



3 PhD positions in the enzymology and microbiology of nitrogen cycling

Balancing the global nitrogen cycle is vital for food security and controlling environmental pollution and climate change. These 3 PhD studentships focus on microbial ammonia oxidation, a central and critically important process in the nitrogen cycle. The studentships will be jointly supervised by Prof Colin Murrell and Dr Laura Lehtovirta-Morley and will be based in the Earth and Life Systems Alliance Lab at University of East Anglia.

Position 1: **Identifying the missing enzyme(s) in the global nitrogen cycle**

This PhD focuses on ammonia oxidising archaea (AOA) which are among the most numerous living organisms on Earth. Despite the immense environmental importance of AOA, the enzymes catalysing archaeal ammonia oxidation are not known. Understanding this novel biochemistry is an essential first step towards managing and predicting nitrogen fluxes in the environment. The PhD student will receive training in a wide range of cutting edge molecular, microbiological and biochemical techniques. Project includes working with pure cultures of AOA, isotopic labelling, cloning, heterologous expression and protein characterisation. *Closing date: 25th May 2018.*

Position 2: **Crosstalk between global biogeochemical cycles and its impact on climate change**

This PhD studentship centres on the functional overlap between ammonia monooxygenase and methane monooxygenase, which are key enzymes in the global nitrogen and carbon cycles. Methane is a powerful greenhouse gas, which is removed from the atmosphere by the bacterial enzyme methane monooxygenase, but the role of other related monooxygenases (including the archaeal ammonia monooxygenase) in global methane consumption is largely unexplored. The aim of this studentship is to determine the novel role of AOA in atmospheric methane consumption and climate change. The PhD student will receive training in cultivation of pure cultures of AOA, analysis of inorganic nitrogen, gas chromatography, isotopic analysis and mass spectrometry. *Closing date: 25th May 2018.*

Position 3: **Innovative and sustainable landfill leachate management using the anammox reaction**

The topic of this PhD is the anaerobic ammonium oxidation (anammox) and its application for ammonium removal from the landfill leachate. Landfill leachate is an enormous problem in the UK with major environmental consequences for pollution, eutrophication and climate change. This studentship will pioneer a novel application of the anammox technology in landfill leachate treatment using constructed wetlands. The project will be carried out in collaboration with the Norfolk County Council and includes a 3-month placement with the project partner. The project combines a wide range of molecular, microbiological and analytical chemistry techniques, including DNA- and RNA-based methods, sequencing, bioinformatics, isotopic labelling, mass spectrometry and enrichment and characterisation of novel microorganisms. *Application process will open in early June 2018.*

All projects are funded for 4 years and start in October 2018. EU and UK citizens are eligible. Informal inquiries prior to the application are strongly encouraged, please contact Laura Lehtovirta-Morley: L.Lehtovirta-Morley@uea.ac.uk. To apply, go to:

<https://www.findaphd.com/search/ProjectDetails.aspx?PJID=94830>

<https://www.findaphd.com/search/ProjectDetails.aspx?PJID=97469>