

Microbial ecology of desert soils in the Antarctic Dry Valleys

Professor Don A Cowan

Institute for Microbial Biotechnology and Metagenomics, University of the Western Cape, Cape Town

The Dry Valleys of continental Eastern Antarctica are considered to be one of the most extreme environments on earth. Our studies have focussed on the microbial diversity of the desiccated mineral soils of these valleys, which are exposed to very low temperatures, low humidity, high incident radiation, and are highly oligotrophic. Using ATP analysis, we have demonstrated that microbial biomass levels are at least two orders of magnitude higher than previously estimated and, contrary to common dogma, these extreme environments harbour a very high diversity of microbial phylotypes. Using molecular tools to study local transects, we aim to establish the physicochemical 'drivers' which control the development and activity of specialised microbial communities in the Dry Valleys.