

Abstract

This diploma thesis has focused on the diversity and biogeography of *Asterochloris* photobionts. Since no study so far has been published on the biogeography of symbiotic microorganisms, the presented thesis is the first attempt to trace the biogeographic distribution and endemism of symbionts.

By gathering 121 *Asterochloris* sequences obtained from lichen thalli sampled outside Europe and America, the diversity within the genus increased dramatically. The phylogenetic analysis based on the concatenated alignment of ITS rDNA and actin sequences obtained from *Cladonia* and *Stereocaulon* photobionts revealed 28 differently supported clades. Of them, eight lineages were newly discovered. Three environmental factors explaining the best the distribution pattern of *Asterochloris* photobionts were selected according to the statistical tests of the phylogenetic signal: two different types of biogeographical ecoregions and the substrate type.

In general, the genus *Asterochloris* is distributed cosmopolitally, with a very low rate of endemism. Newly obtained data indicate that the restricted distribution of any photobiont clade is not caused by either historic or biological factors, but more likely by specific climatic or habitat preferences.