



UNIVERSITY OF LEEDS

CANDIDATE BRIEF

Research Fellow in Biochemistry/Biophysics, Astbury Centre for Structural Molecular Biology, Faculty of Biological Sciences



Salary: Grade 7 (£33,797 – £40,322 p.a.) Due to funding restrictions it is unlikely an appointment will be made above £34,804.

Reference: FBSAS1044

Fixed-term for 3 years (due to funding)

Post-doctoral Research Fellow in Biochemistry/Biophysics Astbury Centre for Structural Molecular Biology, School of Molecular and Cellular Biology

Are you looking to apply your skills in Biochemistry/Biophysics to help gain a new molecular understanding of how proteins assemble into amyloid fibrils and help to develop new routes to understand the molecular origins of memory formation and memory loss in disease?

We are looking for an outstanding research fellow to join a well-established interdisciplinary team that is investigating how proteins aggregate into amyloid fibrils and cause disease. This Royal Society-funded post-doctoral fellowship aims to determine the mechanisms of amyloid formation *in vitro*, in cells and in model organisms. You will focus on two contrasting protein systems, one involved in neurodegeneration associated with Parkinson's disease (α -synuclein (α Syn)), and the second, a functional amyloid (CPEB/Orb2), involved in the formation and storage of long-term memories. Specifically, you will exploit recent advances in biophysical methods, and combine them with structural methods, chemical biology and other approaches, to map the transient protein-protein interactions that drive amyloid formation, to map the dynamic regions of fibrils, and to understand the interactions of fibrils in cells. The outcome will be a transformation in our understanding of how amyloid fibrils create memory, and new opportunities to target the dynamic interactome of amyloid fibril assemblies for human benefit.

You will be based in the laboratory of [Professor Sheena Radford](#). You will have a PhD (or be close to completion) in Chemistry, Biochemistry, Biophysics or a related discipline. You will also have experience of using biophysical and biochemical methods to analyse protein structure and assembly and protein interactions. Experience in the use of biophysical methods to analyse protein dynamics and/or protein interactions *in vitro* and in cells would be an advantage.

Further information about the project and our recent publications are available within the additional information document.



What does the role entail?

As a Research Fellow, your main duties will be:

- Designing, planning and conducting a programme of investigation, in consultation with [Professor Sheena Radford](#);
- Generating independent and original research ideas and methods in biophysics and protein biochemistry with an aim to extend the Radford group research portfolio;
- Designing and creating mutants and producing recombinant proteins, including proteins containing non-natural amino acids;
- Creating amyloid fibrils of α Syn and CPEB/Orb2 *in vitro* and purifying amyloid from tissue/model organisms for biochemical and biophysical characterisation;
- Using biophysical methods (e.g. fluorescence methods, HX-MS, cross-linking-MS or other footprinting methods, or other relevant approaches) to map the structural cores of amyloid fibrils and to determine the extent of dynamic excursions of their mobile flanking regions;
- Using cross-linking/footprinting methods to identify interactions in α Syn/Orb2 monomers, oligomers and fibrils and to map their interactome *in vitro* and in cells;
- Collaborating with others to develop functional assays in cell lines, insect cells and iPSC-derived dopaminergic neurones;
- Integrating information from the above approaches to develop a new molecular understanding of amyloid in memory formation and loss;
- Contributing to the supervision of junior researchers and PhD students and acting as a mentor to less experienced colleagues;
- 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;
- 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;
- Evaluating methods and techniques used and results obtained by other researchers and relating such evaluations to your own research.

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 be close to completion) in Chemistry, Biochemistry, Biophysics or a related discipline;
- Extensive experience in the production of recombinant proteins and the design of protein variants for the analysis of biomolecular mechanisms (e.g. folding and/or assembly);
- Experience of using biophysical methods to study protein structure, folding, binding and/or assembly;
- Experience of working with proteins and protein complexes;
- Extensive experience of using biophysical and computational methods to understand macromolecular behaviour;
- Detailed understanding of protein structures and protein dynamics;
- Experience of successful collaborations and team working;
- Good data management, analytical and computer skills and experience of using software for fitting biophysical data;
- 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;
- The desire and drive to learn new skills and techniques;
- Imagination, creativity and ambition to drive new areas of science.

You may also have:

- A BSc in Biochemistry, Chemistry, Biophysics or a related subject;
- Experience of working in the fields of protein assembly, protein-protein interactions or protein aggregation and amyloidosis;
- Experience with developing instrumentation and new methods;
- Experience of programming and computational modelling of proteins protein systems;
- Experience of using cell biological assays using cell lines or primary cells, especially applied to amyloid-associated cytotoxicity.

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:

[Sheena E Radford](#), Astbury Professor of Biophysics

Tel: +44 (0)113 343 3170

Email: s.e.radford@leeds.ac.uk

'Please note: If you are not a British or Irish citizen, from 1 January 2021 you will require permission to work in the UK. This will normally be in the form of a visa but, if you are an EEA/Swiss citizen and resident in the UK before 31 December 2020, this may be your passport or status under the EU Settlement Scheme.'

Additional information

Find out more about the [Astbury Centre for Structural Molecular Biology](#) in the [School of Molecular and Cellular Biology](#) in the [Faculty of Biological Sciences](#). Find out more information about the [Radford research group](#).

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.

A diverse workforce

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.

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.

