

ER 3 (WP2) Aline Ramos da Silva (RamosdaSilva@bioclear.nl), Bioclear - Research and Innovative Company, Groningen – The Netherlands.

Local supervisory team: Dr. Inez Dinkla; Dr. Sytze Keuning

Projects: “Waste systems” and “Key strains”

BRIEF OVERVIEW OF RESEARCH PROJECT AND MAJOR ACCOMPLISHMENTS EXPECTED

The main scientific goal of NORA is to improve the understanding and predictive ability with regard to the regulatory biology and ecology of microorganisms involved in the N-cycle and N₂O emissions. The ER Aline Ramos da Silva will participate, together with other members of the Bioclear-team and collaborators, in the NORA research within the Work Package 2 (Systems), mostly involved in the Project 4 (Waste systems), but also in the Project 5 (Key strains). Aline Ramos da Silva intends to optimize molecular tools for quantification of group specific and functional genes of microorganisms involved in the separated steps: nitrification, denitrification and anammox, in waste-water treatment and soil systems. A database will be established, allowing alignment of data from molecular analyses and process parameters, aiming for optimal process understanding and process control in (engineered) biological systems.

Specific tasks:

- Molecular tools to detect, monitor and control biological processes in full scale (engineered) biological systems;
- Database and use of bioinformatics tools;
- Research in a company setting.

Anticipated publications:

- Identification of microbial diversity responsible for N₂O emissions in waste-treatment and soil systems;
- Quantitative relationships between measured emissions and environmental parameters;
- Validation of molecular tools to map N-emissions using Next Generation Sequencing datasets derived from lab-scale and full-scale samples;
- Molecular toolbox for analyses of N₂O emissions in waste-treatment and soil systems.

Other activities

- Participation in the organization of experiments/activities for the ESRs during their secondments at Bioclear;
- Participation in the organization of the School 3 (focus on entrepreneurship) hosted by TUD-Bioclear-Paques-YARA.