

**P016** Phototropin signalling: using yeast two-hybrid to identify and characterize interacting partners.

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Phototropins (phot1 and phot2) are blue-light receptor kinases that mediate phototropism, stomatal opening and chloroplast movement in *Arabidopsis*. Each receptor contains two flavin-binding LOV domains functioning as light sensors. Their C-terminus contains a Ser/Thr kinase domain that catalyses autophosphorylation in response to blue light irradiation.

While much progress has been made in understanding their photochemical properties, little is known about the downstream signalling mechanisms that follow phototropin activation. We have therefore used the yeast two-hybrid system to identify immediate reaction partners for phot1. Using various regions of phot1 as bait, we have obtained several potential interacting candidates. One protein is AtMDR1 (*Arabidopsis thaliana* multi-drug resistance 1), an ABC-like transporter reported to be involved in polar auxin transport and phototropism. A second is a homologue of NPH3, a known phot1-interacting partner. NPH3 is a member of a plant-specific protein family that are considered to function as molecular scaffolds, bringing together components of a signalling complex. We have used both yeast and in vitro pull down assays to investigate these interactions in more detail. Our results indicate that these interactions are light-sensitive. Moreover, domain mapping has revealed that both the extreme N-terminus and the kinase domain of phot1 are sufficient for these interactions.