

The Wang laboratory just published a paper entitled “[The RhoGAP SPIN6 Associates with SPL11 and OsRac1 and Negatively Regulates Programmed Cell Death and Innate Immunity in Rice](#)” in the premier pathology journal PLOS Pathogens. (<http://journals.plos.org/plospathogens/article?id=10.1371/journal.ppat.1004629>)

The laboratory previously demonstrated that the rice U-box E3 ligase SPL11 and its *Arabidopsis* ortholog PUB13 negatively regulate programmed cell death (PCD) and defense response. However, the components involved in the SPL11/PUB13-mediated PCD and immune signaling pathway remain unknown. In this study, they reported that SPL11-interacting Protein 6 (SPIN6) is a Rho GTPase-activating protein (RhoGAP) that interacts with SPL11 *in vitro* and *in vivo*. SPL11 ubiquitinates SPIN6 *in vitro* and degrades SPIN6 *in vivo* via the 26S proteasome-dependent pathway. Both RNAi silencing in transgenic rice and knockout of *Spin6* in a T-DNA insertion mutant lead to PCD and increased resistance to the rice blast pathogen *Magnaporthe oryzae* and the bacterial blight pathogen *Xanthomonas oryzae* pv. *oryzae*. Strikingly, SPIN6 interacts with the small GTPase OsRac1, catalyze the GTP-bound OsRac1 into the GDP-bound state *in vitro* and has GAP activity towards OsRac1 in rice cells. Their results demonstrate that the RhoGAP SPIN6 acts as a linkage between a U-box E3 ligase-mediated ubiquitination pathway and a small GTPase-associated defense system for plant immunity.

