Analysis of Micropollutant Degrading Microbial Community Under Different Redox Conditions

wetsus
european centre of excellence for sustainable water technology

Type of project: BSc thesis or HBO internship
Research field: Molecular biology, Microbiology
Duration: 4 months (flexible)
Start date: Flexible
Location: Wetsus, Leeuwarden, the Netherlands

Project background: Biodegradation is the major process for natural attenuation of micropollutants, like pharmaceuticals and pesticides, in the environment. Although anaerobic conditions are found in several environment compartments, including groundwater, most studies on micropollutants are performed in aerobic conditions. To better explain micropollutant biodegradation under anaerobic conditions, it is necessary to understand how the microbial culture is being affected under these conditions.

Project description: Different microbial cultures from soils and aquifer have been exposed to micropollutants under aerobic and nitrate reducing conditions. These cultures have shown different micropollutant biodegradation capacity. A first step to understand this difference is to investigate the microbial community. Tasks include To do so, microbial growth and changes in culture structure will be determined by 16S rRNA sequencing and NGS. Additionally, changes in copy number of functional genes for micropollutant-degradation and specific of the redox-conditions used will be quantified using qPCR. Tasks include DNA extraction and quantification, qPCR of 16S rRNA, functional genes for micropollutant degradation and functional genes specific for redox conditions, and NGS and qPCR data treatment.

Your profile:

- Either EU citizenship or international student registered at a Dutch university
- Enrolled in graduate (BSc/HBO) studies
- Specialization in biotechnology/biochemistry/microbiology/biology or equivalent
- Experience in molecular biology techniques (e.g. DNA extraction, qPCR)
- Fluency in English both spoken and written
- Good organization skills

Our offer:

- Allowance of 175 €/month (except for students with other scholarships)
- Working in an international and multidisciplinary environment
- Developing laboratory skills and critical thinking
- Being part of the leading European research center in sustainable water technology

How to apply: For questions about the project please contact Rita Branco (rita.branco@wetsus.nl). Interested students are invited to send a CV (max. 2 pages) and a motivation letter (max. 1 page) to the same address.