a much more diverse community. The Arctic is undergoing drastic changes directly linked to sea-ice decline, and the present study provides insights on the impact of sea-ice loss on ice-associated pelagic plankton.
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Keywords: Polar phytoplankton, Arctic, 18S rRNA

Oral presentation

METABOLITE CHANGES DURING DESICCATION-REHYDRATION CYCLE IN DESERT AND AQUATIC GREEN ALGAE FROM *TETRADESMUS*

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Desert algae in the phylum Chlorophyta are not monophyletic and diverse taxa possess the ability to recover from extreme desiccation without forming specialized resting structures. The green algal genus *Tetradesmus* (Sphaeropleales, Chlorophyceae) contains temperate terrestrial, desert, and aquatic species, and recent analysis indicates multiple habitat switches in the genus. Habitat of origin was shown to be predictive of a desiccation tolerance phenotype, with terrestrial, but not aquatic species, recovered their photosynthetic activity upon rehydration after desiccation. Close phylogenetic relationships of these algae and their distinct responses to desiccation provide a unique opportunity to pinpoint specific physiological adaptations of terrestrial algae to their habitat. We used liquid chromatography tandem mass spectrometry (LC-MS/MS) methodology to study changes in composition of small water-soluble molecules in aquatic and terrestrial *Tetradesmus* under desiccation followed by rehydration. Our questions focused on assessing if there are constitutive protective compounds in the terrestrial algae, determining their composition, and how these might compare from other desiccation tolerant green algae. We also examined how the metabolomic profiles change over the course of a dehydration and rehydration cycle. Our analysis shows that each of the cell hydration state (dehydrated, desiccated, rehydrated for 15 min, and rehydrated for 24 h) are characterized by a distinct metabolite profile.
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Keywords: Desiccation-tolerance, metabolomics, *Tetradesmus*

E-Poster

THE GENETIC DIVERSITY OF BIOFILM COMMUNITIES COLONISING A CENTRAL MEDITERRANEAN SHORELINE

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Phototrophic biofilms and microbial mats colonise coastal rocky shores around the Maltese islands. Such communities are under-investigated, both locally in Malta and regionally in the Mediterranean area. This study aims to increase the knowledge of the genetic diversity of phototrophic communities forming biofilms and microbial mats along a central Mediterranean shoreline, that are adapted to survive stressors of temperature, salinity and UV radiation. Representative samples were obtained using techniques that were non-invasive to the underlying substratum. These were studied by direct observation using light and electron microscopy, as well as by molecular and phylogenetic analyses based on the sequencing of the SSU rRNA genes and the ITS. Microscopic analysis showed that the biofilms and microbial mats were highly diverse communities made up of both phototrophic and heterotrophic organisms. The predominant microorganisms were filamentous cyanobacteria belonging to species of the Leptolyngbyaceae, including *Leptolyngbya, Phormidesmis* and *Nodosilinea* spp. strains, together with *Toxifilum* sp. strains of the Pseudanabaenaceae, the non- heterocytous Phormidium and Lyngbya, as well as heterocytous *Calothrix* and *Nunduva* spp. representatives. The coccal cyanobacteria included species of *Aphanocapsa and Chroococcus*, while coccal microalgae belonged to *Chlorella, Chlamydomonas* and *Coelastrella* spp., diatoms of *Navicula* spp., as well as germlings of the filamentous macroalga Cladophora. Ciliated protozoans and microcrustaceans were also observed interacting within the community. The isolation of new cyanobacterial and microalgal strains from these phototrophic communities highlights the importance of a combined polyphasic approach to supplement current knowledge about the biodiversity of phototrophic biofilms and microbial mats colonising rocky shores.

Keywords: Biofilm, cyanobacteria, microalgae

E-Poster

THE ROLE OF CYANOPROKARYOTA IN THE RHIZOSPHERES OF GYPSOPHYTES AND EFFECTS OF DROUGHT AND WATER PULSES ON MICROBIAL FUNCTIONALITY

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In a Mediterranean environment plants are subject to water stress and lack of nutrients, among others. The adaptations