UNIVERSITY OF LEEDS

CANDIDATE BRIEF

Research Fellow in Biological Mass Spectrometry, Astbury Centre for Structural Molecular Biology, Faculty of Biological Sciences

Salary: Grade 7 (£33,797 – £40,322 p.a.) Due to funding limitations it is unlikely an appointment will be made above £36,914 p.a.

Reference: FBSAS1032

Fixed-term for 3 years (due to funding)

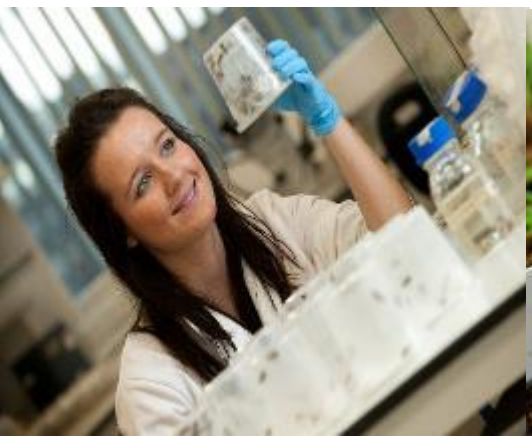
Research Fellow in Biological Mass Spectrometry
Astbury Centre for Structural Molecular Biology, School of Molecular and Cellular Biology

Are you an ambitious researcher looking for your next challenge? Are you looking to apply your skills in Biological Mass Spectrometry, Biochemistry and Biophysics to help gain a new molecular understanding of how proteins undergo phase separation?

We are looking for an outstanding postdoctoral research fellow to join a team of researchers investigating the mechanisms by which membraneless organelles form by phase separation using a combination of structural mass spectrometry, proteomics, biochemistry, biophysics, structural biology and cell biology. You will have experience in the analysis of protein structure, dynamics and assembly using structural mass spectrometry methods (e.g. native mass spectrometry, chemical crosslinking, covalent footprinting and/or hydrogen-deuterium exchange), and complementary biophysical methods. This project focuses on studying the conformational dynamics and early protein-protein and protein-nucleic acid interactions that underlie phase separation mechanisms. In particular, the project will focus on studying the protein TDP-43, which plays a role in in neurodegenerative diseases, including motor neurone disease and dementia, in addition to proteins that form viral replication organelles in Rotavirus-infected cells (NSP5/NSP2). Ultimately, the understanding of membraneless organelle formation afforded by these studies may lead to new treatments for neurodegenerative disease and viral infection.

You will be based in the laboratory of Dr Antonio Calabrese (Sir Henry Dale Fellow), and will work closely with collaborators at Leeds, across the UK and internationally. You will have a PhD (or be close to completion) in Chemistry, Biochemistry, Biophysics or a related discipline. Experience in the use of structural mass spectrometry or proteomics methods is essential and working with cell biological methods would be an advantage.

The University of Leeds and the Faculty of Biological Sciences are committed to providing equal opportunities for all and offer a range of family friendly policies. The University is a charter member of Athena SWAN (the national body that promotes gender equality in higher education), and the Faculty of Biological Sciences was awarded a Silver award in 2020. We are proud to be an inclusive Faculty that values



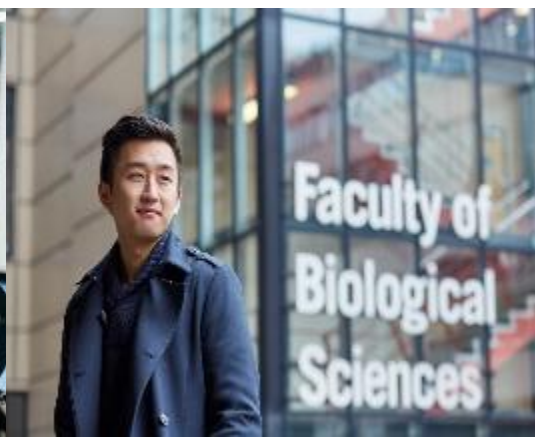
all staff, and are happy to consider job share applications and requests for flexible working arrangements from our employees. Our Athena SWAN webpage provides more information.

What does the role entail?

As a Research Fellow your main duties will include:

- Designing, planning and conducting a programme of investigation, in consultation with Dr Anton Calabrese;
- Production of recombinant proteins and design of mutants for analysis by structural proteomics methods, including native mass spectrometry, chemical crosslinking, hydrogen-deuterium exchange and fast photochemical oxidation of proteins (FPOP);
- Design of variants for labelling with dyes for FRET experiments, conduct of FRET experiments and data analysis;
- Integration of data to derive structural models of proteins (TDP-43, NSP2 and NSP5) and their assemblies;
- Functional interrogation of proteins, e.g. by turbidity experiments and/or confocal imaging methods;
- Development and application of in-cell chemical crosslinking and fast photochemical oxidation of proteins (FPOP) methods to interrogate the architecture and consequences of membraneless organelles in situ;
- Making a significant contribution to the dissemination of research results by publication in leading peer-reviewed journals, and by presentation at national and international meetings;
- Keeping up to date with recent advances in fields of research associated with the project;
- Working independently and as part of a larger team of researchers, both internally and externally to develop new research links and collaborations and engage in knowledge transfer activities where appropriate;
- Contributing to the supervision of junior researchers and PhD students and acting as a mentor to less experienced colleagues;
- Evaluating methods and techniques used and results obtained by other researchers and relating such evaluations to your own research;
- To contribute to, and to encourage, a safe working environment.





These duties provide a framework for the role and should not be regarded as a definitive list. Other reasonable duties may be required consistent with the grade of the post.

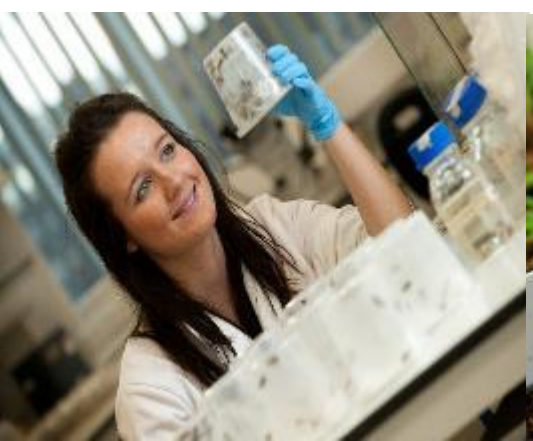
What will you bring to the role?

As a Research Fellow you will have:

- A PhD (or close to completion) in Biochemistry, Chemistry, Physics, Biophysics or a closely allied discipline;
- Experience using structural MS approaches (e.g. native mass spectrometry, chemical crosslinking, and/or hydrogen-deuterium exchange) to study protein structure, interactions and/or assembly;
- Experience in the production of recombinant proteins and design of protein variants;
- Detailed understanding of protein structures and protein dynamics;
- Experience of successful collaborations and team working;
- Good data management, analytical and computer skills;
- The ability to design, execute and write up experimental work independently as well as a proven ability to work effectively and responsibly without close supervision;
- Ability to work well both independently and as part of a team;
- A developing track record of peer reviewed publications in international journals;
- Excellent communication skills, both written and verbal and the ability to communicate your research at national and international conferences;
- Good time management and planning skills;
- A strong commitment to your own continuous professional development.

You may also have:

- Experience in using cell biological assays using cell lines or primary cells;
- Expertise in the use of FRET methods to study protein dynamics;
- Experience in integration of sparse data to derive structural models;
- Experience in the design and construction of instrumentation and/or fluidics devices.



How to apply

You can apply for this role online; more guidance can be found on our How to Apply information page. Applications should be submitted by **23:59** (UK time) on the advertised closing date.

Your application should include:

- A supporting statement providing evidence to support each requirement listed on the 'What will you bring to the role' section of the Candidate Brief (no more than two sides of A4, minimum font size 11);
- An academic curriculum vitae, including a list of your publications.

Contact information

To explore the post further or for any queries you may have, please contact:

Dr Antonio Calabrese
Sir Henry Dale Fellow and University Academic Fellow
Email: a.calabrese@leeds.ac.uk

Additional information

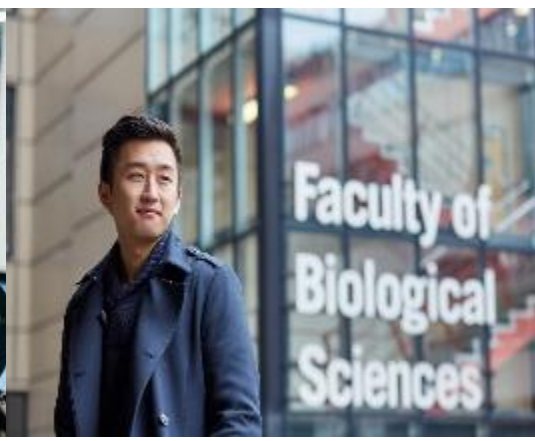
Find out more about the Astbury Centre for Structural Molecular Biology, the Faculty of Biological Sciences and the School of Molecular and Cellular Biology.

Find out more information about the Calabrese lab.

Working at Leeds
Find out more about the benefits of working at the University and what it is like to live and work in the Leeds area on our Working at Leeds information page.

Candidates with disabilities
Information for candidates with disabilities, impairments or health conditions, including requesting alternative formats, can be found on our Accessibility information page or by getting in touch with us at disclosure@leeds.ac.uk.





Criminal record information

Rehabilitation of Offenders Act 1974
A criminal record check is not required for this position. However, all applicants will be required to declare if they have any 'unspent' criminal offences, including those pending.

Any offer of appointment will be in accordance with our Criminal Records policy. You can find out more about required checks and declarations in our Criminal Records information page.