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## OsDOR1, a novel glycine rich protein that regulates rice seed dormancy

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### Abstract

Regulation of seed dormancy is important in many grains to prevent pre-harvest sprouting. To identify and understand the gene related to seed dormancy regulation, we have screened for viviparous phenotypes of rice mutant lines generated by insertion of Ds transposon in a Korean Japonica cultivar (Dongjin) background. One of the mutants, which represented viviparous phenotype, was selected for further seed dormancy regulation studies and designated *dor1*. The *dor1* mutant has single Ds insertion in the second exon of OsDor1 gene encoding glycine-rich protein. The seeds of *dor1* mutant showed a higher germination potential and reduced abscisic acid (ABA) sensitivity compared to wild type Dongjin. Over-expression of Dor1 complements the viviparous phenotype of *dor1* mutant, indicating that Dor1 function in seed dormancy regulation. Subcellular localization assay of Dor1-GFP fusion protein revealed that the OsDor1 protein mainly localized to membrane and the localization of OsDOR1 was influenced by presence of a gibberelin (GA) receptor OsGID1. Further bimolecular fluorescence complementation (BiFC) analysis indicated that OsDOR1 interact with OsGID1. The combined results suggested that OsDOR1 regulates seed dormancy by interacting with OsGID1 in GA response. Additionally, expression of OsDOR1 partially complemented the cold sensitivity of *Escherichia coli* BX04 mutant lacking four cold shock proteins, indicating that OsDOR1 possessed RNA chaperone activity. Supported by a postdoctoral Fellowship and by a grant (PJ012476 & PJ010015) from RDA.

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