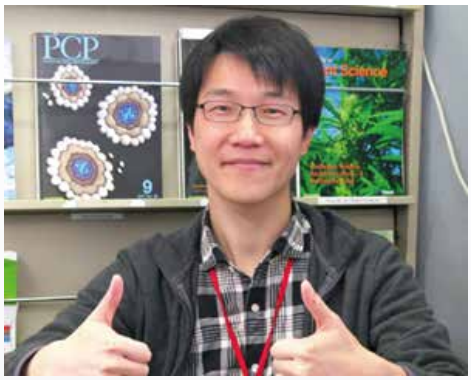
ITbM/IGER Seminar



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Growth regulation by stress signal –
ER stress-responsive transcription factors bZIP17 and bZIP28 regulate root elongation

Date: Tuesday, July 17
Time: 14:00~15:00

Venue: Lecture room, ITbM
Language: English

Abstract

The unfolded protein response (UPR) is a eukaryotic transcriptional regulatory network that is activated upon the accumulation of malformed proteins in the endoplasmic reticulum (ER). In Arabidopsis thaliana, three bZIP transcription factors modulate the UPR: bZIP17, bZIP28, and bZIP60. Although bZIP28 and bZIP60 have been relatively well studied, the physiological and transcriptional roles of bZIP17 remain largely unknown. Here, we generated a double knockout mutant of bZIP17 and bZIP28 to elucidate the function of bZIP17. The mutant plant exhibited severe dwarfism including scarce root elongation and constantly over-induced bZIP60 activity. RNA-seq analyses of three double knockout mutants of bZIPs revealed that bZIP28 and bZIP60 are the major activators of the canonical induced UPR. By contrast, bZIP17 functions with bZIP28 to modulate non-inducible expression of multiple genes involved in cell growth. Accordingly, our study revealed the essential roles of bZIP17 and bZIP28 in plant development and UPR modulation. As their stress-responsive acting nature, the extended study on the root growth regulation by UPR will provide a significant advance to understand where plant vegetative growth is regulated in balance with stress response.

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