

MICROBIAL DIVERSITY AND THEIR GENETIC BASIS FOR HEAVY METAL RESISTANCE IN REGOLITH

MINEX CRC PROGRAM 3

National Drilling Initiative

PHD PROJECT

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RESEARCH PROJECT

This project initially began looking at samples from mid-west NSW bore waters. We have characterised some of the microbes found in these samples. To extend the project and take advantage of the NDI samples we propose to train a PhD student in geomicrobial genomics, looking not only at the diversity of microbes associated with heavy metal ore deposits, but also their resistance mechanisms that enable their survival in these extreme environments. The aims will be:

1. Characterise the microbial communities in deep bore water samples (from the NDI) across different mineral deposits. We will use amplicon (16S rRNA gene) sequencing to identify species present.
2. Correlate regolith geochemistry with these microbial communities.
3. Perform metagenomic analyses of samples from a range of samples with known levels of heavy minerals (Au, Cu, etc) and identify genes responsible for resistance

The project will be hosted by Program 3 projects and require results from the NDI geochemistry work to correlate microbial communities associated with resistance, thus providing a microbial signature for ore deposits.