OLLSCOIL NA GAILLIMHE
UNIVERSITY OF GALWAY

HR EXCELLENCE IN RESEARCH

# Postdoctoral position – Environmental Engineering

# Direct Interspecies Electron Transfer (DIET) contribution to methane formation in the rumen

## School of Biological and Chemical Sciences

## Ref. No. 011705

## JOB ADVERTISEMENT

Applications are invited from suitably qualified candidates for a full time, fixed term position as a Postdoctoral researcher with Microbiology/Ryan institute at the University of Galway, Ireland.

This position is funded by the Global Methane Hub and is available from May 2026 to contract end date of May 2028.

Understanding and manipulating electron flow is in the rumen is critically important to reducing methane emissions from ruminants. The Global Methane Hub's (GMH) Enteric Fermentation Accelerator is funding a groundbreaking study on advancing the science behind methane production, electron flow, and its connection to animal productivity. Specifically in this role the potential contribution of Direct Interspecies Electron Transfer (DIET) to methane formation in the rumen will be investigated using approaches adopted from the field of environmental engineering in combination with rumen microbiology. The effects of conductive additives on methane production in *in vitro* experiments will help identify putative electroactive microbial taxa. In addition, rumen microbial communities will be inoculated into microbial fuel cells and microbial electrosynthesis cells to enrich electron donating and electron accepting microorganisms. Subsequently, novel isolation procedures will be used to isolate electroactive organisms in order to study them further in pure and co-culture. The work will contribute to this wider programme by determining whether direct interspecies electron transfer contributes to methane formation using conductive additives, microbial electrochemical technologies and via isolation and characterisation of direct interspecies electron transfer (DIET)-capable microbes.

**Salary**: Postdoctoral Researcher salary scale €46,805 - €59,654 per annum, (subject to the project's funding limitations), and pro rata for shorter and/or part-time contracts.
The default position for all new public sector appointments is the 1st point of the salary scale. This may be reviewed, and consideration afforded to appointment at a higher point on the payscale (subject to the project's funding limitations), where evidence of prior years' equivalent experience is accepted in determining placement on the scale above point 1, subject to the maximum of the scale.
(Research Salary Scales - University of Galway)

**Closing date for receipt of applications is 17:00 (Irish Time) on 10th April, 2026. It will not be possible to consider applications received after the closing date.**

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***Please review full job description for further details and essential requirement**

## JOB DESCRIPTION

**Job Description:**
We are seeking a highly motivated postdoctoral researcher to lead experimental research on external electron transfer (EET) and direct interspecies electron transfer (DIET) in rumen microbial communities, using conductive materials and bioelectrochemical systems. The successful candidate will design, optimise, and operate batch incubation experiments and lab-scale bioelectrochemical reactors to investigate how electron transfer processes influence methane production, microbial interactions, and biofilm formation in rumen-derived systems.

The postdoctoral researcher will combine reactor-based experimentation and electrochemical measurements with targeted microbial community analysis and microscopy to link system-level performance with underlying biological processes. A central expectation of the position is the development of innovative, independent research leading to senior-author peer-reviewed publications.
In addition to leading their own research, the postdoctoral researcher will contribute to a collaborative research environment by supporting the training and mentoring of PhD, MSc and/or undergraduate students, including assistance with experimental design, laboratory methods, data interpretation, and scientific writing.

**Duties:**

- Design, operate, and optimise lab-scale bioelectrochemical systems, including microbial fuel cells (MFCs) and microbial electrosynthesis (MES) reactors, to enrich and characterise electroactive rumen microorganisms.
- Apply electrochemical techniques, including cyclic voltammetry and controlled-potential experiments, to investigate electron transfer processes, redox-active biofilms, and electrode–microbe interactions.
- Conduct batch, biological methane potential type tests using rumen fluid to assess the effects of conductive materials on methane production and microbial community composition.
- Integrate process performance data (e.g. gas production, VFA composition, current generation) with microbial and biofilm observations to interpret methane production pathways and electron transfer mechanisms.
- Apply microscopy techniques (e.g. SEM, TEM, FISH) to visualise microbial attachment, biofilm formation, and interactions with conductive materials and electrodes.
- Coordinate microbial community profiling using amplicon sequencing to support interpretation of enrichment experiments and electrochemical observations.

- Mentor and support PhD, MSc and undergraduate research projects related to rumen microbiology, anaerobic systems, and bioelectrochemical experimentation.
- Lead and/or contribute to research outputs under the supervision of the Principal Investigator, including peer-reviewed publications, conference presentations, seminars, and project reports.
- Attend and disseminate research findings at national and international conferences and meetings.
- Any other duties assigned commensurate to this level of post.

## ELIGIBILITY REQUIREMENTS

**Essential Requirements:**

- PhD in Environmental Biotechnology, Bioengineering, Microbiology, or a closely related field.
- Demonstrated research expertise in anaerobic microbial systems, or bioelectrochemical approaches, evidenced by peer-reviewed publications.
- Experience with reactor-based experiments (e.g. batch systems, anaerobic incubations, or electrochemical reactors).
- Familiarity with electrochemical measurements (e.g. cyclic voltammetry, potentiostatic control) or a strong willingness to develop these skills.
- Proven ability to develop and implement research independently, with a strong record of scientific output appropriate to career stage.
- Strong analytical skills and experience integrating process, electrochemical, and microbial data.
- High level of initiative and motivation, with a problem-solving, interdisciplinary mindset.
- Excellent organisational, writing, and report/paper drafting skills.
- Excellent written and spoken English communication skills.

**Desirable Requirements:**

- Experience with microbial community analysis.
- Experience with rumen microbiology.
- Experience applying microscopy techniques (e.g. SEM, TEM, FISH) to biofilms or environmental samples.
- Evidence of student supervision or mentoring.

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## CONTINUING PROFESSIONAL DEVELOPMENT

**Continuing Professional Development/Training**:
Researchers at University of Galway are encouraged to avail of a range of training and development opportunities designed to support their personal career development plans. University of Galway provides continuing professional development supports for all researchers seeking to build their own career pathways either within or beyond academia. Researchers are encouraged to engage with our Researcher Development Centre (RDC) upon commencing employment - see HERE for further information.

## FURTHER INFORMATION/LINKS

- **TO APPLY:** Search Current University of Galway vacancies. Applications must be submitted online.
    - How to apply guide
- For informal enquiries, please contact Dr Sinead Waters, School of Biological and Chemical Sciences on Sinead.Waters@universityofgalway.ie.
- University's Strategic Plan
- Working in Research at University of Galway
- Moving to Ireland (Euraxess)
- Applicant Information
- We reserve the right to re-advertise or extend the closing date for this post.
- University of Galway is an equal opportunities employer.
- All positions are recruited in line with Open, Transparent, Merit (OTM) and Competency based recruitment.

Athena Swan Ireland
EQUALITY CHARTER