



REGIONAL CENTRE FOR BIOTECHNOLOGY
Seminar series

**“Role of BBX25, a novel HY5 interacting B-BOX protein, in
Arabidopsis seedling photomorphogenesis”**

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Abstract

ELONGATED HYPOCOTYL5 (HY5), a bZIP transcription factor, is a central regulator of seedling photomorphogenesis in *Arabidopsis*. Proteins that interact with HY5 could therefore be important modulators of light dependent seedling development. Here, we identified BBX25 as an HY5 interacting factor through yeast two-hybrid screen, and found that it interacts with HY5 both in vitro and in vivo. BBX25 has been previously found to interact with CONSTITUTIVE PHOTOMORPHOGENIC1 (COP1), which is a master repressor of photomorphogenesis. Our genetic, physiological and molecular studies suggest that BBX25 is a negative regulator of seedling photomorphogenesis, and functions additively with its homolog BBX24. Further, epistatic analyses of *bbx25* and *bbx24* with *hy5* and *cop1* revealed that BBX25 and BBX24 additively enhance COP1 but suppress HY5 functions. Furthermore, BBX25 accumulates in a light-dependent manner and undergoes COP1-mediated degradation in dark and light conditions. Moreover, our results suggest that BBX24 and BBX25 repress *BBX22* expression by interfering with HY5 transcriptional activity. Interestingly, as HY5 promotes the expression of *BBX22* by directly binding to its promoter, our results demonstrate a direct mechanism through which the expression of *BBX22* is regulated. We propose that BBX24 and BBX25 functions as transcriptional co-repressors, probably by forming inactive heterodimers with HY5 leading to reduced *BBX22* expression for the fine-tuning of photomorphogenic responses during seedling development.