

LOCALIZATION AND FURTHER CHARACTERIZATION OF *UVR8*, A GENE INVOLVED IN *ARABIDOPSIS THALIANA* ROOT AND SHOOT DEVELOPMENT

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The *uvr8* gene was identified in our laboratory as able to restore growth of the osmotic unstable yeast mutant *mpk1-ppz1-* in absence of sorbitol. Gain and loss of functions in *A. thaliana* plants revealed that, besides the plant's response to UVB (Kliebenstein et al, 2002, Plant Physiol 130: 234-243) the gene controls plant development under non UVB-stressing conditions.

Root length and the number of lateral roots were significantly reduced in the *uvr8* overexpressing lines, while an opposite effect was observed in antisense lines and in a knock-out mutant from the Salk collections. Consistent with these data, hypocotyl elongation was inhibited in *uvr8* overexpressing *Arabidopsis* seedlings. Cotyledon expansion was not affected in these seedlings, though petiole length was visibly reduced. In contrast, antisense seedlings displayed an increase in cotyledon size, while hypocotyl elongation was not significantly affected compared to control seedlings. Negative effects of *uvr8* on hypocotyls and cotyledon expansion were further confirmed in an *uvr8* knock-out mutant.

Experimental data with the GUS-fused promoter and the YFP::UVR8 protein evidenced a complex pattern of expression. The gene was primarily expressed in the L1 layer of meristematic shoot apex and in hypocotyls and cotyledon epidermis. Cellular localization of UVR8-YFP revealed that the UVR8-YFP signal was localized in the root columella cells as well as in the stele and lateral root cap. This localization pattern of the *uvr8* gene and protein suggests a link with auxin transport and its redistribution inside the plants. Since the content of flavonoids was higher in overexpressing *uvr8* plants, through the transcriptional regulation of the CHS gene, we speculate that the observed effects on plant root and shoot development might be due to the interference of these secondary metabolites with auxin transport and distribution.

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