

THE UNIVERSITY OF MANCHESTER
PARTICULARS OF APPOINTMENT
FACULTY OF SCIENCE & ENGINEERING
SCHOOL OF NATURAL SCIENCES
DEPARTMENT OF CHEMISTRY

**FUTURE BIOMANUFACTURING RESEARCH HUB RESEARCH FELLOW: BIOCATALYST
ENGINEERING AND FLOW BIOCATALYSIS (2 POSITIONS)**

VACANCY REF: SAE-016041

Salary:	£41,526 to £51,034 per annum, depending on relevant experience
Hours:	Full Time
Duration:	Fixed Term, from 1 March 2021 until 31 March 2023
Location:	Oxford Road, Manchester

Enquiries about the vacancy, shortlisting and interviews:

Contact: Nigel Scrutton, Director of the FBRH

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Or

Contact: Dr Rosalind Le Feuvre, Director of FBRH Operations

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Project Title: Future BRH Research Fellows: Biocatalyst Engineering and Flow Biocatalysis for Biomanufacture (2 positions).

Project Description

The University of Manchester (UoM) is leading a new Future Biomanufacturing Research Hub (Future BRH, <https://futurebrh.com/>) with Spokes at Imperial, UCL, Nottingham, IBioIC, CPI, and the UK Catalysis Hub at Harwell. Funded by UKRI in 2019 (EPSRC and BBSRC, £10M over 7 years), the Future BRH aims to develop new underpinning technologies based on Industrial Biotechnology (IB) to enable efficient, sustainable and innovative bio-based manufacturing in key sectors: Pharmaceuticals; Value-added Chemicals; Engineering Materials and BioFuels. The Future BRH will connect Hub and Spoke IB strengths in interdisciplinary discovery science with industry to deliver innovative and sustainable biomanufacturing solutions that position the UK at the vanguard of economic [Clean Growth](#) and the forefront of international developments in the global bio-economy.

The Future BRH is hosted by the Faculty of Science and Engineering (UoM) and has its research base in the Manchester Institute of Biotechnology (MIB) which is a cross-disciplinary research Centre that brings together more than 500 researchers with expertise in the foundational sciences supporting IB, including: molecular biology; chemistry; biochemical-engineering; materials science; synthetic biology; analytics and computer science. These Research Fellow (RF) appointments closely align with the University's research strategy as part of the IB Research Beacon, which is providing solutions for 21st century industry and helping us to move towards bio-based economies.

As a research fellow, you will be part of an expert Future BRH research team (12 RF's) providing an interdisciplinary resource working with academic and industrial partners for a mix of innovative Platform Research and the Grand Challenge projects.

Overall purpose of the Positions

Working collaboratively with multi-disciplinary scientists, as a central part of a high quality national interdisciplinary research Centre, these positions will provide the successful candidates with an exciting opportunity to further develop and apply their research skills to the sustainable biomanufacture of chemicals, materials, pharmaceuticals and biofuels. We seek applications from experienced researchers with expertise, a proven track record and research interests in biocatalyst engineering and directed evolution; synthetic chemistry; use of biocatalysts in flow technologies; and coupling of enzyme reactions for cascade processes.

The successful applicants will support the two Grand Challenge research themes "*Automated and integrated biocatalyst engineering for biomanufacturing*" and "*Realising the value of industrial biotechnology at scale*". They will also work across the research platforms for "*High throughput biocatalyst engineering*" and "*Continuous flow and cascade biocatalysis*".

The expectation is that holders of these senior positions will have the necessary research expertise to drive forward and deliver collaborative science programmes, and to work both with academic and industrial partners. Initially for 2 years (with possible extension) these positions will suit candidates keen to build their longer term independent career in academia. As a member of an interdisciplinary research Centre, a strong ethos for team-based working will be essential.

Key Responsibilities, Accountabilities or Duties

As a Future BRH research fellow, you will be responsible for the delivery of a number of projects working alongside the academic scientific theme leaders, industrial partners and management team to drive the scientific vision of the Hub.

Main responsibilities:

Position 1: Biocatalysis Engineering for Biomanufacturing: Supporting the Grand Challenge theme of "*Automated and integrated biocatalyst engineering*", this position will drive the rapid discovery and engineering of enzymes for biomanufacturing through high throughput variant library generation and screening.

Position 2: Flow Biocatalysis for Biomanufacturing: Supporting the Grand Challenge theme "*Realising the value of industrial biotechnology at scale*", this position will drive biocatalyst

engineering and the use of immobilised biocatalysts in flow technologies, and couple enzyme reactions in cascade processes for flow chemistry applications.

Both positions will help to develop commercially viable biocatalysis biomanufacturing solutions across diverse chemical sectors. The successful candidates will also be expected to drive timely dissemination of their research through high quality publications.

Additional responsibilities for both positions are detailed below:

As a Research Fellow you will:

- Work closely with the Future BRH director (Prof. Nigel Scrutton) and scientific research leads to ensure timely and successful delivery of the research programmes in your technology area.
- Undertake and develop high quality research that drives experimental development according to your area of expertise across multiple science projects.
- Have the required broad vision and high level of scientific knowledge and training to lead and develop the capabilities of the technology platforms or Grand Challenge projects to deliver world-leading Biomanufacturing outputs.
- Demonstrated track-record in establishing new and innovative experimental protocols and delivering high quality research.
- Provide an important research link working closely with the Spoke institutions UCL, Nottingham, CPI, Catalysis Hub and IBIOIC.
- Act as the primary contact for your technology field able to provide expertise to the wider academic/industrial community and ensure timely publication and dissemination (contributing experimental data, writing and review) of the Future BRH research in high quality academic journals and through presentations at conferences and seminars.
- Work closely with the Future BRH partners and its technology experts to deliver the expert technology team-based resource, effectively liaising between Hub and Spoke partners and with industry.
- Build internal and external contacts and participate in internal/external networks to exchange information and to develop further Future BRH collaborations.
- Develop the impact of your research through suitable collaborations and partnerships.
- Provide technical training and support to fellow researchers, collaborators and students in the Future BRH.
- Work closely with diverse industry partners to ensure delivery of industry focused projects.

PERSON SPECIFICATION

Essential Knowledge, Skills and Experience

The appointed fellows will be highly self-motivated with demonstrable expertise in their field. Applicants should hold a PhD with additional research experience (or have significant industrial experience) and a growing research reputation is expected.

Expertise:

- A proven track record of research in:

- **Position 1:** Biocatalyst engineering using directed evolution and a background in biocatalysis and enzymology, biochemistry, organic or synthetic chemistry or related subject. Experience in automating directed evolution workflows is desirable but not essential.
- **Position 2:** Application of Biocatalysts for flow and cascade reactions with a background in organic chemistry, chemical engineering, process engineering or related discipline.

NB: This specialist knowledge is expected to be gained from a PhD and post-doctoral research (or through relevant experience in industry) and evidenced through relevant high-quality publications.

- A demonstrated track record in establishing and developing new and innovative experimental protocols and devising novel approaches, techniques, critiques and methods.
- An ability to work collaboratively as part of a team, with a strong collaborative ethos and flexible approach to dealing with research problems as they arise.
- The candidate should have a wider interest in industrial biotechnology/ biomanufacturing approaches.

Research and Scholarship

- A commitment to developing and maintaining a programme of research objectives, projects and proposals and disseminating the results.
- Ability to effectively plan and manage your research projects in collaboration with others.
- Collaborate with academic / industrial colleagues on areas of shared research interest.
- Attend and contribute to and on occasion lead relevant research meetings.
- Use initiative and creativity to identify areas for research, develop new research methods and extend the Future BRH research portfolio.
- Use creativity to analyse and interpret research data and draw conclusions on the outcomes, and evaluate and communicate complex data.
- Ability to translate knowledge of advances in the subject area into research activity.
- Write or contribute to publications or disseminate research findings using other appropriate media.

Communication

- Excellent interpersonal and communication skills (both written and oral).
- Experienced in presenting at national and international conferences; the appointee will make presentations at conferences or exhibit work in other appropriate events.
- Communicate complex information and material of a specialist or highly technical nature, orally, in writing and electronically.
- Routinely communicate complex and conceptual ideas to those with limited knowledge and understanding as well as to peers using high level skills and a range of media.

Liaison and Networking

- A self-motivated individual with the ability to work independently and creatively as part of a team.
- Ability to work with multiple research groups and organise your workload accordingly.
- Collaborate actively within and out-with the University to complete research projects and advance thinking.
- Participate in and develop external networks, for example to identify sources of funding, generate income, obtain consultancy projects, or build relationships for future activities.

Teaching and Learning Support

- Train other researchers including Post-Doctoral Research Associates, technicians and postgraduate research students.

Managing people

- Mentor colleagues with less experience and provide advice on personal development.
- Could be expected to supervise the work of others and in developing their research techniques, for example in research teams or projects.

Teamwork

- Take lead responsibility for smaller research projects or identified parts of a large project.
- Develop productive working relationships with other members of staff.
- Co-ordinate the work of colleagues to ensure equitable access to resources and facilities.

Pastoral Care

- Deal with standard problems and help colleagues resolve their concerns about progress in research.

Initiative, Problem Solving and Decision Making

- Assess, interpret and evaluate outcomes of research.
- Develop new concepts and ideas to extend intellectual understanding.
- Resolve problems of meeting research objectives and deadlines.
- Develop ideas for generating income, promoting research and application of research outcomes.
- Decide on research programmes and methodologies, often in collaboration with colleagues and sometimes subject to the approval of the head of the research programme on fundamental issues.

Planning and Managing Resources

- Plan, co-ordinate and implement research programmes.
- Manage the use of research resources and ensure that effective use is made of them.
- Scientific project management of industry-interfaced Grand Challenge research projects (working with academics, and Future BRH management).
- Manage or monitor research budgets.
- Help to plan and implement commercial and consultancy activities.

Sensory, Physical and Emotional Demands

- Ability to balance the pressures of research and administrative demands and competing deadlines.

Work Environment

- Working with the Future BRH team you will be expected to conduct research related risk assessments and contribute to the health and safety of others.

Consideration will be given to applicants who have taken a non-standard career path after their primary degree and circumstances such as maternity, paternity, long term illness, caring responsibilities, or career breaks. Applications are also welcome from candidates who wish to re-establish themselves after a career break or other period of absence from active research. There are no nationality restrictions for these positions.

The above particulars are intended as a general guide to the duties of the post and the conditions of service. They do not constitute a contract of employment between the University and the person appointed. The successful applicant will, however, receive a full set of conditions of service on appointment.
