

Candidate Information

Position: Research Fellow
School/Department: School of Medicine, Dentistry and Biomedical Sciences
Reference: 25/113044
Closing Date: Monday 15 December 2025
Salary: £41,159 - £49,536 per annum.
Duration: 33 months or until 30 November 2028, whichever is soonest

JOB PURPOSE:

The Microbial Biochemistry and Pathogenesis group of Professor Valvano, in the Wellcome-Wolfson Institute for Experimental Medicine, is looking for an ambitious, highly motivated individual with demonstrated research skills on cellular models of bacterial infection in macrophages, strong bioinformatics skills, molecular microbiology, and protein structure/function. The candidate will contribute to ongoing research aiming to understand the molecular and cellular pathogenesis of *Enterobacter* clinical isolates in the context of human infection.

We seek applicants with recent experience working with human primary macrophages and epithelial cells. Strong interpersonal skills and a passion for collaborative research are essential. The successful candidate will have a demonstrated background in molecular microbiology and genetics, cellular biology techniques to examine the course of infection in human cells, and strong expertise in bioinformatics including the bioinformatics analyses of bacterial protein families.

Applications are invited from individuals with combined expertise in microbiology, microbial genetics, molecular biology, cell biology, and bioinformatics with a strong commitment to research. The post holder should have (or about to complete) a relevant PhD, as demonstrated by evidence of first-author publications, and recent research experience in cell culture, handling of Gram-negative pathogenic bacteria, and microbial molecular biology including transcriptomics.

Further information:

<https://pure.qub.ac.uk/en/persons/miguel-a-valvano>

<https://publish.uwo.ca/~mvalvano/>

<https://www.qub.ac.uk/research-centres/wwiem/>

MAJOR DUTIES:

1. Conceive experimental strategies to achieve high level project aims in discussion with other members of the team.
2. Oversee management of the *Galleria* infection facility within the Infection Biology Group, with assistance from facility technicians.
3. Design, conduct, and analyse experiments involving isolation and culture of primary human macrophages and primary epithelial cells.
4. Design, develop, and refine bacterial infection experiments in primary human macrophages and primary epithelial cells.
5. Design, conduct and analyse experimental infections in cells using bacterial colony counts and multiple imaging methods, as applicable.
6. Design and conduct experiments to determine the subcellular bacterial localisation by confocal fluorescence microscopy of intracellular compartments/organelles and associated bacteria.
7. Design, conduct and analyse ELISA assays for cytokines, Western blot analyses or like to detect components of the inflammasome and/or specific cellular proteins
8. Creatively develop new molecular cloning/mutagenesis protocols suited for the manipulation of *Enterobacter* species, singly and in high-throughput settings, to discover bacterial genes involved in bacterial persistence/survival in macrophages.

9. Present regular progress reports on research to members of the research group, other groups within the University and to external audiences nationally and internationally to disseminate and publicise research findings.
10. Prepare, in consultation with co-authors, material for publication in national and international journals and presentations at international conferences.
11. Assist the PI in the preparation of funding proposals, grant applications, and project progress reports to external bodies. Maintaining a clean and organised laboratory workspace; assisting in the preparation and storage of reagents and experimental materials; supporting the upkeep and maintenance of laboratory equipment.
12. Carry out routine 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.
13. Carry out school/undergraduate/post-graduate student and visiting researcher training and supervision, demonstrating, tutoring or lecturing duties within the post holder's area of expertise and under the guidance of a member of academic staff.
14. Responsible for accurate and detailed documentation of experimental procedures, data, and results; monitoring and advising on project costs and stock levels relating to the programme of work; collaborating with the research team to maintain organised records of the project's progress.
15. Participate in, and in some cases lead, outreach activities on behalf of the group.
16. Assist in assessment of research communications and data, particularly within the group.
17. Additional research and/or laboratory related duties including outreach activities, within the general range of the post and competence of post holder.
18. Providing help and guidance to research students and newly appointed staff on equipment use and laboratory procedures/techniques.
19. Any other duties that fall within the general ambit of the post.

ESSENTIAL CRITERIA:

1. Have or be about to obtain*(laboratory work complete) a PhD in molecular biology, microbial genetics, structural biology or a related area of biomedicine. * Must be obtained within 3 months of date of interview.
2. Significant, recent research experience in state-of-the-art molecular and cellular infections in eukaryotic cells, microbiology, cell culture, and bioinformatic approaches to identify and characterisation of bacterial secretion systems.
3. Extensive, recent, hands-on experience of using at least 3 standard molecular biology techniques (such as, but not limited to Gibson ligation, two-hybrid systems for protein-protein interaction, proteomics, etc.) to answer biological questions.
4. Significant experience in handling Gram-negative bacterial pathogens relevant to the project.
5. Demonstrated experience in culturing macrophages and epithelial cells.
6. Recent experience with identification by confocal fluorescence microscopy imaging of intracellular compartments/organelles and associated bacteria.
7. Demonstrated experience in protein bioinformatics, especially in silico modelling using AlphaFold or similar, clustering analysis techniques, gene synteny, etc.
8. Experience teaching/supervising /mentoring postgraduate/ undergraduate/ school students and visiting researchers in the laboratory.
9. Methodical approach to project management and meticulous regarding experimental procedures and record keeping.
10. Highly motivated, efficient, organised and show a commitment to, and interest in, research topic.
11. Demonstrated experience on detailed documentation of experimental procedures, data, and results.
12. Demonstrated strong initiative and independence in thought and work but also to work within a highly collaborative team to support/train other team members as appropriate.
13. Competent in maintaining knowledge of cutting-edge of field of expertise.
14. Very good oral and written communication skills and excellent time management skills.
15. Competent in delivering effective oral and poster presentations.
16. Competent in communicating stipulated research skills essential to the post in CV/job application.
17. Strong ability to work from own initiative.
18. Strong capacity to meet deadlines.
19. Excellent team working skills in multiple internal and external team settings.
20. Leadership qualities.
21. Excellent problem-solving skills.
22. Irregular hours including evening, weekend and other out-of-hours working will be a component of the research at times.

23. Must be willing to travel to national and international meetings and collaborative laboratories.

DESIRABLE CRITERIA:

1. First-author primary research publication(s) in an area(s) related to the project.
2. Demonstrated experience in bacterial mutagenesis (e.g., making gene deletion mutants) in Gram-negative bacteria, especially *Enterobacter* species.
3. Relevant experience in purification and Western blot analysis of bacterial proteins.
4. Relevant experience in proteomics analyses of bacterial proteins.
5. Relevant experience in transmission or scanning electron microscopy of cells.
6. Recent experience in handling *Enterobacter* pathogens.
7. Experience with infection quantification in cells and confocal fluorescent imaging methods using live or fixed samples, relevant to the project.
8. Familiarity with Python coding.
9. Experience teaching lab members as well as undergraduate lectures/tutorials/practicals.
10. Experience working in outreach settings.
11. Research project management training.
12. Demonstrated up-to-date knowledge of fields of bioinformatics concerning the characterisation of bacterial secretion systems, Python coding and genomics.
13. Proficient in the use of statistical/graphical software to represent experimental data
14. Evidence of oral presentations/invitations at scientific conferences.

ADDITIONAL INFORMATION:

Informal enquiries can be directed to: Dr. Julia Monjaras Feria - J.MonjarasFeria@qub.ac.uk.