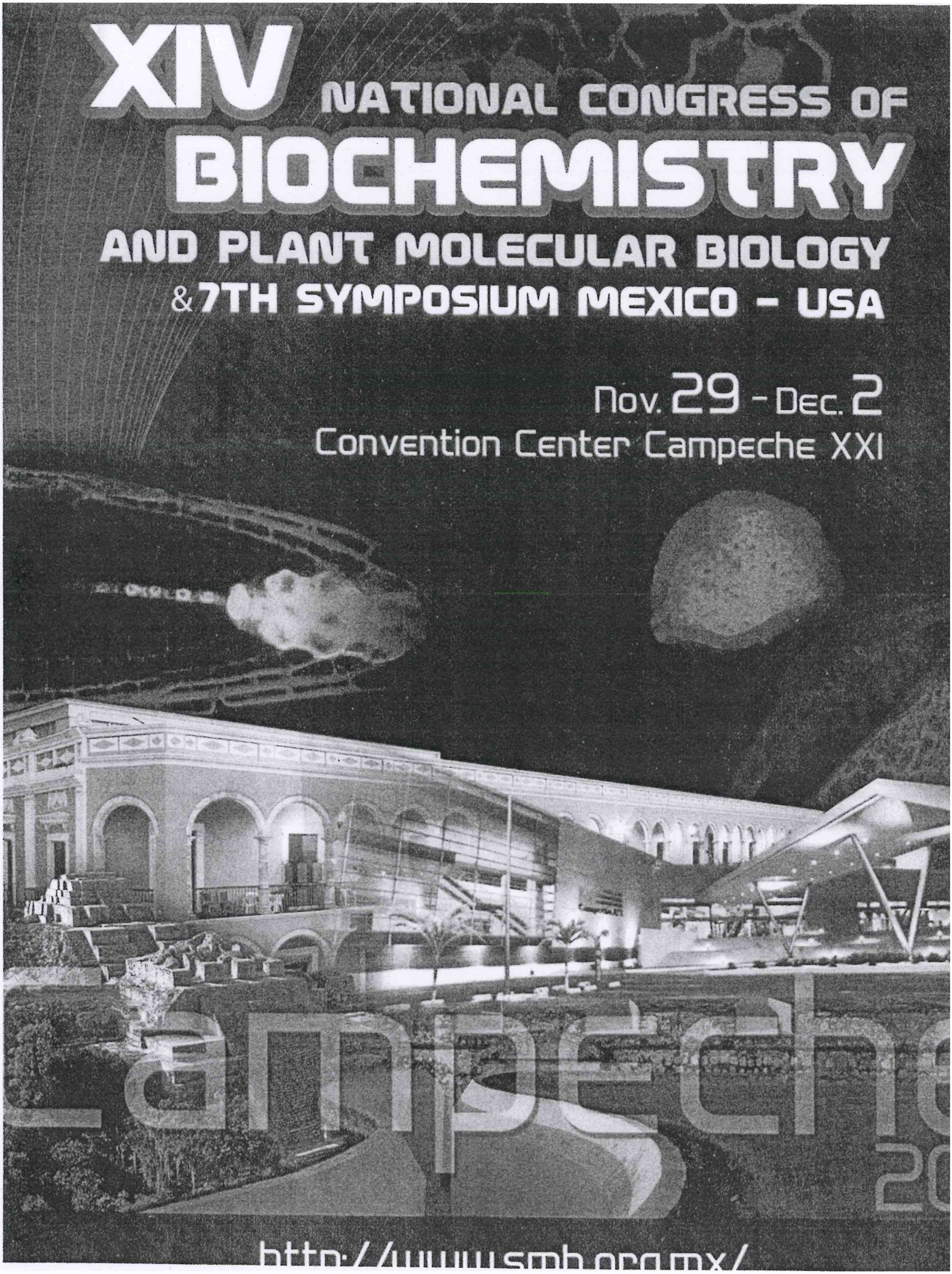
XIV NATIONAL CONGRESS OF
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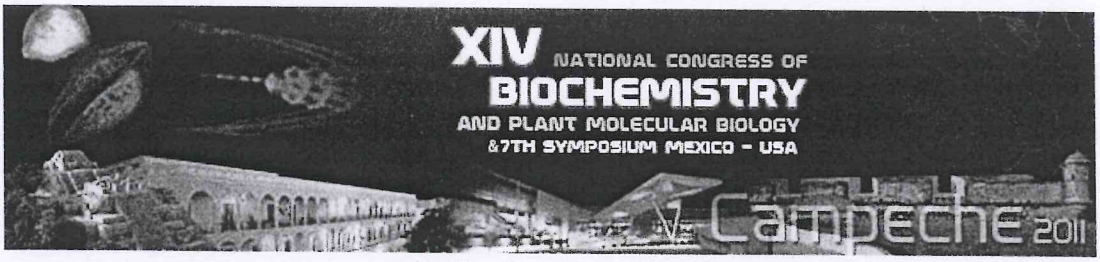

Desiccation Tolerant Mosses: Phenotypic, Physiological, and Molecular Studies.

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Mosses from the central highlands of Mexico were evaluated for desiccation tolerance. Two species showed total photosynthesis recovery when rehydrated after desiccation: *Pseudocrossidium replicatum* (Taylor) R.H. Zander and *Bryum billarderi* Schwagr. Spores from both species are able to germinate when exponed to very high concentrations of osmotic agents and NaCl. Furthermore, the resulting protonema exhibited growth under such stressing conditions for several weeks. Also, we found that ABA sensitivity during spore germination is significantly lower than Arabidopsis seed germination. Protonema responses to abiotic stress were tested on pure lines for both species obtained from one spore. Protonemal tissue from both strains was exposed for different periods to several concentrations of osmotic agents, NaCl, and freezing. The phenotypes observed at extreme conditions correlate with a slow decrease of Fv/Fm. Surprisingly, few days after transferring the stressed tissues to control conditions, they were able to recover growth and photosynthesis. Notably, protonema from *P. replicatum* can recover growth and Fv/Fm even after 1 week of exposition to ultra freezing. Currently, we are developing a protocol for genetic transformation for both species. Finally, as an attempt to identify dehydration stress responsive genes, the FOX gene hunting system is being used for *B. billarderi*. For *P. replicatum*, subtractive hybridization of a cDNA library and RNA-seq strategies are being used. Our results indicate that both moss species are tolerant to severe abiotic stress and can be used as model systems to study abiotic stress tolerance and as a genetic source with biotechnological potential. Authors thanks CONACYT and SIP IPN for funding.