**The role of ubiquitination in rice immunity against *Magnaporthe oryzae***

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**Abstract:**

The ubiquitin-proteasome system (UPS) is one of the most important protein turnover mechanisms that regulates growth, development and responses to abiotic and biotic stresses. Among the three main UPS enzymes, the highly flexible and diverse E3 ubiquitin ligases (E3s) play a critical role in the regulation of their substrates. Using the AvrPiz-t-Piz-t pair as a model, we found that several E3s are crucial in the rice-*Magnapothe oryzae* interaction. Although AvrPiz-t does not interact with the NLR Piz-t directly, it binds to several AvrPiz-t interacting proteins (APIPs). AvrPiz-t ubiquitinates and degrades both E3 ligases APIP6 and APIP10, in return, both E3s also ubiquitinate and degrade AvrPiz-t. Although APIP10 does not interact with Piz-t, knocking down of *APIP10* causes Piz-t accumulation and increased cell death. Furthermore, we discovered that two VOZ transcription factors link APIP10 and Piz-t to modulate immunity in rice. Additionally, we found that the U-box-type E3 ligase OsPUB73 positively regulates resistance against *M. oryzae* by interacting with and promoting the degradation of OsVQ25. To rapidly identify target E3 ligases in the rice proteome, we generated a complete ubiquitin E3 ligase-encoding open reading frame (UbE3-ORFeome) library containing the 1515 E3 ligase genes in the rice genome. Using this library, we identified the hub F-box-type E3 ligase OsFBK16 that promoted the degradation of phenylalanine ammonia lyase family. Taken together, our findings demonstrate that the UPS plays significant roles in rice immunity against *M. oryzae* and the UbE3-ORFeome library is a powerful proteomic tool in dissecting the complete UPS system in rice.