

# 第9回植物生命科学セミナー

9th Open Seminar hosted by the Department of Plant-Biosciences  
Faculty of Agriculture, Iwate University

## Photoactivation and inactivation mechanisms of plant cryptochromes

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日時：2018年4月25日(水) 16:30~18:00

場所：総合教育研究棟(生命系)1階 遠隔講義室(生命系スペースC)

### 要旨

Plant cryptochromes (CRYs) are photoreceptors that direct a diverse array of developmental processes in response to blue light. Arabidopsis CRY1 and CRY2 regulate transcription of a number of light-responsive genes by directly or indirectly altering transcription factor activity. However, it remained unclear how CRYs become physiologically active upon blue light absorption. We found that CRY2 forms homodimer in response to blue light. It has been reported that dimerization is necessary for CRY functions. Thus, we concluded that the blue light-dependent homodimerization is an elementary process that activates CRY2. In addition, we identified Blue-light Inhibitors of Cryptochromes 1 (BIC1) and BIC2 as inhibitors of CRY functions that bind to CRY2 to suppress the blue light-dependent homodimerization. Interestingly, CRYs mediate blue light induction of BIC1 and BIC2 transcription. Furthermore, ELONGATED HYPOCOTYL 5, a transcription factor acting downstream of CRY signaling, is associated with chromatin of the BIC promoters to activate the expression of BICs. These results demonstrate a CRY-BIC negative feedback circuitry that regulates the activity of each other to sustain blue light sensitivity of plants under the broad spectra of solar radiation in nature.

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