

PROJECT DETAILS

Project Title.

Exploring extreme environments for industrial breakthroughs

Project Summary: aims, significance, expected outcomes and potential research impact.

Extreme environments host some of nature's most industrially and environmentally significant bacteria, some of which are utilized for industrial applications such as biomining. However, numerous undiscovered extremophilic microorganisms also hold untapped potential for degradation of agricultural wastes and wastewater treatment. This project aims to identify and isolate microorganisms that produce industrially relevant enzymes (e.g. chitinase, cellulase, lignolytic enzymes) using already available metagenomes and direct culture techniques. Selected microorganisms will undergo genomic and proteomic characterization to inform optimisation of biodegradation capabilities. Outcomes will advance sustainable strategies for managing agricultural waste and wastewater, contributing to reducing environmental impact through innovative microbial solutions.

Preferred applicant skill set, describe the capabilities of the HDR applicant.

The ideal candidate will demonstrate a passion for advancing knowledge and making meaningful impact in environmental microbiology and biotechnology. They will have exceptional problem-solving and time management skills. They will also be proficient in their written and verbal communication skills. As this is a joint PhD program, the candidate must be available to travel between Perth, Western Australia and Portsmouth, UK. Previous experience in metagenomic analysis/bioinformatics is preferred.

Contact person for the project:

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