



Bioprospecting for Polymer-degrading Microorganisms

DEVELOPMENT OF MICROBIAL CONSORTIA THAT DEGRADE COMMON SYNTHETIC POLYMERS FOR ENVIRONMENTAL BIOREMEDIATION

KEY WORDS

MICROBIAL
CONSORTIA,
BIODEGRADATION,
BIOREMEDIATION

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DESCRIPTION

This project is based on research into the microbial degradation of polymers, focusing on the identification, isolation, and optimization of bacterial and fungal consortia capable of degrading common synthetic polymers under the environmental conditions of Argentine Patagonia. The development includes: bioprospecting for native microorganisms from soils, sediments, and extreme environments of the region with degradation capacity; characterization of key enzymes using molecular and proteomic techniques; optimization of degradation conditions in bioreactors; and formulation of microbial inoculants for in situ and ex situ bioremediation applications.

POTENTIAL BENEFITS OR IMPACTS

Potential environmental impact: Bioremediation technology for soils and water bodies contaminated with microplastics. Development of low-energy biological recycling technologies.

Ecological diversity: Valuation of regional biodiversity applied to industry.

Economic: Reduction of plastic waste management costs through biological treatments.

Social: Creation of green jobs in environmental biotechnology.

Scientific: Positioning of the UNRN as a leader institution in plastic biodegradation in Patagonian environments.

TECHNOLOGY MATURITY LEVEL (TRL)

TRL 3: experimental proof of concept.

AREA OF APPLICATION

Plastics

Environmental