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Interaction of AtHMGB15, an ARID-HMG family protein, with RING-H2 type E3 ubiquitin ligase AtATL79.

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Highlights

- **AtHMGB15 interacts with RING-H2 type E3 ubiquitin ligase AtATL79**
- **AtHMGB15 and AtATL79 co-localized in the nucleus for the interaction**
- **AtATL79 polyubiquitinate AtHMGB15 protein at lysine 420**
- **Ub/26S proteasome system regulates AtHMGB15 protein level inside the cell**

Abstract:

Recent studies have shown the importance of Ub/proteasome pathway in regulating transcription for proper synchronization of gene expression. Using yeast two-hybrid screening, we have identified an *Arabidopsis* RING-H2 type of E3 ubiquitin ligase, AtATL79 that interacts with ARID-HMG protein AtHMGB15 mainly through the ARID domain. Sequence analysis of the RING domain of AtATL79 indicates the presence of conserved six Cys and two His residue that coordinate two Zn^{+2} ions. AtATL79 is a membrane-bound protein that colocalizes with AtHMGB15 in the nucleus. AtATL79 is an E3 ubiquitin ligase that self-ubiquitinates at Lys 76 residue *in vitro*. Moreover, AtHMGB15 was found to be polyubiquitinated by AtATL79 both *in vitro* and *in vivo* at lysine residue 420. Interestingly,