PhD Project: On-going



Bacterial Plastic Degradation

PhD Candidate: Diana Alicia Garza Herera

Enzymatic potential of bacteria isolated from plastic-polluted environment: The ability of Streptomyces spp. to degrade polyesters and a range of biopolymers.

The primary objective of Diana Alicia Garca Herera's doctoral project is the development of enzymatic microbiological tools geared towards enhancing the biodegradation of a wide range of polymers, but most specifically, polyesters, with a focus on capitalizing on the unique capabilities of bacteria sourced from plastic-polluted environments, where they have possibly developed unique ways to adapt in these harsh environments with compromised nutrients. The project involves the creation of a collection of microorganisms from these polluted sites, forming a diverse pool for subsequent research. Through rigorous screening, we aim to identify bacteria with potent enzymatic potential, particularly in the breakdown of polyesters like PET and PHB, as well as other biopolymers such as PLA, cellulose, PVC, among others. The ultimate goal is to harness these microbial tools in various forms, employing them as a pretreatment strategy to significantly enhance the degradation rate of these polymers, thereby reducing their persistence in the environment. Additionally, we seek to explore the potential for upcycling, utilizing these valuable microorganisms to extract valuable metabolites using polymers as an alternative carbon source. This comprehensive approach not only addresses the urgent need to mitigate plastic pollution but also explores innovative pathways for sustainable material use and resource recovery.