

THE UNIVERSITY OF MANCHESTER  
PARTICULARS OF APPOINTMENT  
FACULTY OF SCIENCE & ENGINEERING  
DEPARTMENT OF CHEMISTRY  
RESEARCH ASSOCIATE IN BIOCHEMISTRY / CHEMICAL BIOLOGY  
VACANCY REF: SAE-027796

<b>Salary:</b>	Grade 6, £36,924 to £45,163 per annum, depending on relevant experience
<b>Hours:</b>	1 FTE
<b>Duration:</b>	Fixed term available for 3 years
<b>Location:</b>	Oxford Road, Manchester

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**Enquiries about the vacancy, shortlisting and interviews:**

Name: Professor Elizabeth Fullam

Email: [elizabeth.fullam@manchester.ac.uk](mailto:elizabeth.fullam@manchester.ac.uk)

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**Background and Overall Purpose of the Job**

**What scientific question will you investigate? / Outline of the project aims**

Tuberculosis (TB), caused by *Mycobacterium tuberculosis* (*Mtb*), remains the leading cause of death world-wide from a single bacterial pathogen, with over 10 million new cases and more than 1 million deaths each year. To eradicate TB infections, we urgently need to unravel *Mtb* pathogen biology to be able to develop next generation therapies and diagnostics. However, *Mtb* is a remarkably successful pathogen that, unlike other bacteria, survives within the human body for decades. Yet almost nothing is known about the 'diet' of this deadly pathogen. This project aims to take a chemical biology/biochemical approach to unravel which nutrients *Mtb* uses and when at the molecular level. Understanding how *Mtb* access and uses nutrients will provide critical insights into its biology and inform tactics to thwart this deadly pathogen. Specifically, this project will investigate how *Mtb* recognises, transports and uses the vital energy sources it needs to survive.

**About the research group**

You will join Professor Elizabeth Fullam's dynamic research group at the Manchester Institute of Biotechnology and Michael Smith Building at the University of Manchester. We are equipped with cutting-edge facilities, bioanalytical equipment required for this project. Our diverse team

integrates chemistry, biochemistry and microbiology to explore and manipulate mycobacterial nutrient utilisation.

We pride ourselves on fostering a supportive and inclusive research environment. You will be embedded in a vibrant research community at Manchester with excellent opportunities for professional development and growth.

### **About you**

We are looking for an experienced and motivated researcher to join our team in a project investigating how *Mycobacterium tuberculosis* (*Mtb*) utilises nutrients. You will apply a range of biochemical and biophysical techniques to study mycobacterial transport systems and proteins involved in nutrient metabolism. This will involve the production and purification of proteins and protein complexes alongside establishing and performing biochemical, biophysical, and structural analyses of these systems. You will report directly to Professor Elizabeth Fullam. A strong research track record is essential with demonstrated ability to lead and finish projects. You must have excellent communication, presentation, interpersonal and teamworking skills. You will contribute to a positive and collaborative research culture.

For further information regarding the skills required for this role please see the personal specification section of the attached job description.

### **Key Responsibilities, Accountabilities or Duties**

- To take initiatives in the planning of research (design and perform experiments).
- To conduct individual and collaborative research projects.
- To identify and develop suitable techniques, and apparatus, for the collection and analysis of data.
- Use initiative and creativity to identify areas for research, develop new research methods and extend the research portfolio.
- Use creativity to analyse and interpret research data and draw conclusions from the outcomes.
- To plan and manage own research activity in collaboration with others.
- To balance with help the competing pressures of research and administrative demands and meet deadlines.
- To communicate complex information, orally, in writing and electronically.
- To communicate material of a specialist or highly technical nature.
- To ensure the validity and reliability of data at all times.
- To maintain accurate and complete records of all findings.
- To actively read the scientific literature relating to (and around) the project
- To continually update knowledge and understanding in field or specialism.
- To write reports.
- To prepare material for presentation in oral and poster formats, and present findings to colleagues, and at conferences.
- To attend and contribute to relevant meetings, workshops and conferences as necessary
- To write up research work for publication
- To contribute to writing bids for research grants.

- To assist in the development of PhD/undergraduate students, supervise practical work and advise students on techniques as agreed.
- To aid the Principal Investigator in the supervision of students
- To work with colleagues on joint projects as required
- Contribute to collaborative decision making with colleagues in areas of research.
- To use research resources, laboratories, facilities and workshops as appropriate.
- To be an active team-member and set positive examples by showing a commitment to achieving results, encouraging and supporting junior members of the team and raising suggestions for continuous improvement.
- To undertake any necessary training and/or development.
- To undertake appropriate administration tasks.
- To maintain safe workplace practice and procedures in accordance with the requirements of Health and Safety legislation.
- Any other duties commensurate with the grade of the post.
- To develop contacts and research collaborations within the Faculty and the wider community.
- To promote the reputation of the laboratory, Faculty and wider University.

### **Person Specification**

#### **Essential Knowledge, Skills and Experience:**

- Hold (or expect to hold shortly) a PhD in Biochemistry/Chemical Biology/Chemistry (or a related subject area).
- Extensive and up-to-date theoretical and practical and specialist knowledge in advanced molecular biology, protein expression and purification and the establishment of biochemical and biophysical assays
- Have sufficient specialist expertise and broad knowledge of research methods and techniques to work within the research programme.
- Have strong IT skills (including experience with common data analysis software)
- Have a developing research profile as appropriate to career stage.
- Excellent interpersonal and communication skills (oral and written) with the ability to work with colleagues at all levels.
- Ability to work collaboratively as part of an interdisciplinary research team and be self-motivated.
- Be able to work independently with an ability to act on own initiative and be self-motivated.
- Have excellent time management and organisational skills and an ability to meet deadlines, with an ability to make decisions, organise and prioritise own workload.
- Desire to contribute to the work of others by offering practical and intellectual help.
- Proven ability to use initiative to efficiently plan, optimise and progress project and communicate findings.
- Have excellent problem-solving skills and an ability to know when to refer to others for advice
- The ability to analyse data, write up and communicate data.
- Be able to keep meticulous and accurate written records
- Flexible approach to dealing with research problems as they arise.
- Committed to continuous learning and professional development

- Ability to assess and organise resources and contribute to broader management processes
- Excellent written and spoken English

**Desirable Knowledge, Skills and Experience:**

- Experience in working with mycobacteria at containment level 2 or higher
- Expertise in the production of mycobacterial proteins
- Experience in the production and purification of membrane proteins
- Relevant structural biology expertise
- Previous experience of supervising other research colleagues or PhD students
- Relevant experience in the development of funding proposals to support research projects.

**Background Information:**

**The University of Manchester**

The University of Manchester was the world's first 'industrial city' and has since been a prodigious source of pioneers and innovators. Many major advances in the 20th century began in the University's laboratories, such as the work by Rutherford leading to the splitting of the atom and the development of the world's first stored programme computer by Williams and Kilburn. Today, research remains at the heart of The University of Manchester.

On October 1st 2004, The University of Manchester, created as a result of the merger of the Victoria University of Manchester and UMIST, became the largest in the UK, with an income of £600 million, more than 35,000 students and 11,000 staff. We have used the golden opportunity of its creation, and a £600 million capital programme to plan a revolutionary agenda. We have modernised management and administration, made long-term academic plans for all subjects, established key priorities for interdisciplinary research in areas of science and technology at the cutting edge of progress in industry and commerce, and set a target to more than double the volume of research activity performed in collaboration with external partners. By 2020, The University of Manchester aims to hold a world-class leading research profile and be among the top 25 universities worldwide. The University is pursuing this agenda in the context of the city of Manchester's dramatic regeneration over the past 20 years. The aim is to make the world's first industrial city a great post-industrial city. A vibrant culture of creative industries, entrepreneurs, and technology-based start-ups is served by iconic buildings and a re-modelled city centre – and now by a powerful, consolidated research university. Now and in the coming years we look forward to welcoming the very best staff, students and industrial partners from around the world.

Further information about the University and its faculties may be found on the University's website ([www.manchester.ac.uk](http://www.manchester.ac.uk)).

**Manchester Institute of Biotechnology**

Biotechnology is a field of biology that involves the manipulation of living organisms and bioprocesses in engineering, technology, medicine and other fields for human benefit. Interdisciplinary in nature it draws on the pure biological sciences and in many instances is dependent upon knowledge and methods outside of biology at the engineering and physical sciences interface.

The strong interdisciplinary focus and mode of operation in the MIB enables our scientists and engineers to drive state-of-the-art biotechnology research through establishing new types of collaboration. The MIB's approach is pluralistic, integrative and non-exclusive, functioning flexibly as a partner to researchers across a broad spectrum of disciplines which are fluid and constantly evolving. Using advanced quantitative methods to explore the relationship between the macro behaviour of biological systems and the properties of their nanoscale components we see this understanding as a basis for developing new biotechnologies that will find applications in areas such as human health, the energy economy, food security, industrial transformations and the environment. A defining feature of our mission is the incorporation of rigorous, cutting-edge principles and technologies derived from the physical sciences, engineering, mathematics and computation into novel approaches to elucidating the molecular mechanisms that underpin living processes and systems. An extensive programme of technology development lies at the heart of our research programmes, driven by expertise from the quantitative sciences and engineering, allowing us to accelerate progress through the implementation of state-of-the-art enabling technologies.

Further information can be found at <http://www.mib.manchester.ac.uk/>