

AMBER is funded by the EU Marie Skłodowska-Curie (MSCA) COFUND scheme.

Around 20 postdocs/research fellows will be recruited in the fourth call 2025, with each fellowship lasting 36 months.

Your work may include clinical and biomedical projects. It may also include technique development work aimed at combining imaging techniques and data analysis to provide a more integrated picture of life processes in the context of health and disease. To be a postdoc fellow at the AMBER programme you will get unprecedented medical, biological, and methodological capabilities, with a profound potential impact for Europe's next generation of research and researchers. When you have completed the AMBER programme you will be extraordinarily well equipped to further your career in academia, at infrastructures, in the health and MedTech sectors, and beyond.

For more information about the total announced post-doctoral/research fellow positions within in the AMBER cofund project please visit <https://www.euraxess.se/jobs/341970>

The interviews will start in November 2025. For more information about AMBER, application and evaluation process etc please visit: ambercofund.eu

Qualification requirements

Minimum requirements are:

- candidate needs to have a maximum 8 years after a doctoral degree (PhD), as required by the project Grant Agreement signed with the European Commission,
- at least one original publication in a peer-reviewed journal,
- a background in the relevant methods,
- a complete application package submitted through the AMBER portal (including CV and detailed research plan),
- and finally, strict compliance with the MSCA mobility rule that the researcher must not have resided or carried out his/her main activity (work, studies, etc.) in the host organisation's country for more than twelve months in the three years immediately prior to the call deadline.

Incomplete applications will not be considered. Please make sure that you upload all the required documents specified below i-ix.

Applications shall be written in English and all documents shall be in pdf format.

- i) A Curriculum Vitae (europass format). Your CV shall be exported to a PDF file that you use in your application.
- ii) A detailed research plan including any foreseen secondments (candidates can suggest more than the mandated one, they can also suggest their own secondments), schools and conferences as well as a templated budget plan. (as concise as possible, recommended about 3-5 pages, but at an absolute maximum 10 pages). The research plan should include a half page of summary/abstract.

Give your career a new dimension

The Institut Laue-Langevin (ILL) is based in Grenoble (France) and operates Europe's leading research facility for basic research with neutrons. United by our passion for progress and technology, we drive science and research forward every day. Together, we can pave the way for discoveries that will help to make our world a better place.

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Additional texts to include in the PDF are:

- iii) Letter of Commitment from any additional secondment partners the candidate wishes to bring onboard.
- iv) Evidence of English proficiency (minimum CEFR B2-2 also checked at interview).
- v) A draft Individual Career Development Plan (ICDP).
- vi) Two reference letters.
- vii) Any additional documents to support the application.
- viii) Ethical questionnaire (HE ethics checklist + research ethics commitment)

In addition, the application will require:

- ix) Any candidate can apply for a maximum of 3 positions. You must apply for each individual position. A list with order of preference of positions should be sent to the AMBER management: amber@linxs.se

Context

This 3-year postdoctoral research fellowship is part of the EU Marie Skłodowska-Curie (MSCA) COFUND research project AMBER, Advanced Multiscale Biological imaging using European Research infrastructures. This project will address scientific and sectoral gaps in biological imaging ranging from molecular, through cellular, tissue, organ and organism levels of organisation, and is coordinated by the LINXS Institute of advanced Neutron and X-ray Science.

AMBER has six core partners: Lund University/MAX IV, Sweden, the European Spallation Source (ESS), Sweden, the European Molecular Biology Laboratory (EMBL), the Institut Laue-Langevin (ILL), France, the International Institute of Molecular Mechanisms and Machines (IMOL), Poland, and the Leicester Institute of Structural and Chemical Biology, United Kingdom. For more information about AMBER,

visit: <https://www.ambercofund.eu>

Description of the ILL's Project

At the Institut Laue-Langevin (ILL), the world's most powerful steady state neutron source, advanced beamlines for neutron imaging are available. Notably, NeXT is a state-of-the-art tomographic facility that offers the highest spatio-temporal resolution for neutron (and simultaneous X-ray) imaging. This unique capability makes it an exceptional setting for pioneering scientific research and interdisciplinary collaboration. At NeXT, you will be immersed in an environment that not only places you at the forefront of advanced imaging techniques but also supports the development of innovative and impactful work/research in present-day society.

Neutron and X-ray tomography provide different, and highly complementary information. Notably, in biomaterials neutron imaging allows the study of the hydrogen content and hydrogen-rich phases and their spatial distribution, for example in bones and cartilage. Additionally, neutrons have minimal impact on the biological materials making them ideal for operando studies, where multiple subsequent tomographies are acquired while the sample evolves, for example under mechanical load. Finally, the low opacity of metals to neutrons allows the study of metallic objects such as implants, virtually artifact-free. All this can be combined with simultaneous X-rays, which provide a unique insight into the structural distribution and density variations. In recent times, the facility has achieved record neutron tomographic resolution (e.g. <https://doi.org/10.1364/OE.448932>) and its potential for imaging of biomaterials at high resolution is virtually unexplored. Also, its combined use with X-rays offers a vast, untapped potential, for example in examining bone healing around metallic implants under different types of treatment (e.g. <https://doi.org/10.1088/1361-6560/ac02d4>).

We are looking for a highly motivated postdoctoral researcher to develop research in bio-mechanical materials at the structural level on NeXT and help us push the boundaries of high-resolution imaging for biomaterials and explore the applicability of neutron imaging for the study of their micro-structure. The work will be based at the Institut Laue Langevin and specifically at the Neutron and X-ray Tomograph NeXT-Grenoble. The project will have good access to state-of-the-art medical, natural sciences and bio-engineering facilities.

Name and working place of the Principal investigator

Alessandro Tengattini, Large-Scale Structures group, Institut Laue-Langevin, Grenoble, France, is co-responsible for the neutron imaging instruments NeXT and MoTo. His research focuses on neutron and X-ray imaging for operando studies of porous media and coupled (bio-)chemo-hydro-mechanical processes at the micrometric scale.

Minimum requirements

- PhD in biomedical engineering, structural or molecular biology or biochemistry, ideally with excellent knowledge of programming.
- Applicants need to have a maximum 8 years after a doctoral degree (PhD), as required by the European Commission, in accordance with the MSCA rules.
- At least one original publication in a peer-reviewed journal.
- A complete application package submitted through the AMBER portal (including CV and detailed research plan).
- Strict compliance with the MSCA mobility rule that the researcher must not have resided or carried out his/her main activity (work, studies, etc.) in the host organisation's country for more than twelve months in the three years immediately prior to the call deadline.
- Applicants should be fluent in English, have good communication skills and should demonstrate their ability to develop and conduct high-quality research, both in a team and independently.

Other specific conditions may apply depending on exactly where and which position you are applying for. Website for additional job details: <https://www.ambercofund.eu/for-applicants> or <https://www.euraxess.se/jobs>

What we offer

Quality of life A hub for research and technology, the city of Grenoble is ideally located in the heart of the French Alps (just 3 hours from Paris/Provence by train, 1 hour from Lyon international airport and 1 ½ hours from Geneva). It is important for us that our staff achieve a healthy work-life balance. We therefore offer home working (under certain conditions), generous annual paid leave entitlement and a host of other benefits that you will discover when you arrive!

Prospects We guarantee you a secure 3-year contract in the framework of a project with project-specific funding (“contrat d’usage pour financement nominatif”). Only candidates holding a PhD obtained less than 8 years ago are eligible.

Benefits We offer generous social benefits (expatriation allowance, excellent health cover), moving and relocation assistance (under certain conditions) and an annual productivity bonus. We also offer language courses for you and your partner and subsidies for the use of public transport and the staff canteen, as well as for holidays and a variety of cultural and sports activities.

Sounds interesting?

Then why not take your next career step with us by applying online - in English - via our career portal by **08.09.2025**, quoting reference number **25/33** with a list of publications and the names of 3 referees, including one from your present work place. Please note that all applicants are subject to administrative screening (background checks). For this post, medical fitness for work under ionising radiation is required.

We are committed to equal opportunities and diversity and therefore welcome applications from all suitably qualified candidates.

Apply now

Con copia de la candidatura a: eures.franciasuizabenelux@sepe.es

Indicando la referencia ILL 25/33

Ayudas a la movilidad EURES



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