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## Research fellowship - AMBER cofund project

This research fellow position is part of the EU cofund research project AMBER, Advanced Multiscale Biological imaging using European Research infrastructures, which aims to 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 the LINXS Institute of advanced Neutron and X-ray Science. AMBER is funded by the EU Marie Skłodowska-Curie (MSCA) COFUND scheme. Around 10 postdocs/research fellows will be recruited in the third call 2024/2025, with each fellowship lasting 36 months. 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.

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. As a research fellow at the AMBER programme, you will acquire 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 all of the announced post-doctoral/research fellow positions within the AMBER cofund project, please visit <https://www.euraxess.se/jobs/231943>

The interviews will start in April 2025. For more information about AMBER, the application and evaluation process, etc., please visit: <https://www.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.

***Each project will have additional specific requirements that candidates have to fulfill. Please make sure you check what these are before you apply.***

## Instructions on how to apply:

For more information and documents/templates/europass link, please visit <https://www.ambercofund.eu/for-applicants>.

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

If you are interested in applying for more than one position (maximum 3), you must be prepared to make a full application for each individual position.

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.

## 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](mailto:amber@linxs.se)

## Context

This 3-year 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

Small-angle X-ray (SAXS) and neutron (SANS) scattering are powerful techniques to probe the conformation and structure of biomacromolecules, as well as their interactions in solution on a nanometer scale. Both techniques are complementary: X-rays being sensitive to the electron densities, and neutrons being sensitive

to neutron scattering length densities of the solubilized molecules and the surrounding solvent [Mahieu & Gabel, Acta Cryst. D 2018]. While SAXS (especially when used at synchrotrons) allows a higher throughput and shorter exposure times, SANS has a particular strength for contrast-variation experiments and deuterium-labelling of sub- parts of biomacromolecular complexes and thus allows to mask or highlight specific molecules in complex systems in an efficient way [Härtlein et al. Meth. Enzymol. 2016]. While both techniques are complementary in the sense that they “see” different molecules (proteins, RNA/DNA, lipids...) differently, there are few studies to date using SAXS and SANS jointly and in a systematic way in order to analyse the internal structure of important and complex biological assemblies (e.g. protein-RNA/DNA complexes or solubilized membrane proteins).

In the present AMBER postdoc project, we propose to advance the state-of-the-art of combined SANS/SAXS analysis of biomacromolecular complexes in solution by a joint and extensive SANS and SAXS contrast-variation study of a solubilized membrane protein complex. We will combine a recently developed approach of solvent-contrast variation SAXS [Gabel et al. IUCrJ 2019; Gabel et al. Acta Cryst. D 2022] with SANS solvent-contrast variation and specific deuteration of proteins and lipids/nanodiscs of a solubilized FhuA membrane protein model system. This novel combination is expected to provide unprecedented insight into structural details of the complex in solution, due to the unusually broad range of complementary contrast conditions of (hydrogenated or deuterated) proteins, lipids and nanodiscs with respect to X-rays and neutrons in different solvent conditions (H<sub>2</sub>O/D<sub>2</sub>O in the case of SANS, and electron-rich contrast agents in the case of SAXS). Once validated for our membrane protein model system, we expect this novel approach to be applicable to a multitude of structural studies of important biomacromolecular complexes in solution.

### Name and working place of the Principal investigator

**Frank Gabel** is the head of the “Biology, Deuteration, Chemistry and Soft Matter” (BDCS) group at the Institut Laue-Langevin, Grenoble. His personal research activity focuses on integrated structural biology approaches, in particular using small-angle neutron (SANS) and X-ray (SAXS) scattering to study challenging biomacromolecular complexes of biological and biomedical importance in solution.

### Minimum requirements

- PhD in physics or structural biology/chemistry, with excellent knowledge of biochemistry and molecular biology, including experience in protein expression, purification and characterization by biophysical techniques (e.g. SEC-MALLS).
- Experience in small-angle neutron and X-ray scattering (data collection, data reduction and analysis) would be desirable.
- Applicants need to have a maximum 8 years after a doctoral degree (PhD), as required by the Commission, in accordance with the Horizon-Europe MSCA COFUND project Grant Agreement.
- 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>

## 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 **24.02.2025**, quoting reference number **24/54** 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

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