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Auxin homeostasis mediates adaptation responses to both biotic and abiotic stresses in *Arabidopsis*

Jung-Eun Park,¹ Ju-Young Park,² Youn-Sung Kim,¹ Jae-Hoon Jung,¹ Minsun Lee,¹ Sun-Young Kim,¹ Jungmook Kim,³ Yong-Hwan Lee,² and Chung-Mo Park^{1,*}

¹Graduate School of Chemistry and Molecular Engineering and Molecular Signaling Laboratory, Seoul National University, Seoul 151-742, Korea; ²School of Agricultural Biotechnology and Center for Agricultural Biomaterials, Seoul National University, Seoul 151-742, Korea; ³Department of Applied Plant Science and Agricultural Plant Stress Research Center, Chonnam National University, Gwangju 500-757, Korea
(*cmpark@snu.ac.kr)

Plants vigilantly monitor environmental fluctuations to adjust growth and metabolism in an optimal way. One such example is plant adaptation to biotic and abiotic stresses. However, the underlying mechanisms have not been elucidated. Here, we demonstrate that auxin homeostasis mediates adaptation responses to diverse environmental stresses. Endogenous pool of active auxin is regulated through negative feedback by an auxin-inducible *GH3* gene, *WES1*, that encodes an auxin-conjugating enzyme. A *WES1*-overexpressing *Arabidopsis* mutant, *wes1-D*, exhibits typical auxin-deficient traits in the light. Interestingly, *WES1* is also activated by salicylic acid (SA) and pathogen infections as well as by abscisic acid (ABA) and abiotic stresses. Accordingly, *wes1-D* is resistant to pathogen infections and abiotic stresses, and stress-regulated genes, including *PR-1* and *CBFs*, are up-regulated in the mutant. The *WES1*-mediated growth suppression would direct the reallocation of metabolic energy and resources to resistance responses and explain the fitness costs of induced resistance in stressed plants.

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