Job Description – Post-Doctoral Research Associate (Geomicrobiology/Molecular Biology), Astrobiology Research Group

1 FTE  
3-year fixed term contract  
AC2  
Walton Hall, Milton Keynes-based, with some travel including field work overseas

The Role

The post-holder will be welcomed into an interdisciplinary research group investigating the feasibility of life beyond the Earth. In their role, they will explore, through a combination of field work and laboratory simulation experiments, the feasibility of habitability elsewhere in the Solar System, with focus on the icy moons and Mars. They will study the limits of microbial life and work as part of a multidisciplinary team to identify bio-signatures that could be used as evidence of life under simulated extraterrestrial conditions.

Key responsibilities

- To collect samples from extreme environments, which are terrestrial analogues of extraterrestrial environments;
- To characterise the microbial community, using culture-independent and culture-dependent methods, and the geochemistry of these extreme environments;
- To optimise DNA extraction methods from low biomass environments;
- To study microbial communities in artificial environments e.g. clean rooms;
- To investigate microbial survival under a variety of environmental conditions, including simulated extraterrestrial conditions;
- To identify bio-signatures that are uniquely produced by life in simulated extraterrestrial conditions;
- To write papers on the results and publish them in peer review journals;
- To present results at national and international conferences and workshops;
- To be an active member of the OU Astrobiology Research Group, attending regular research group meetings and sharing knowledge with other members of the team;
- To contribute expertise and scientific ideas to research projects, methodologies and teaching areas, as appropriate;
- To carry out administrative tasks associated with this work, such as risk assessments;
- To liaise closely with their Line Manager and/or the academic Group Lead and Group Manager;
- To have a strong commitment to the principles and practice of equality and diversity;
- To undertake other duties that are reasonable for the position, as directed by the Line Manager.
Person Specification

Skills and experience

Essential:
- PhD (completed or shortly obtained) in microbiology, molecular biology, geomicrobiology, or a related discipline;
- Demonstrable experience in molecular biology techniques;
- Demonstrable experience in culturing microorganisms;
- Field work experience;
- Demonstrable track record of communicating research results through peer reviewed publications and conference presentations (as fitting career stage);
- Ability to plan and prioritise own workload and work to agreed deadlines;
- Ability to take full responsibility and accountability for tasks while making effective use of available resources;
- Demonstrable experience of analysing problems and working creatively to develop innovative and workable solutions;
- Good oral and written communication in a variety of contexts, including the ability to offer and receive constructive criticism.

Desirable:
- Experience with anaerobic microbiology;
- Experience with bioinformatics;
- Experience with metagenomics and/or transcriptomics;
- Experience in a wet chemistry laboratory environment or with simulation experiments;
- Ability to organise and statistically analyse data sets;
- Knowledge of geochemistry, thermodynamics, or planetary geology;
- Experience of working across discipline boundaries or in interdisciplinary teams.
About the Astrobiology Research Group

Research England has recently awarded the Open University Astrobiology Research Group an Expanding Excellence in England grant worth £6.7 million. This will allow the Group to expand to bring together expertise in technology, international development and governance to address the scientific and governance challenges associated with the advancement of astrobiology and related space exploration missions. This will result in a multi-disciplinary research environment with members spanning three Faculties: the Faculty of Science, Technology, Engineering and Mathematics, the Faculty of Business and Law, and the Faculty of Arts and Social Sciences.

The primary aims of this multi-disciplinary group will be as follows:

1. furthering the understanding of the limits of life and potentially habitable environments in the Solar System;
2. identifying chemical and geochemical signatures that could be used as evidence of life;
3. investigating the survivability of microorganisms and their biosignatures;
4. educating and engage with the space sector, policymakers and the public in the UK and ODA countries;
5. examining critically the governance and ethical implications of astrobiology-related space missions to develop and enhance governance frameworks.

The OU Astrobiology Research Group is committed to building an inclusive research environment. The Group supports flexible working arrangements, within the limits of the post, and particularly welcomes applications from groups traditionally under-represented in STEM.
About the Unit

Faculty of Science, Technology, Engineering & Mathematics
The Faculty of Science, Technology, Engineering and Mathematics (STEM) is comprised:

- School of Computing & Communications
- School of Environment, Earth & Ecosystem Sciences
- School of Engineering & Innovation
- School of Life, Health & Chemical Sciences
- School of Mathematics & Statistics
- School of Physical Sciences
- Knowledge Media Institute
- Deanery including teams supporting Curriculum, Research and Enterprise, Laboratory Infrastructure and Faculty Administration

“We aspire to be world leaders in inclusive, innovative and high impact STEM teaching and research, equipping learners, employers and society with the capabilities to meet tomorrow’s challenges”

The Faculty of STEM consists of 2500 staff including 1,800 Associate Lecturers. The Faculty delivers over 185 modules across undergraduate and postgraduate curriculum, supporting nearly 19,000 students (full time equivalents) which is 29% of the OU total.

The Faculty generates more research income (circa £17M) than any other Faculty in the University, supported by a comprehensive laboratory infrastructure.

We are proud of our distinctive values and capabilities underpinning our aspiration:

We are inclusive:
- We transform people’s lives, ensuring STEM education is openly accessible to many thousands of students from diverse backgrounds – our students express high satisfaction with their study experience.
- We engage the public in exciting citizen science and engineering, including through free open educational resources, multi-platform broadcasting, outreach to inspire the next generation and with programmes to encourage more women into STEM.

We are highly innovative:
- We are at the forefront of innovative developments in teaching practical science and engineering at a distance, through simulated and remote access laboratories and practical experimentation.
- Our high quality teaching and curriculum are informed by world-leading research, strong links with professional bodies and communities of practitioners, as well as by scholarship focused on continuously improving our STEM pedagogy.

We deliver significant social and economic impact:
- We provide STEM higher education at a scale and reach unsurpassed in the UK, with a sizeable international reach and further growth potential.
- We inject transferable STEM skills and knowledge direct into the workplace for immediate employee and employer benefit, as students combine study while working.
- The employability value of our courses is underpinned by accreditation from leading STEM Professional Bodies and Learned Societies, as well as partnerships and sponsorship with leading employers.
- Our high quality, applied and academically relevant teaching and research addresses real-world issues, delivering impact for industry and society, including addressing pressing STEM skill-shortages across the UK.