Identification and characterisation of components of the PGE retrograde and acclimation signalling pathways

Chloroplast biogenesis is indispensable for proper plant development and environmental acclimation, and is dependent on light and on extensive information exchange between chloroplasts and the nucleocytoplasmic compartment. Multiple evidences suggest that perturbations of the homeostasis of plastid gene expression regularly result in the activation of acclimation and tolerance responses, presumably via retrograde signalling. We identified the *protein phosphatase7-like* (*pp7l*) mutant, which displays delayed chloroplast development. Intriguingly, although PP7L locates to the nucleus, loss of PP7L compromises translation and ribosomal RNA (rRNA) maturation in chloroplasts. Moreover, we uncovered PP7L as an integrator of responses to environmental changes. The dissection of the interplay between chloroplast signalling and perception pathways in the nucleus and the cytoplasm is of fundamental importance to enhance our understanding of how plants sense and respond to a changing environment. With the help of a genetic screen, we were able to identify suppressor mutants of *pp7l*. Moreover, we will exploit knock-down and overexpression lines of PP7L and, in addition, transcription factors (TFs) we had identified before, to decipher the interconnections between chloroplast-derived and nucleocytoplasmic processes in chloroplast biogenesis and acclimation responses.

More information on PP7L can be found in this publication:

Extrachloroplastic PP7L Functions in Chloroplast Development and Abiotic Stress Tolerance (nih.gov)