MYCOPLAST

IDENTIFYING MICROBIAL COMMUNITIES ASSOCIATED WITH MARINE PLASTIC WASTE AND EVALUATING THEIR BIOREMEDIATION POTENTIAL

Plastic waste is invading and accumulating in our freshwater and ocean ecosystems at a growing rate. Recent estimates indicate an annual input of plastic waste to the oceans of between 4.8 and 12.7 million tonnes. Although it is essential to identify and control the main sources of plastic upstream, it is also important to generate understanding of the microbial communities which colonise this plastic waste.

The key aim of the MycoPLAST plastic is to focus on a specific microbial component associated with marine plastic waste, namely micromycetes or marine fungi.

Numerous studies in recent years have attested to the presence and activity of fungal communities in different aquatic habitats. Many studies have proved the existence of marine and lakeside fungi which are metabolically active. But nothing is yet known about the extent to which these communities contribute to large biogeochemical cycles, including in relation to the use of xenobiotic pollutants and contaminants.

The major objectives of this project therefore focus on evaluating the diversity, activity, dynamics and spread of fungi associated with samples of plastic waste and assessing and even improving their capacity to break down complex plastic polymers.

The MycoPLAST project therefore represents a first step to standardising approaches to bioremediation to reduce plastic pollution by simulating specific microbial decomposers or by detecting and using microbial enzymes with the capacity to break down plastic polymers on an industrial scale.

Partners

Research centers

UBO/LUBEM (Laboratoire Universitaire de Biodiversité et Ecologie Microbienne), Brest [Project Developer]
Institut de Chimie de Clermont-Ferrand (ICCF), Clermont-Ferrand
Ocean University of China - Li's lab (OUC), Qingdao, Chine
Université de Toulon, Laboratoire MAPIEM
Woods Hole Oceanographic Institution - Edgcomb's lab, Woods Hole, USA

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