ON THE COVER

Tracheary element differentiation inhibitory factor (TDIF) peptide signaling plays a crucial role in the maintenance of procambial/cambial stem cells. Hirakawa et al. (pages 2618–2629) show that TDIF functions in the regulation of stem cell proliferation and xylem differentiation by two independent pathways. Activation of the WUSCHEL-related HOMEBOX4 (WOX4) gene by TDIF is involved only in the enhancement of procambial cell proliferation, whereas TDIF-mediated inhibition of xylem commitment is independent of WOX4. The cover shows a cross section of secondary vascular tissues in a tdr wox4 double mutant hypocotyl, in which the procambial/cambial stem cells adjacent to the phloem cells (green dots) have differentiated into xylem cells (with orange secondary walls), causing premature growth termination of secondary vascular tissues.

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