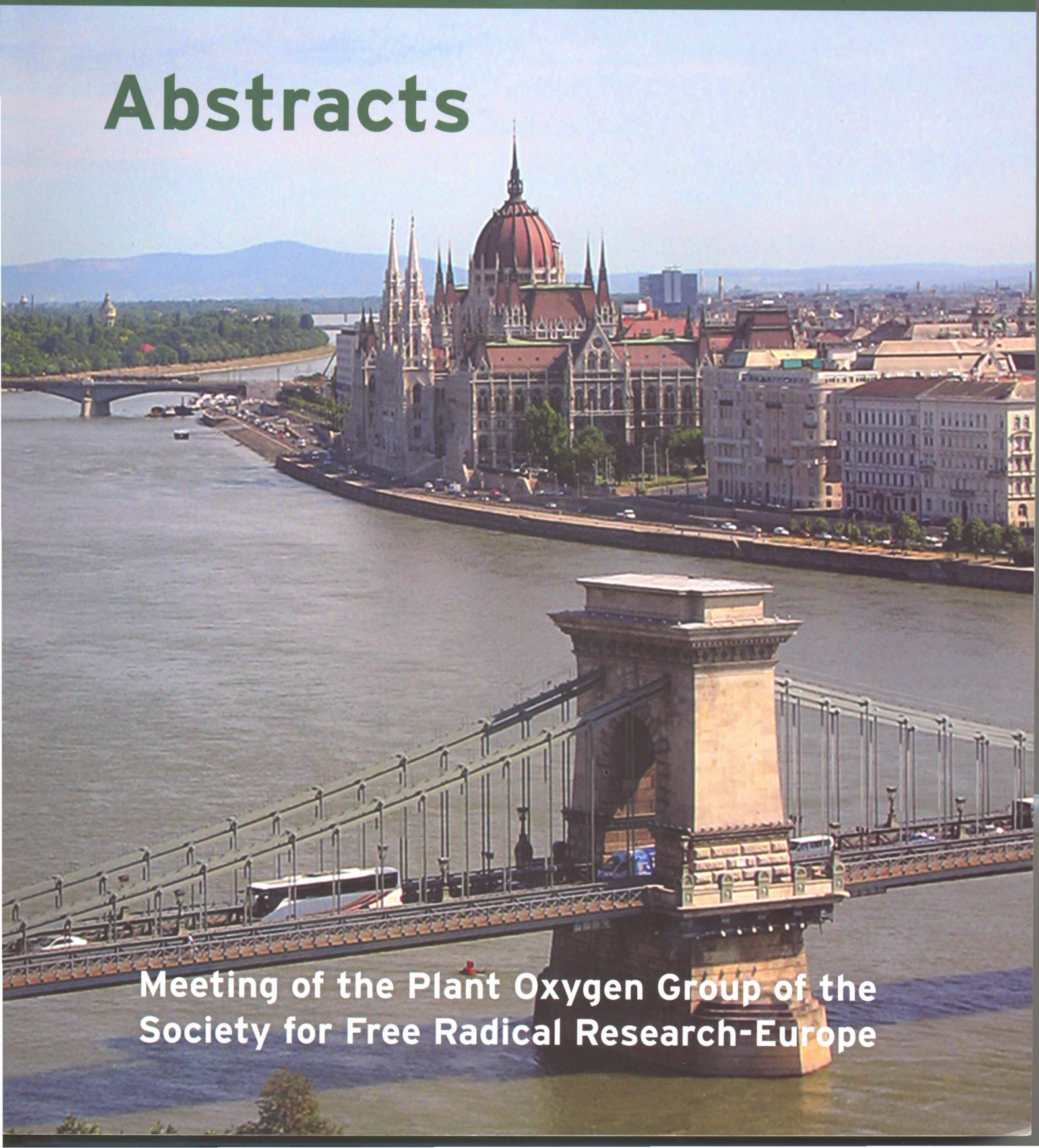
10th International Conference on Reactive Oxygen and Nitrogen Species in Plants

July 5-8, 2011, Budapest, Hungary



Abstracts

Meeting of the Plant Oxygen Group of the Society for Free Radical Research-Europe

P-95. HYDROGEN SULFIDE CONFERS SYSTEMIC TOLERANCE TO SALT AND POLYETHYLENE GLYCOL STRESS IN STRAWBERRY PLANTS

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Hydrogen sulfide (H_2S) is an endogenous gasotransmitter which has been recently found to play a major signaling role in response to abiotic stress factors. In the present study we tested whether hydroponic pre-treatment of strawberry (*Fragaria x ananassa* cv. Camarosa) roots to a H_2S donor, NaHS (10 mM for 48 h) could induce long lasting priming effects and tolerance to subsequent exposure to 100 mM NaCl or 10% PEG-6000 for 7 d, employing a variety of physiological, biochemical and molecular approaches. Hydrogen sulfide root pre-treatment resulted in significantly increased leaf chlorophyll fluorescence, stomatal conductance and relative leaf water content as well as reduced ion leakage and lipid peroxidation levels in comparison with plants directly subjected to salt and PEG stress, suggesting a systemic mitigating effect of H_2S pre-treatment to cellular damage derived from abiotic stress factors. In addition, root pre-treatment resulted in the minimization of oxidative and nitrosative stress in strawberry plants, manifested via the reduced *de novo* synthesis of NO and H_2O_2 in leaves and the maintenance of high ascorbate and glutathione redox states following subsequent salt and hyperosmotic stresses. Quantitative real-time RT-PCR data examining antioxidant, transcription factor and ion transporter gene expression levels suggest that H_2S plays a key role in the regulation of multiple transcriptional pathways. Our results indicate that H_2S pre-treated plants managed to overcome the deleterious effects of both salt and hyperosmotic stress, by controlling oxidative and nitrosative damage mainly through increased performance of antioxidative mechanism and thus propose a novel role of H_2S in plant priming.