

THE UNIVERSITY OF MANCHESTER
PARTICULARS OF APPOINTMENT
FACULTY OF BIOLOGY, MEDICINE AND HEALTH
SCHOOL OF BIOLOGICAL SCIENCES
DIVISION OF EVOLUTION AND GENOMIC SCIENCES
RESEARCH ASSISTANT IN ALGAL MICROBIOLOGY
VACANCY REF: BMH-016396

Salary: £27,511 to £28,331 per annum depending on relevant experience
Hours: 1 FTE
Duration: Fixed term from 3 May 2021 until 2 May 2024
Location: Oxford Road, Manchester
Responsible to: Prof. Michael Brockhurst

Enquiries about the vacancy, shortlisting and interviews:

Name: Prof. Michael Brockhurst

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Faculty of Biology, Medicine and Health

Introduction to the University of Manchester and the Faculty of Biology, Medicine and Health

The University of Manchester is the largest single-site university in the UK with over 40,000 students and more than 12,000 staff.

We aim to become one of the top 25 research universities in the world and are committed to: delivering an outstanding teaching and learning experience for our students; contributing to the social and economic success of local, national and international communities; producing the highest calibre graduates; and developing our staff to be amongst the very best of their peers.

To achieve our ambitious goals we aim to attract and retain the very best people to work across a range of academic disciplines and professional services.

The Faculty of Biology, Medicine and Health (FBMH)

The Faculty of Biology, Medicine and Health has an integrated structure to deliver a truly translational approach to the life sciences, ensuring smooth research pathways - from pure discovery science through to clinical application and patient care.

With a total annual income of over £300 million, and over 3,000 members of staff, the Faculty is comparable in size to a medium-sized UK university. Thirty undergraduate and 90 postgraduate programmes offer our 11,000 students opportunities to develop the skills and knowledge they need for a successful career.

The Faculty's matrix structure facilitates interdisciplinary working and enables us to interact, learn from each other and share best practice. Our eight, strategic Research Domains help to articulate our research strengths, drive large-scale, collaborative research activities and strengthen relationships with our research and healthcare partners.

The integration of discovery biology, clinical application and patient care within a single Faculty, particularly in a region with notable health inequality, provides us with a real opportunity to have a very significant and positive impact on people's lives.

Our strategic partnerships

The new Faculty inherits a number of key strategic partnerships that underpin its ambitions to develop ground-breaking research.

Working alongside six local NHS Trusts, the Faculty is a key member of the [Manchester Academic Health Science Centre \(MAHSC\)](#) - a federation of equal partners that unites leading healthcare providers with world-class academics and researchers. It aims to be a global centre for the delivery of applied health research and education and provide leadership for our local and regional health systems.

It also plays a leading role in [Health Innovation Manchester \(HInM\)](#), which was launched in September 2015, as part of the UK Government's decision to devolve health and social care responsibilities to Greater Manchester. HInM offers a unique opportunity to bring together health and social care, academic and life science related business resources across the region to deliver an innovative health ecosystem that can help accelerate innovation into our local health and social care systems, enhance our global scientific standing and act as a magnet for inward investment.

Key partnerships in the charitable sector include Cancer Research UK; Diabetes UK; and the Wellcome Trust; and the Faculty also has research and funding links to a number of commercial organisations including Unilever, AstraZeneca, GlaxoSmithKline and Boots, who will help us to bring new drugs and products to the market.

Working for the University of Manchester

The University of Manchester strives to make our community a welcoming, caring and enthusiastic one, fuelling ambition with opportunities and support to help us all achieve our personal and professional goals.

Our diverse job opportunities include an attractive [benefits package](#) with family-friendly policies that provide for flexible working. We care deeply about career and personal development, offering a structured induction programme for new staff, an annual performance and development review, staff training for all career stages and mentoring opportunities to support your career development.

We have a genuine commitment to [equality of opportunity](#) for our staff and students, and are proud to employ a workforce that reflects the diverse community we serve.

As a global institution, situated at the heart of a lively, [culturally diverse city](#), we welcome applicants of all nationalities. To help international job applicants plan for life in the UK, we have put together some useful [information on passports and visas](#), travel to the UK, accommodation and a number of other practical considerations.

Brockhurst Lab / Microbial Evolution Research Manchester Group (MERMan)

The Research Assistant will be based in the Brockhurst Lab led by Prof. Michael Brockhurst. They will be part of a dynamic team comprising postdoctoral Research Associates, Research Fellows, Technicians and PhD students (group size approx. 6-10 people). All are working on related research topics in microbial evolution, providing a supportive and vibrant research environment. The Brockhurst lab is based in a newly-equipped state-of-the-art microbiology lab facility with access to a range of cutting-edge analytical instruments and robotic automation. We hold weekly lab meetings, journal clubs, and reading groups focused around developing skills in statistics and bioinformatics.

The Brockhurst Lab is part of a wider collective of evolutionary microbiology labs forming the [Microbial Evolution Research Manchester \(MERMan\)](#) grouping.

MERMan is one of the largest groups of evolutionary microbiologists in the UK, comprising 8 group leaders and >25 research staff all working on microbial ecology and evolution projects. Research topics include, antimicrobial resistance evolution (Dr. Danna Gifford; Dr. Mato Lagator; Dr. Michael Bottery), horizontal gene transfer and symbiosis (Prof. Michael Brockhurst), mutation rate evolution (Dr. Chris Knight; Dr. Rok Krasovec), and the ecology and evolution of host-associated microbiomes (Dr. Kat Coyte; Dr. Sophie Nixon). The group is co-located within shared laboratories and write-up spaces forming an exciting and cohesive community of likeminded scientists. We hold a weekly MERMan group meeting and a monthly external Zoom seminar.

Overall Purpose of the Role

The Research Assistant position is funded by a 3-year Natural Environment Research Council Standard Grant led by Prof. Michael Brockhurst, together with collaborators at University of Sheffield: Prof. Duncan Cameron, Prof. Andrew Beckerman, Prof. Jon Slate, Dr. Pascal-Antoine Cristin, and Dr. Jagroop Pandhal. Overall, the project is aimed at understanding the ecological drivers of the evolution of symbiosis, focusing on the role of fitness trade-offs during evolutionary transitions from free-living to symbiosis (and vice versa).

Building on our recent research, we will study the microbial symbiosis between the unicellular eukaryote host *Paramecium* and the algal symbiont *Chlorella*, which form an experimentally tractable and environmentally widespread symbiosis (doi.org/10.1016/j.cub.2015.11.052; doi.org/10.1016/j.cub.2019.11.053). The new project will combine field sampling with experimental

evolution, and use an exciting combination of comparative genomics and metabolomics to discover the genomic architecture and metabolic mechanisms underlying evolutionary transitions between the free-living and symbiotic lifestyles.

The Research Assistant will perform the environmental sampling and laboratory experiments, working together closely with the Research Associate also based at Manchester to design and analyse these experiments, and will collaborate with a research impact technician based at University of Sheffield who will engage with industrial collaborators.

Main Responsibilities

- Perform algal field sampling and isolation of strains
- Perform algal laboratory experiments (including maintenance of longterm experimental lines, quantification of ecological population dynamics by flow cytometry and microscopy, a range of physiological and growth assays)
- Perform algal genomic DNA extractions and metabolite extractions
- Assist with metabolomic mass spectrometry experiments
- Develop and maintain the algal and *Paramecium* strain archive
- To assist the PI, Research Associate and other lab members in the planning of research.
- To conduct data analysis
- To ensure the validity and reliability of data at all times
- To maintain accurate and complete records of all findings
- To assist with the writing of reports for submission to research sponsors
- To prepare material for presentation in oral and poster formats
- To assist with the preparation of publications and their submission to refereed journals
- To contribute to the general activities of the laboratory including Health & Safety, lab meeting planning and ordering of research materials
- Take an active part in group meetings
- Training, advising and possible supervision of students
- Assistance in the preparation and collation of data
- To take responsibility for organising resources and effective decision making in support of research
- To attend relevant workshops and conferences as necessary
- 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 work alongside the PI and other colleagues in a collegiate manner and build rapport within the team and the wider School and Faculty
- To develop contacts and research collaborations within the School, Faculty and the wider community
- To promote the reputation of the laboratory, School and wider University

Other Duties

- To undertake appropriate administration tasks
- To attend relevant meetings
- To undertake any necessary training and/or development
- Actively read the scientific literature relating to (and around) the project

- To maintain safe workplace practice and procedures in accordance with the requirements of Health and Safety legislation
- To maintain an up-to-date knowledge of relevant statutory Health and Safety legislation and recommendations and attend safety training as required
- Any other duties commensurate with the grade of the post as directed by PI / Research Associate
- Manage own professional development, keeping abreast of new developments within area of expertise

Facilities for animal research are first rate and are validated by all the appropriate Home Office licences. However, if you have any medical, social or ethical reasons for avoiding work on experimental animals, then do not apply for this post.

PERSON SPECIFICATION

Essential Skills, Knowledge and Experience

- BSc (hons) or equivalent in Biology or related subject
- Extensive and up-to-date theoretical and practical knowledge in microbial ecology and / or algal microbiology
- Excellent technical skills in microbiology (including culturing, physiology, phenotyping) and standard molecular biology techniques (PCR, electrophoresis, DNA sequencing)
- Practical experience of algal microbiology including field sampling, media preparation and culturing
- Practical experience of planning and performing large-scale experiments and of managing the resulting datasets
- Track-record of contributing to peer-reviewed publications
- Proven ability to use initiative to efficiently plan, optimise and progress project and communicate findings
- Extensive IT skills (including experience with e.g. R statistics)
- Excellent interpersonal and communication skills and ability to work with colleagues at all levels
- Good written and spoken English
- A willingness to contribute to the work of others by offering practical and intellectual help

Desirable Skills, Knowledge and Experience

- Research Degree (e.g. MRes, MPhil or PhD) in Microbiology or related subject
- Practical experience of working with *Chlorella* (or similar algal species)
- Practical experience of working with *Paramecium* (or similar single-celled eukaryotes)
- Practical experience of light microscopy
- Practical experience of photophysiology experimental techniques
- Practical experience of flow cytometry experimental techniques
- Practical experience of mass spectrometry analytical techniques
- Experience in the delivery of training and supervision of other staff and students

- Willingness to work flexible hours including outside standard office hours (e.g. at weekends as required to maintain experiments)

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.
