Postdoctoral position on archaea-bacteria interactions and cooperation

We invite applications for a 24-month postdoctoral scientist position to join our team within the project *ReFuel: Harnessing archaeal processes to capture carbon dioxide into*
alkanes as renewable fuels and energy storage agents. The position will begin on 1 August 2026, or as soon as possible thereafter.

Application Deadline:
01 May 2026

Institute/Faculty:
Department of Biology

Faculty:
Faculty of Natural Sciences

Academic contact person:
Florin Musat
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Vacant positions:
1

Number of months:
24

Hours per week:
37

Expected date of accession:
01/08/2026

Job Description

Hydrocarbon-oxidizing archaea form obligate syntrophic partnerships with sulfate-reducing bacteria (SRB), enabling the anaerobic turnover of hydrocarbons in marine sediments. Despite their global importance, the **mechanistic basis of this metabolic coupling remains unresolved**: whether electron transfer proceeds via diffusible intermediates or through direct, cell-to-cell electron transfer (DIET) is still under active debate.

This project aims to **resolve the mechanism of archaeal-bacterial electron transfer** in these systems. By combining cultivation-based microbiology with electrochemical approaches and high-resolution imaging, the work will directly probe how energy metabolism is physically and functionally coupled across domains of life.

The project will involve working with syntrophic deep-sea consortia, performing strictly anoxic physiological experiments, and developing electrode-based systems to probe extracellular electron transfer. The successful candidate will have the opportunity to work with **unique enrichment cultures** and contribute to a mechanistic framework for one of the central processes in anaerobic microbiology.

The postdoctoral researcher will employ a combination of:

- Anaerobic cultivation and experimentation with syntrophic consortia
- Physiology assays with cultures, cell suspensions, and cell-free extracts
- Microbial electrochemistry, including setting up and operating microbial fuel cells (MFC) under anoxic conditions
- Stable isotope labeling coupled to metabolomics
- Fluorescence in situ hybridization (FISH, CARD-FISH), advanced microscopy, community sequencing, and metagenomics

The work will be carried out in the Archaea group, Section for Microbiology, Department of Biology with collaborations at the Helmholtz Centre for Environmental Research – UFZ, Leipzig, Germany and the University of Southern Denmark - SDU, Odense, Denmark.

The postdoctoral fellow will benefit from **MicroCorr**, a next-generation imaging platform integrating confocal laser scanning microscopy and Raman microscopy, enabling combined structural, functional, and live/dead-resolved single-cell analyses. The platform will be established during 2026, and the postdoc will have the opportunity to help shape its application to complex microbial systems.

Required research experience

We seek candidates with a strong background in anaerobic microbiology, microbial physiology, electromicrobiology, molecular biology, or related disciplines, and a scientific interest in mechanistic questions at the interface of microbiology and electromicrobiology.

Experience in one or more of the following areas is desirable:

- Microbial electrochemistry (e.g., MFC, cyclic voltammetry)
- Anaerobic cultivation and handling of strictly anoxic systems
- Microbial physiology assays, analytical chemistry and metabolomics
- Meta-omics approaches
- Fluorescence in situ hybridization (FISH, CARD-FISH) & advanced microscopy.

Candidates with experience in electromicrobiology/MFC who are motivated to engage with complex anaerobic syntrophic systems are particularly encouraged to apply.

Qualifications

- PhD in microbiology, bioelectrochemistry, molecular biology, or a related field
- Strong collaborative mindset and interest in interdisciplinary work
- Excellent written and oral communication skills in English

The deadline for applications is 1 May 2026. Applicants seeking further information are invited to contact **Associate Professor Florin Musat (florin.musat@bio.au.dk)**.

Who we are

The successful candidate will be employed by the Department of Biology at Aarhus University (http://bio.au.dk/en) and work in the **Archaea Group** (https://bio.au.dk/en/research/research-areas/microbial-processes-and-diversity/archaea-group), Section for Microbiology at this department. The section employs 12 permanent scientific staff and ~20 PhD students and postdocs. Research at the section covers studies of microbial physiology, evolution, ecology, and biogeochemistry. It integrates basic and applied research, addressing the role, ecophysiology and evolution of microorganisms in natural, technical and clinical systems and in biotechnology (https://bio.au.dk/en/about-biology/sections/microbiology). The section has well-developed shared laboratory facilities and a permanent support staff of seven highly skilled laboratory technicians. From summer 2026, a new multimodal imaging facility – **MicroCorr** – dedicated to microbiological research will be available for research at the Section for Microbiology.

The principal investigator for this project is Associate Professor Florin Musat.

Aarhus City

Aarhus is a city of about 300,000 inhabitants and the second largest city in Denmark. Aarhus is large enough to have a rich cultural scene and international community, but small enough to not feel crowded. It is a safe and welcoming environment for children - a great place for the whole family. For further details on the city and the university please follow this link: https://international.au.dk/

The place of work is Department of Biology, Section for Microbiology, Ny Munkegade 116, 8000 Aarhus C.

Application procedure

Shortlisting is used. This means that after the deadline for applications – and with the assistance from the assessment committee chairman, and the appointment committee if necessary, – the head of department selects the candidates to be evaluated. All applicants will be notified whether or not their applications have been sent to an expert assessment committee for evaluation. The selected applicants will be informed about the composition of the committee, and each applicant is given the opportunity to comment on the part of the assessment that concerns him/her self.

Letter of reference

If you want a referee to upload a letter of reference on your behalf, please state the referee's contact information when you submit your application. We strongly recommend that you make an agreement with the person in question before you enter the referee's contact information, and that you ensure that the referee has enough time to write the letter of reference before the application deadline. Unfortunately, it is not possible to ensure that letters of reference received after the application deadline will be taken into consideration.

If you wish to add a referee **after** you have submitted your application, you must send this person's details (name, job title, place of work, and email address) as well as the name of the position you have applied for to: HR.Nattech@au.dk

Formalities and salary range

Natural Sciences refers to the Ministerial Order on the Appointment of Academic Staff at Danish Universities under the Danish Ministry of Science, Technology and Innovation.

The application must be in English and include a curriculum vitae, degree certificate, a complete list of publications, a statement of future research plans and information about research activities, teaching portfolio and verified information on previous teaching experience (if any). Guidelines for applicants can be found here.

Appointment shall be in accordance with the collective labour agreement between the Danish Ministry of Taxation and the Danish Confederation of Professional Associations. Further information on qualification requirements and job content may be found in the Memorandum on Job Structure for Academic Staff at Danish Universities.

Salary depends on seniority as agreed between the Danish Ministry of Taxation and the Confederation of Professional Associations.

Aarhus University's ambition is to be an attractive and inspiring workplace for all and to foster a culture in which each individual has opportunities to thrive, achieve and develop. We view equality and diversity as assets, and we welcome all applicants.

Research activities will be evaluated in relation to actual research time. Thus, we encourage applicants to specify periods of leave without research activities, in order to be able to subtract these periods from the span of the scientific career during the evaluation of scientific productivity.

Aarhus University offers a broad variety of services for international researchers and accompanying families, including relocation service and career counselling to expat partners. Read more here. Please find more information about entering and working in Denmark here.

Aarhus University also offers a Junior Researcher Development Programme targeted at career development for postdocs at AU. You can read more about it here.

At the Faculty of Natural Science at Aarhus University, we strive to support our scientific staff in their career development. We focus on competency development and career clarification and want to make your opportunities transparent. On our website, you can find information on all types of scientific positions, as well as the entry criteria we use when assessing candidates. You can also read more about how we can assist you in your career planning and development.

The application must be submitted via Aarhus University's recruitment system, which can be accessed under the job advertisement on Aarhus University's website.

Aarhus University

Aarhus University is an academically diverse and research-intensive university with a strong commitment to high-quality research and education and the development of society nationally and globally. The university offers an inspiring research and teaching environment to its 37,000 students (FTEs) and 8.700 employees and has an annual revenue of EUR 1.106 billion. Learn more at www.international.au.dk/