UNIVERSITY OF LEEDS

CANDIDATE BRIEF

Research Fellow in Glycan-lectin Interaction and Signalling Across the Membrane

Salary: Grade 7 (£39,105 – £46,485 p.a. depending on experience)

Reference: ENVFS1137

Fixed term for 24 months from 1st May 2025 to complete time limited work.

We are open to discussing flexible working arrangements.

Research Fellow in Glycan-lectin Interaction and Signalling Across the Membrane, School of Food Science and Nutrition, Faculty of Environment

Overview of the Role

Are you an ambitious researcher looking for your next challenge? Do you have a background in glycan-lectin interaction studies? Are you interested in exploiting multidisciplinary approaches to address challenging biological questions? Do you want to further your career in one of the UK's leading research-intensive universities?

We are looking for a highly motivated BBSRC-funded Postdoctoral Research Fellow to join a dynamic, interdisciplinary team, focusing on employing carbohydrates synthesis, surface biophysical and high-resolution imaging techniques to elucidate the mechanisms underlying how multivalent interactions induce protein clustering on surfaces and modulate immune cell signalling. You will actively work with supervisors from the Schools of Food Science & Nutrition, Chemistry, Physics & Astronomy and Chemical & Process Engineering. The supervision team has strong track records (see example papers, *J. Am. Chem. Soc.* **2017**, *139*, 10833; **2020**, *142*, 18022; **2022**, *144*, 17346; *Nature Chem*. **2020**, *12*, 832; *Angew. Chem*. **2022**, *134*, e202206919; *JACS Au*, **2023**, *3*, 1755; *Adv. Mater.* **2021***, 33, 2008307*) and complimentary expertise and skills in this research field.

You will be responsible for the chemical synthesis of target glycans, conjugating them onto nanoparticle surfaces, monitoring how their binding induces surface anchored protein clustering and re-arrangement, and correlating results with cellular function outcomes. The project aims to deepen our understanding of how extracellular multivalent binding signals are transmitted across cell membranes and regulate immune cell functions, allowing us to manipulate immune responses using multivalent glycans as potential effective treatments against infectious and autoimmune diseases and other immune dysregulation diseases, including cancer.

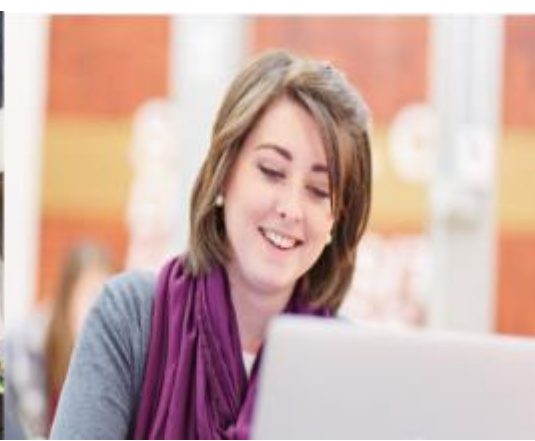


Main duties and responsibilities

- Synthesizing target glycans by chemical synthesis, purifying and characterizing them using chromatography, NMR and mass spectrometry;
- Preparing and characterising compact, polyvalent glycan-nanoparticles (e.g., quantum dots/rods, gold nanoparticles) with tuneable glycan density and flexibility.
- Investigating glycan-nanoparticle binding induced protein clustering and re-organisation on supported lipids bilayers using super-resolution fluorescence and transmission electron microscopy;
- Investigating the effect of glycan-nanoparticle binding on lectin clustering on dendritic cell (DC) immune functions (e.g., DC maturation, cytokine production);
- Taking a lead role, with guidance and supervision from the principal investigators, to move the project forward;
- Assisting in the identification and development of potential areas of research and drafting research papers for publication in leading international journals;
- Disseminating research results through presentations in recognised national and international conferences and other events. Engaging in knowledge-transfer and public-engagement activities where appropriate;
- Continually updating your knowledge, understanding and skills in the research field in which you work;
- Contributing to, and encouraging, a safe working environment.
- Evaluating methods and techniques used and results obtained by other researchers and to relate such evaluations appropriately to your own work;
- Working both independently and also as part of a larger team of researchers, engaging in knowledge-transfer activities where appropriate and feasible;
- Maintaining your own continuing professional development and acting as a mentor to less experienced colleagues as appropriate, including the assistance of project supervision to both undergraduate and postgraduate students in areas relevant to this project;

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.





Qualifications and skills

Essential

- A PhD or near completion i.e the initial thesis needs to have been handed in at the point of application, in the field of synthetic carbohydrate chemistry, or a related discipline;
- Excellent skills in organic chemistry, glycan synthesis, purification, characterization, and good knowledge in biophysical studies of protein-ligand interactions, and data interpretation;
- The ability to design, execute and write up research independently, to the standard required for international publications;
- 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, managing competing demands and work effectively under pressure without close support, and efficiently meeting deadlines;
- Attention to detail, a commitment to performing high quality research, and willingness to work positively and proactively with colleagues;
- A proven ability to work well individually and in a team;
- A strong commitment to your own continuous professional development.

Desirable

- A proven track record of peer-reviewed publications in high impact, leading international journals;
- Experience of pursuing external funding to support research;
- Experience in anchoring proteins on supported lipid bilayers, super-resolution imaging.
- Experience in cell biology assays such as FACS, and confocal fluorescence microscopy.

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.



Contact information

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

Dr Yuan Guo
Email: y.guo@leeds.ac.uk

Professor Dejian Zhou
Email: d.zhou@leeds.ac.uk

Additional information

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.

Please note that this post may be suitable for sponsorship under the Skilled Worker visa route but first-time applicants might need to qualify for salary concessions. For more information please visit: www.gov.uk/skilled-worker-visa.

For research and academic posts, we will consider eligibility under the Global Talent visa. For more information please visit: https://www.gov.uk/global-talent.

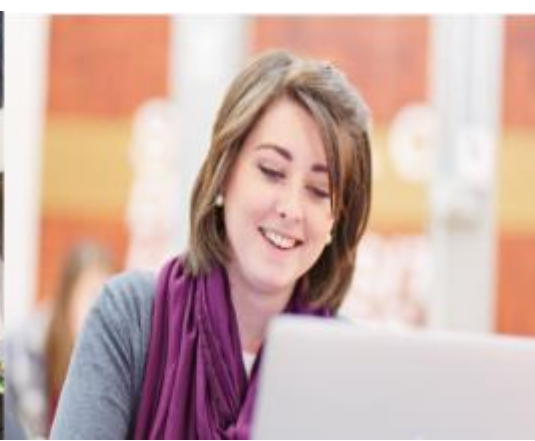
Find out more about our Faculty of Environment and Faculty of Engineering and Physical Sciences

Find out more about the School of Food Science and Nutrition, School of Chemistry, School of Physics and Astronomy and School of Chemical and Process Engineering

Find out more about Equality in the Faculty

Working at Leeds
We are a campus-based community and regular interaction with campus is an expectation of all roles in line with academic and service needs and the requirements of the role. We are also open to discussing flexible working arrangements. To find out more about the benefits of working at the University and what it is like to live and work in the Leeds area visit our Working at Leeds information page.





Information for disabled candidates
Information for disabled candidates, impairments or health conditions, including requesting alternative formats, can be found under the ‘Accessibility’ heading on our How to Apply information page or by getting in touch by emailing HR via hr@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.