

MINI-SYMPOSIUM ON PHOTOBIOLOGY

It is most provocative to present here to the natural science community, six papers dealing with the photobiological responses produced as the result of chemical and/or physical changes induced in biological systems by non-ionizing radiation. Photobiology is one of the central subjects in aquatic vegetation studies, since autotrophs are the principal organisms that drive and control carbon fluxes in freshwaters and in oceans.

The laudable initiative to organize a special session in photobiology, was undertaken by some of the presenting authors and the organizers of the Ficología '99 meeting, held in Puerto Varas southern Chile, in order to highlight new approaches related to photosynthetic measurements, questions and challenges, and some novel results on the effect of UV-B radiation. Research mainly dealing with the UV stress, is motivated greatly by the reported decrease of the stratospheric ozone at the Global Scale.

Contributors from Argentina, Mexico, United States, Spain, Germany (now in Chile) and Chile, kindly agreed to participate bearing in mind that this effort was preferentially going to be published simultaneously in an international current journal. Some of these investigations used natural communities, isolated multi-cellular or single cells plants as biological models according to each of their specific approaches. These results are also important for modeling purposes in coastal and pelagic assemblages.

Alejandro Cabello-Pasini & Randall Alberte's research deals with the enzymatic regulation of the light-independent carbon fixation in three macroalgae (Phaeophyte- Chlorophyte and Rhodophyte). The biochemical regulation of metabolic pathways along the thallus of seaweeds was investigated through in vivo carboxylation pathways and the in vitro activity of ribulose 1, 5-bisphosphate carboxylase/oxygenase (RUBISCO), phosphoenolpyruvate carboxykinase (PEPCK) and phosphoenolpyruvate carboxylase (PEPC).

Félix Figueroa and Benjamín Viñegla working with *Plocamium*, *Ulva* and *Fucus* species from southern Spain, presented novel information on the diurnal changes in photosynthesis and enzyme (nitrate reductase and carbonic anhydrase) activities in marine macroalgae and the effect of UV radiation on these patterns.

Iván Gómez, presents extensive information about the ecophysiology and adaptation of Antarctic macroalgae due to the effect of the environmental light conditions on the photosynthetic metabolism. This was accomplished by putting results of numerous well planned studies together.

Walter Helbling, Virginia Villafañe & Elena Barbieri, working in several freshwater Andean environments in Patagonia, confirmed the differential sensibility to ultraviolet-B radiation of the phytoplankton communities during winter. This was related to water transparency and cell size structure of phytoplankton, where those systems with high large cell proportions, showed the higher inhibition rates.

Patrick Neale, Jennifer Fritz and Richard Davis studying the effects of UV radiation on Antarctic phytoplankton photosynthesis, added to the biological spectral weighting function (BWF) an explicit derivation of a link between the two models generally used (one with active repair, the other without), allowing the determination of UV damage weights and rate of repair of UV damage.

Vivian Montecino, Ximena Molina, Ginger Martínez, M. Isabel Olmedo, Leira Retamal, Gabriela Hannach and Mónica Orellana described the response of four microalgae isolated from the coast of South America to ultraviolet radiation. They proposed that species with high rates of photorepair might be more tolerant to UV-B than those species, which depend on the synthesis of UV absorbing compounds as their principal protection mechanism.

None of these personal commitments and planning effort would have been possible without the generous support of the Phycology '99 organizing committee, and the Universidad de Los Lagos, Chile. Universidad de Los Lagos also supported partially the edition of these contributions in the present issue of Revista Chilena de Historia Natural. Puerto Varas offered the wonderful Llanquihue lake and the Osorno volcano as scenery, a suitable environment for discussion and a great opportunity of social interactions.

Vivian Montecino (Special Associated Editor) and Alejandro Buschmann (President of Ficología '99 organizing committee) are also most thankful to contributors, to many most prominent peer-reviewers from the international scientific community and to Patricio Ojeda, Editor-in-Chief of the Revista Chilena de Historia Natural.

We have accomplished, with the invaluable help of the technical editors of the Revista Chilena de Historia Natural, to show here the results of studies across Europe and North/South America. We hope that this Mini-Symposium will inspire young researchers and motivate collaboration for future avenues of research in this and other related topics.

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