Candidate Information

Position:	Research Assistant
School/Department:	School of Medicine, Dentistry and Biomedical Sciences
Reference:	25/112471
Closing Date:	Monday 28 April 2025
Salary:	£33,785 per annum
Anticipated Interview Date:	Thursday 8 May 2025
Duration:	18 months or until 30 April 2027, whichever is soonest

JOB PURPOSE:

To join the Inflammasome Biology research team led by Dr Rebecca Coll at the Wellcome-Wolfson Institute for Experimental Medicine (WWIEM). The position will involve working as part of an MRC-funded research programme investigating the molecular mechanisms underlying the inflammatory response to ferritin and how inflammasome activation and ferritin contribute to the pathogenesis of acute respiratory distress syndrome (ARDS).

This project will investigate the ferritin-inflammasome axis in a range of human cell types and patient samples using biochemical, genetic, and immunological approaches. Successful applicants will have responsibilities in independent research, supervision, planning, day-to-day lab management, collaborations, and outreach. The post is suited to an ambitious and collaborative individual and is available for 18 months.

Applications are invited from highly motivated, efficient, and organised individuals with a strong commitment to research. The successful candidate will have a background in immunology, respiratory biology, biochemistry, or cell biology and will be seeking an ambitious research project in a well-supported environment.

MAJOR DUTIES:

1. To be actively involved in the existing ferritin/inflammation research programme as directed by the supervisor and to ensure adequate planning and progression so that the overall research objectives for the project are met.
2. Carry out cell culture of hiPSC-derived macrophages, primary human monocyte-derived macrophages, primary human monocytes, human monocytic cell lines (THP-1) and primary human epithelial cells and cell lines.
3. Carry out inflammasome assays including: pyroptosis (LDH), ELISAs for cytokine release, western blotting (cleaved caspase-1, GSDMD, IL-1B), and fluorescence microscopy to detect ASC specks.
4. Carry out assays for innate immune cell signalling including Western blotting for signalling pathways e.g. MAPK, NFKB.
5. Perform siRNA in primary human macrophages and iPSC-derived macrophages.
6. Use microscopy to analyse ferritin localisation and interactions.
7. Carry out analysis of RNA sequencing and proteomics datasets.
8. Carry out analysis of ARDS patient samples for inflammasome biomarkers.
9. Carry out analysis, critical evaluation, and interpretation using methods and techniques appropriate to area of research.
10. Prepare and maintain adequate laboratory records of methods, sample details and results in a timely fashion.
11. Maintain up-to-date knowledge of the field of inflammasomes and ARDS.
12. Present regular progress reports on research to members of the research group or to external audiences to disseminate and publicise research findings.
13. Prepare, in consultation with supervisor, publications for leading international journals, and presentations at national and international conferences.

14. Carry out administrative tasks associated with the research projects/group to ensure that projects are completed on time and within budget and that the group functions efficiently. These might include organisation of project/group meetings and documentation, financial control, stock management/procurement, risk assessment of research activities and development of SOPs.
15. Carry out school/undergraduate/post-graduate student and visiting researcher training and supervision.
16. Participate in local research-related activities such as journal clubs, training sessions, Institute seminar series etc.
17. Additional research and/or laboratory related duties including outreach activities, within the general range of the post and competence of post holder.

ESSENTIAL CRITERIA:

1. Degree in immunology, biochemistry, respiratory biology, cell biology, molecular biology, or a relevant biomedical science.
2. Significant hands-on experience in the following:
   - Culture of human iPSC-derived macrophages and primary human macrophages.
   - Use of siRNA in human macrophages.
   - Assays for measuring innate immune signalling pathways including Western blotting, ELISAs, cell death assays, and ASC speck formation assays.
   - Confocal and fluorescence microscopy.
   - RNA sequencing experiments and analysis.
   - Handling of patient samples and knowledge and training in the Human Tissue Act.
3. Methodical approach to project management and meticulous about experimental procedures and record keeping.
4. Up-to-date knowledge in the field of inflammasomes, innate immune signalling pathways and ARDS.
5. Strong interpersonal skills.
6. Ability to communicate complex information clearly.
7. Competent in giving effective and informative oral and poster presentations.
8. Highly ambitious, motivated, efficient, and organised.
9. Demonstrable intellectual ability.
10. Strong ability to work from own initiative.
11. Excellent problem-solving skills.
12. Excellent teamwork skills.
13. Must be prepared to work irregular hours including evening, weekend and other out-of-hours work on an ad-hoc basis as required.
14. May be required to travel for training, meetings, and conferences on an ad-hoc basis as required.

DESIRABLE CRITERIA:

1. Postgraduate qualification in a relevant area.
2. Experience with mass-spectrometry based proteomics experiments and analysis.
3. Original research publications in peer-reviewed journals commensurate with career stage.
4. Experience teaching/supervising undergraduate students and visiting researchers in the laboratory.
5. Research project management experience.
6. Ability to assess and organise resources.