From Antarctic soils to rock surfaces in Chile: changes in terrestrial microalgal communities along environmental gradients and phylogenies to assess microalgal distribution patterns

Prof. Thomas Friedl, Experimental Phycology and SAG Culture Collection of Algae (EPSAG), University of Göttingen

Our work supports adaptation to environment for shaping the distribution pattern of terrestrial microalgae more than long geographical distances. We use molecular signatures of various resolution, from assessing relationships within classes to species and subspecies levels. Using a traditional cultural approach distribution patterns for new isolates of stramenopile algae are assessed using plastid- and nuclear encoded markers. It follows an identification of species based on comparisons with important authentic and epitype culture strains as references. The diversity of eukaryotic algae along a lateral glacier retreat gradient in the Maritime Antarctica revealed ubiquitous species already known from geographic regions other than Antarctica as well as species probably confined to Antarctica. Along a gradient of aridity in the Coastal Cordillera mountains of Chile complex lichen communities, associated with a large diversity of bacteria were found pivotal for stone weathering. In support of biogeography, the most dominant photobionts have so far been recorded only from the Chilean study sites. Following the climatic gradient, most algal OTUs were restricted to a certain area, while only few occurred across several zones. The least arid climatic zone exhibited the largest green algal diversity, while the most arid zones appeared to be hotspots of prokaryote diversity with unicellular cyanobacteria exhibiting the highest diversity there.

Eingeladen von Prof. Büdel
(AG Pflanzenökologie und Systematik)