

PRESELECTION FOR RESEARCH CONTRACT ON AGRIFOOD ORGANIC WASTE VALORISATION INTO ODD-CHAIN VOLATILE FATTY ACIDS (ODDITY project)

Position's characteristics

A research contract of 6 months, extendable to 2 years, is offered by the Group of Environmental Biotechnology (Biogroup) of the University of Santiago de Compostela within the Spanish project ODDITY. The contract starting date is foreseen to take place in January/February 2023.

Project description

The conversion of organic wastes by anaerobic fermentation (the so-called carboxylate platform) is one of the promising emerging biorefineries that allows valorising organic carbon to volatile fatty acids (VFA), which can be further processed as chemicals, biopolymers and biofuels. A major obstacle to the widespread of the carboxylate platform is the poor selectivity, leading to a mix of mainly acetic, propionic, butyric and valeric acid. There are some guidelines that lead to a moderately selective acetic and butyric acid mixture, but the selective production of propionic and valeric acids, odd-chain VFA, remains elusive. Beyond the applications of propionic and valeric acids as chemicals, it is particularly relevant their use as substrate in the production of polyhydroxyalkanoates (PHA), bio-sourced and biodegradable plastic materials. The project ODDITY tackles the challenge of the selective valorisation of organic wastes into odd-chain VFA with a multidisciplinary approach that integrates technical, microbiological and environmental contributions in a mathematical modelling framework.

Biogroup is one of the most important research groups in Environmental Engineering at European level. As part of a world-renowned research group you will work at state-of-the-art lab facilities with the support of experienced technicians. Biogroup staff is composed by 12 full/assoc. professors, 3 technicians, 3 administrative support staff, 7 postdocs and ~30 PhD students providing a stimulating and multidisciplinary work environment to conduct your research. You will have the opportunity to collaborate in other research activities related to biorefinery development.

Research area

Bioprocesses for resource recovery from waste and wastewater by anaerobic fermentation.

Supervisors

Marta Carballa Arcos and Sabela Balboa Méndez

Brief work description

- Conduct experimental activities both in batch and continuous mode to identify the best waste streams and operational conditions to yield odd-chain VFA.
- Application of molecular techniques (eg. Illumina sequencing) to identify the microbial populations yielding odd-chain VFA.
- Close collaboration with modelling activities (i.e. experimental design, data analysis) carried out in the biorefinery research line of Biogroup, including the ODDITY project, as an input for experimental design and data analysis.

Requirements

- Candidates must have a Bachelor degree in Chemical Engineering, Environmental Environmental Sciences, Biotechnology, or similar.
- Candidates with a master level degree in Chemical Engineering, Environmental Engineering, Biotechnology, or similar will be highly valued.
- Experience in wastewater and solid waste treatment processes will be appreciated, especially on anaerobic technologies.
- Experience in molecular techniques including data processing will be appreciated.
- Candidates must be skilled in experimental lab work.

Preselection process

Applications and information requests must be sent to marta.carballa@usc.es (including in the subject: "ODDITY position") before November 10th at 14:00.

Applications must contain the following documents:

- Motivation letter (not more than 1 page), indicating the contact details of the candidate and a brief description of the reasons why they should be selected.
- Curriculum Vitae.
- Name and contact of two references (e.g. former supervisors).

The preselection process involves the following steps:

1. Evaluation of applications (motivation letter and CV)

The goal of this evaluation is to assess the adequacy of applicant's profile to the requirements of the call.

2. Screening test

Successful candidates from the first stage will be invited to a qualifying screening test. The objective of this test is to evaluate candidate's competency to develop a research project.

3. Personal interview

Top three candidates will be invited for a formal application to the research position, including a personal interview.