ON THE COVER

Cells must sense and regulate their internal \( \text{NH}_4^+ \) levels to modulate nitrogen levels and avoid \( \text{NH}_4^+ \) toxicity. Bai et al. (pages 1497–1511) identify an Arabidopsis [Ca\(^{2+}\)\text{cyt}] associated protein kinase (CAP1), a receptor-like kinase that mediates \( \text{NH}_4^+ \) homeostasis. CAP1 also regulates the polar growth of root hairs by maintaining tip-focused cytoplasmic Ca\(^{2+}\) gradients. The cap1-1 mutation specifically affects root hair tip elongation and the morphology of root hairs on Murashige and Skoog medium and produces elevated levels of cytoplasmic \( \text{NH}_4^+ \). Ammonium depletion from the medium reestablished the Ca\(^{2+}\) gradient necessary for normal root hair tip growth in the mutant. The image shows abnormal root hairs in a cap1-1 mutant grown on Murashige and Skoog medium.

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