

25th March 2024 at 14.30 - Aula 6302, Edmund Mach Foundation.

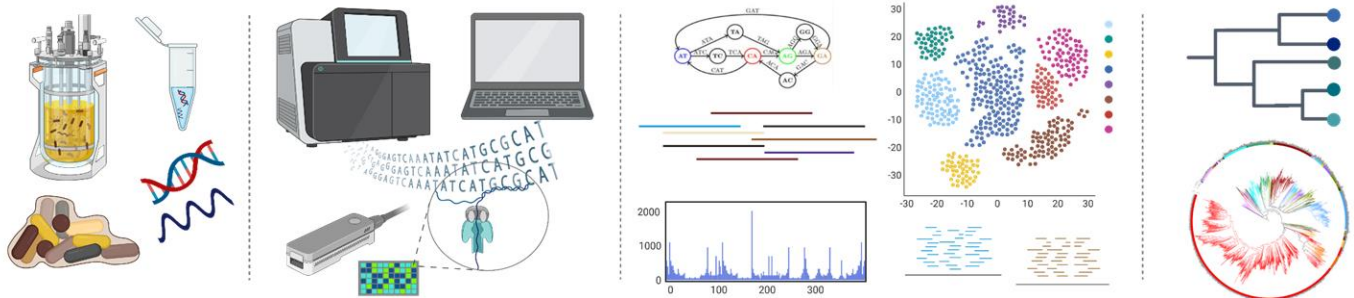
Seminar of the AES PhD school in collaboration with Edmund Mach Foundation

“Exploring the unseen: advancing understanding of anaerobic microbiota via genome-centric metagenomics and metabolic modelling”

Dr. Laura Treu

Department of Biology, University of Padua

Abstract. Anaerobic microbes, present in both natural and engineered environments, play a key role in breaking down organic matter, releasing compounds like methane. Recent studies have focused on understanding these microbial communities, but much remains to be learned about their collective function. Advances in metagenomics have enabled comprehensive analysis of metabolic pathways and microbial behavior prediction. By examining individual species' metabolism and environmental factors, we can better grasp anaerobic digestion processes. Using genome-scale metabolic models derived from high-quality genome reconstructions, we've gained deep insights into anaerobic digestion. Applying metabolic flux balance analysis allows us to explore interspecies interactions and metabolic exchanges within microbial communities. Studies also explore how different feedstocks affect community behavior and growth rates under various interaction types. Additionally, condition-specific community genome-scale models integrate metatranscriptomics data, offering a more mechanistic understanding of multi-omics data in anaerobic digestion systems.



The speaker. Dr. Treu is expert on molecular biology and microbial ecology for investigating the molecular mechanisms involved in carbon cycling, bioenergy production and CO₂ capture. She contributed to developing novel bioinformatics approaches for reconstruction of microbial genomes from metagenomics and metatranscriptomics. She studies metabolic mechanisms involved in shaping environmental and human-related microbiomes to unravel population dynamics, using genome-scale metabolic models. Since 2018 she is Researcher at Department of Biology, University of Padua (Italy), using system biology and molecular biology applied to microbial communities. She has been Senior Researcher at Department of Environmental Engineering, Technical University of Denmark (Denmark) working on microbial ecology applied to bioenergy production.

This series of seminars has been organized for PhD students, post-doc and researchers of the Center Agriculture Food Environment and Edmund Mach Foundation. Your participation is warmly recommended! Mark it down on your calendar!