VOLUME 26 NUMBER 4 APRIL 2014

# THE PLANT CELL

***ARABIDOPSIS* CAP1 FUNCTIONS IN THE TIP GROWTH OF ROOT HAIRS**

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THE
# PLANT
CELL

Volume 26 Number 4 April 2014

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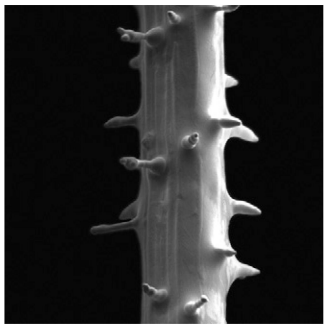
## ON THE COVER



Cells must sense and regulate their internal $NH_4^+$ levels to modulate nitrogen levels and avoid $NH_4^+$ toxicity. Bai et al. (pages 1497–1511) identify an *Arabidopsis* $[Ca^{2+}]_{cyt}$-associated protein kinase (CAP1), a receptor-like kinase that mediates $NH_4^+$ 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 $NH_4^+$. 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.

## IN BRIEF



## LARGE-SCALE BIOLOGY ARTICLES



## RESEARCH ARTICLES

[C] Some figures in this article are displayed in color online but in black and white in the print edition.

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***The Plant Cell*** (ISSN 1040-4651, online ISSN 1532-298X) is published monthly (one volume per year) by the American Society of Plant Biologists, 15501 Monona Drive, Rockville, MD 20855-2768, and is produced by Dartmouth Journal Services, Waterbury, VT. The institutional price for the print and online versions is based on type of institution; contact institution@aspb.org. Single copies may be purchased for $40 each, plus $10 shipping (U.S.) or $12 (outside U.S.). Members of the American Society of Plant Biologists may subscribe to *The Plant Cell* for $240. Nonmember individuals may subscribe for $500. Students may subscribe for $165. For matters regarding subscriptions, contact Suzanne Cholwek, ASPB, 15501 Monona Drive, Rockville, MD 20855-2768; telephone 301/296-0926; fax 301/251-6740; e-mail scholwek@aspb.org. Notify ASPB in writing within 3 months (domestic) or 6 months (foreign) of issue date, and defective copies or copies lost in the mail will be replaced. Send all inquiries regarding display advertising to FASEB AdNet, 9650 Rockville Pike, Bethesda, MD 20814-3998; telephone 301/634-7791; fax 301/634-7153; e-mail adnet@faseb.org. Periodicals postage paid at Rockville, MD 20850, and at additional mailing offices.

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