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ON THE COVER

Roots must circumnavigate barriers in soil to optimize nutrient and water access as well as to physically support aerial organs. The integration of environmental stimuli controlling root architecture and growth is poorly understood. Chen et al. (pages 1972–1991) report the identification of regulatory components of root thigmomorphogenesis. The phylogenetically related *Arabidopsis thaliana* genes *MLO4* and *MLO11* encode heptahelical, plasma membrane–localized proteins predominantly expressed in the root tip. Null mutations in either of these genes resulted in anisotropic, chiral root expansion manifesting as tightly curled root patterns upon contact with solid surfaces. A combination of genetic analysis, chemical genetics, and cell biology showed that cooperative function of *MLO4* and *MLO11* in controlling root thigmomorphogenesis is auxin dependent. The cover illustration shows a typical touch-induced root coiling pattern (viewed from the top) of a 6-d-old *Arabidopsis mlo4* mutant seedling on a hard agar medium.

IN BRIEF

REVIEW

RESEARCH ARTICLES

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