

Cross-talk in light acclimation and disease resistance in *Arabidopsis thaliana*

Grzegorz Konert, Andrea Trotta, Moona Rahikainen, Siri Tähtinen, Eva-Mari Aro and Saijaliisa Kangasjärvi

Molecular Plant Biology, Department of Biochemistry and Food Chemistry, University of Turku, FI-20014 Turku, Finland, saisal@utu.fi

Besides photosynthesis, chloroplasts perform essential signalling functions in light acclimation and various stress responses in plants. The final acclimation responses are, however, influenced by cross-talk with other components of the cellular signalling networks. We have taken a reverse genetic approach to identify novel components in the cross-talk of chloroplast signaling. Mutants deficient in serine/threonine protein phosphatase 2A (PP2A) subunits showed peculiar light-intensity-dependent phenotypes, and were chosen for further analysis. A PP2A regulatory subunit B was identified as a cytoplasmic component in the cross-talk between light acclimation and disease resistance in *Arabidopsis thaliana*. Knock-down mutants for *PP2A-B* show constitutive defence responses, alterations in chloroplast antioxidant metabolism, enhanced photo-oxidative stress and age-dependent disintegration of chloroplasts when grown under moderate light regimes. Accordingly, yeast two-hybrid screening for candidate interaction partners revealed components that contribute to photomorphogenesis and regulation of defence reactions in plants. Interestingly, another highly similar mitochondrial PP2A subunit seems to have a distinct function in the regulation of photosynthetic activity in the maintenance of cellular energy balance. Currently, we are focusing on identification of specific PP2A-B-dependent target processes of PP2A. A combination of interaction studies and biochemical characterization of *Arabidopsis* mutants is expected to specify the mechanisms of PP2A function in plants.