

# **PHYTOCHROMES: PHOTSENSORY PERCEPTION AND SIGNAL TRANSDUCTION**

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Plants respond developmentally to light signals from the environment using an array of regulatory photoreceptors. One family of these receptors, the phytochromes, are the most extensively characterized molecularly, but the mechanism by which sensory information is transduced to photoregulated genes remains unknown. Genetic and molecular investigations indicate that individual members of the phytochrome family have discrete and sometimes antagonistic photosensory functions. Molecular mapping studies have identified the N-terminal domain as responsible for this functional specificity, and a short segment in the C-terminal domain as critical for downstream transmission of signal to the cellular transduction circuitry. Genetic screens have identified a series of loci that act downstream of the photoreceptors, and biochemical/cell biological studies have implicated G-proteins, Ca/calmodulin and cGMP as possible signalling intermediates in phototransduction. Molecular studies have identified a set of promoter elements and DNA-binding proteins, including a unique factor called GT-2, and an A-T-hook containing factor, PF-1, involved in expression of photoregulated genes.