# INTERACTION OF PRA2 SMALL GTPASE WITH A DARK-INDUCIBLE CYTOCHROME P450 IN ETIOLATED PEA STEMS

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Recent studies on plant photomorphogenic mutants suggested a role for brassinosteroids (BR) and gibberellins (GA) in light-regulated photomorphogenic processes. Ras-like small guanosine triphosphatases (small GTPases) also have been suggested to fulfil a regulatory role in light signal transduction in plants. Of particular interests is the pea Pra2 small GTPases that is repressed by light in a phytochrome-dependent manner. The Pra2 is predominantly expressed in the rapidly elongating region of etiolated pea seedlings. This plant part is most rich in total phytochrome content and most sensitive to exogenous hormone treatments in BR- and GA-deficient dwarfish mutants.

In an attempt to elucidate the role of the Pra2 in the interaction of phytochrome-mediated light signals with plant growth hormones in seedling growth, a functional target protein that specifically interact with the Pra2 was isolated and characterized molecular biologically and physiologically. The Pra2 protein specifically interacted with a cytochrome P450, termed Ddwf1, in light-regulated growth of pea seedlings. The Pra2 and Ddwf1 are dark-induced and predominantly expressed in the rapidly elongating region of etiolated stems. They are colocalized to endoplasmic reticulum tightly stacked around nucleus. Transgenic plants overexpressing anti-sense *pra2* gene exhibit a dark-specific dwarfism, which is completely rescued by exogenous brassinolide. Thus, it appears that the Pra2 is a molecular mediator for the interplay between light and BRs in stem growth.

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