ABSTRACT

"Transcriptional control of plant cell dedifferentiation by WIND1."

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Many multicellular organisms have a remarkable capacity to regenerate new organs after wounding. As a first step of organ regeneration, adult somatic cells often dedifferentiate to reacquire cell proliferation potential but mechanisms underlying this control remain unknown in plants. We have recently shown that an AP2/ERF transcription factor WOUND-INDUCED DEDIFFERENTIATION 1 (WIND1) participates in the regulation of cell dedifferentiation in *Arabidopsis* (Iwase et al. 2011). *WIND1* is rapidly induced at the wound site and it promotes cell dedifferentiation and subsequent formation of callus, a mass of pluripotent cells. We further demonstrate that ectopic overexpression of *WIND1* is sufficient to establish and maintain the dedifferentiated status of somatic cells without exogenous auxin and cytokinin. An *in vivo* imaging of a synthetic cytokinin reporter reveals that wounding up-regulates the B-type ARABIDOPSIS RESPONSE REGULATOR (ARR)-mediated cytokinin response and that WIND1 acts via the ARR-dependent signaling pathway to promote cell dedifferentiation. Discovery of WIND1 provides a new molecular basis to further dissect how transcriptional regulators reprogram cellular differentiation status in plants.

Iwase A et al. The AP2/ERF transcription factor WIND1 controls cell dedifferentiation in *Arabidopsis*. *Curr Biol 21: 508-514* (2011)