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OsMYB TF Promotes Rice Leaf Senescence via ABA Signaling Pathway

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[Introduction]
Leaf senescence, the final stage of leaf development, is regulated by complex network of senescence associated genes (SAGs). Several NAC transcription factors have been found to regulates leaf senescence in Arabidopsis, but only a few senescence-associated NAC TFs have been identified in rice.

[Materials and Methods]
The T-DNA insertion knockout mutant of *OsMYB17* was obtained from Kyung-Hee University, Korea. The *Oriza sativa* Japonica cultivar 'Dongjin' (parental line) was used as WT. WT and the onac016 mutant were grown the paddy field under natural long-day (NLD) condition ($\geq$14 h sunlight/day, 37°N latitude) in Suwon, South Korea or growth chamber under long-day (LD) condition (14h light/10h dark, 30°C).

[Results and Discussion]
In this study, we identified new senescence-associated NAC TF in rice, *OsMYB17*. We found that *OsMYB17* expression level increased during senescence. *Osmyb17* T-DNA KO mutants showed stay green phenotype during dark-induced and natural senescence condition, while *OsMYB17-OX* transgenic plants showed early senescence phenotype, suggesting OsMYB17 acts as senescence promoting NAC TF. Furthermore, we found that *OsMYB17* expression is induced by ABA, and osmyb17 mutants showed stay-green phenotype during ABA induced senescence. By microarray and qRT-PCR analysis, several Senescence-Associated Genes (*NOL, OsNAP*), Chlorophyll Degradation Genes (*OsSGR, OsNYC1*), and ABA signaling genes (*ABF1*) were down-regulated in *Osmyb17* under Dark-Induced Senescence condition. These results suggest that OsMYB17 plays an important role in promotion of leaf senescence through ABA-signaling pathway.

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