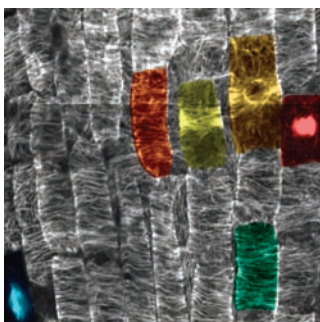


T H E  
**PLANT**  
C E L L

Volume 19 Number 9 September 2007

The electronic form of this issue, available at [www.plantcell.org](http://www.plantcell.org), is the journal of record.

**ON THE COVER**



In animals, members of the ORBIT/MAST/CLASP family of microtubule-associated proteins associate with the plus ends of microtubules. Known functions include promoting the addition of tubulin subunits into attached kinetochore fibers during mitosis and stabilizing microtubules in the vicinity of the plasma membrane during interphase. Ambrose et al. (pages 2763–2775) show that the CLASP ortholog in plant cells localizes to microtubules at all stages of the cell cycle and shows enrichment at the growing plus ends. CLASP most likely contributes to cell division, cell expansion, organ morphology, and axial extension in plants through its role in stabilizing microtubules. The cover image highlights microtubule arrays at key stages of the cell cycle in epidermal cells of an *Arabidopsis* root tip. Ambrose et al. report on the consequences of knocking out CLASP at each of these stages.

**COMMENTARY**

- Returning to Our Roots: Making Plant Biology Research Relevant to Future Challenges in Agriculture** 2695  
Steven J. Rothstein

**IN THIS ISSUE**

- Positive and Negative Feedback Coordinate Regulation of Disease Resistance Gene Expression** 2700  
Nancy A. Eckardt

**IN BRIEF**

- Shoot Meristem Development Depends on *N*-Myristoylation of SnRK1  
Brassinosteroid Signaling Involves the Nucleocytoplasmic Shuttling Activity of BZR1** 2703  
Nancy A. Eckardt

**RESEARCH ARTICLES**

- Oryza sativa Dicer-like4* Reveals a Key Role for Small Interfering RNA Silencing in Plant Development** [W](#)[O](#)[A](#) 2705

Bin Liu, Zhiyu Chen, Xianwei Song, Chunyan Liu, Xia Cui, Xianfeng Zhao, Jun Fang, Wenying Xu, Huiyong Zhang, Xiujie Wang, Chengcai Chu, Xingwang Deng, Yongbiao Xue, and Xiaofeng Cao

- The *Arabidopsis* BEL1-LIKE HOMEODOMAIN Proteins SAW1 and SAW2 Act Redundantly to Regulate *KNOX* Expression Spatially in Leaf Margins** [W](#) 2719

Ravi Kumar, Kumuda Kushalappa, Dietmute Godt, Mark S. Pidkowich, Sandro Pastorelli, Shelley R. Hepworth, and George W. Haughn

- The *GIGANTEA*-Regulated MicroRNA172 Mediates Photoperiodic Flowering Independent of *CONSTANS* in *Arabidopsis*** [W](#)[O](#)[A](#) 2736

Jae-Hoon Jung, Yeon-Hee Seo, Pil Joon Seo, Jose Luis Reyes, Ju Yun, Nam-Hai Chua, and Chung-Mo Park

- Nucleocytoplasmic Shuttling of BZR1 Mediated by Phosphorylation Is Essential in *Arabidopsis* Brassinosteroid Signaling** [W](#)[O](#)[A](#) 2749

Hojin Ryu, Kangmin Kim, Hyunwoo Cho, Joonghyuk Park, Sunghwa Choe, and Ildoo Hwang

## EDITORIAL BOARD

### Editor

Richard A. Jorgensen

### Coeditors

Sarah M. Assmann  
Jody Banks  
Alice Barkan  
Kathy Barton  
David Baum  
Sebastian Bednarek  
James Birchler  
Ulla Bonas  
Christopher Bowler  
Xing Wang Deng  
Rebecca Doerge  
Mark Estelle  
Pascal Genschik  
Jean T. Greenberg  
Thomas Guilfoyle  
Peter Hepler  
Ann Hirsch  
Patricia Leon  
William Lucas  
Cathie Martin  
Marjori Matzke  
Krishna K. Niyogi  
Joseph Noel  
Magnus Nordborg  
Michael Palmgren  
Markus Pauly  
Scott C. Peck  
Karen S. Schumaker  
David Smyth  
Uwe Sonnewald  
Chris J. Staiger  
Nicholas J. Talbot  
Masamitsu Wada

### Managing Editor

John Long

### News and Reviews Editor

Nancy A. Eckardt

### Science Editor

Vacant

### Production Manager

Susan L. Entwistle

### Manuscript Manager

Annette Kessler

### Publications Director

Nancy A. Winchester

### Publisher

American Society of  
Plant Biologists  
Executive Director,  
Crispin Taylor

### Editorial Office

15501 Monona Drive  
Rockville, Maryland 20855-2768  
Telephone: 301/251-0560, ext. 119  
Fax: 301/279-2996  
<http://www.aspb.org>

Online at [www.plantcell.org](http://www.plantcell.org)


- The *Arabidopsis* CLASP Gene Encodes a Microtubule-Associated Protein Involved in Cell Expansion and Division** [W](#) 2763  
J. Christian Ambrose, Tsubasa Shoji, Amanda M. Kotzer, Jamie A. Pighin, and Geoffrey O. Wasteneys
- The MYB46 Transcription Factor Is a Direct Target of SND1 and Regulates Secondary Wall Biosynthesis in *Arabidopsis*** 2776  
Ruiqin Zhong, Elizabeth A. Richardson, and Zheng-Hua Ye
- LITTLE NUCLE1 Genes Affecting Nuclear Morphology in *Arabidopsis thaliana*** [W](#) 2793  
Travis A. Dittmer, Nicola J. Stacey, Keiko Sugimoto-Shirasu, and Eric J. Richards
- N-Myristoylation Regulates the SnRK1 Pathway in *Arabidopsis*** [W](#) 2804  
Michèle Pierre, José A. Traverso, Bertrand Boisson, Séverine Domenichini, David Bouchez, Carmela Giglione, and Thierry Meinell
- INCURVATA2 Encodes the Catalytic Subunit of DNA Polymerase  $\alpha$  and Interacts with Genes Involved in Chromatin-Mediated Cellular Memory in *Arabidopsis thaliana*** 2822  
José María Barrero, Rebeca González-Bayón, Juan Carlos del Pozo, María Rosa Ponce, and José Luis Micol
- The Exposed N-Terminal Tail of the D1 Subunit Is Required for Rapid D1 Degradation during Photosystem II Repair in *Synechocystis* sp PCC 6803** [W](#) 2839  
Josef Komenda, Martin Tichý, Ondřej Prášil, Jana Knopková, Stanislava Kuviková, Remco de Vries, and Peter J. Nixon
- An Oncoprotein from the Plant Pathogen *Agrobacterium* Has Histone Chaperone-Like Activity** [W](#) 2855  
Shinji Terakura, Yoshihisa Ueno, Hideaki Tagami, Saeko Kitakura, Chiyoko Machida, Hirotsu Wabiko, Hiroji Aiba, Léon Otten, Hironaka Tsukagoshi, Kenzo Nakamura, and Yasunori Machida
- AP2-ERF Transcription Factors Mediate Nod Factor-Dependent Mt *ENOD11* Activation in Root Hairs via a Novel *cis*-Regulatory Motif** [W](#) 2866  
Andry Andriankaja, Aurélien Boisson-Dernier, Lisa Frances, Laurent Sauviac, Alain Jauneau, David G. Barker, and Fernanda de Carvalho-Niebel
- Molecular Architecture of Strictosidine Glucosidase: The Gateway to the Biosynthesis of the Monoterpenoid Indole Alkaloid Family** [W](#) 2886  
Leif Barleben, Santosh Panjikar, Martin Ruppert, Juergen Koepke, and Joachim Stöckigt
- Crystal Structures of Flax Rust Avirulence Proteins AvrL567-A and -D Reveal Details of the Structural Basis for Flax Disease Resistance Specificity** [W](#) 2898  
Ching-I A. Wang, Gregor Gunčar, Jade K. Forwood, Trazel Teh, Ann-Maree Catanzariti, Gregory J. Lawrence, Fiona E. Loughlin, Joel P. Mackay, Horst Joachim Schirra, Peter A. Anderson, Jeffrey G. Ellis, Peter N. Dodds, and Boštjan Kobe
- Functional Dissection of Naturally Occurring Amino Acid Substitutions in eIF4E That Confers Recessive Potyvirus Resistance in Plants** [W](#)[O](#)[A](#) 2913  
Inhwa Yeam, Jason R. Cavatorta, Daniel R. Ripoll, Byoung-Cheori Kang, and Molly M. Jahn
- A Cluster of Disease Resistance Genes in *Arabidopsis* Is Coordinately Regulated by Transcriptional Activation and RNA Silencing** [W](#) 2929  
Hankuil Yi and Eric J. Richards

**Rice Pti1a Negatively Regulates *RAR1*-Dependent Defense Responses**   2940

Akira Takahashi, Ganesh Kumar Agrawal, Muneo Yamazaki, Katsura Onosato, Akio Miyao, Tsutomu Kawasaki, Ko Shimamoto, and Hirohiko Hirochika

**The *Arabidopsis* E3 SUMO Ligase SIZ1 Regulates Plant Growth and Drought Responses**  2952

Rafael Catala, Jian Ouyang, Isabel A. Abreu, Yuxin Hu, Haksoo Seo, Xiuren Zhang, and Nam-Hai Chua

 Online version contains Web-only data.

 Open Access articles can be viewed online without a subscription.



© 2007 American Society of Plant Biologists. All rights reserved. Printed on acid-free paper effective with Volume 1, Number 1, January 1989.

Printed in the United States of America.

---

**The Plant Cell** (ISSN 1040-4651, online ISSN 1531-298X) 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](mailto:institution@aspb.org). A subscription includes both *The Plant Cell* and *Plant Physiology*; single copies may be purchased for \$75 each, plus \$7 shipping (U.S.) or \$9 (outside U.S.). Members of the American Society of Plant Biologists may subscribe to *The Plant Cell* for \$160. Nonmember individuals may subscribe for \$325. For matters regarding subscriptions, contact Suzanne Cholwek, ASPB, 15501 Monona Drive, Rockville, MD 20855-2768; telephone 301/251-0560, ext. 141; fax 301/251-6740; e-mail [scholwek@aspb.org](mailto: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](mailto:adnet@faseb.org). Periodicals postage paid at Rockville, MD 20850, and at additional mailing offices.

**Postmaster:** Send address changes to *The Plant Cell*, American Society of Plant Biologists, 15501 Monona Drive, Rockville, MD 20855-2768. The online version of *The Plant Cell* is available at [www.plantcell.org](http://www.plantcell.org).

**Permission to Reprint:** Permission to make digital or hard copies of part or all of a work published in *The Plant Cell* is granted without fee for personal or classroom use provided that copies are not made or distributed for profit or commercial advantage and that copies bear the full citation and the following notice on the first page: "Copyright American Society of Plant Biologists." For all other kinds of copying, request permission in writing from Nancy A. Winchester, Publications Director, ASPB headquarters.

This information is current as of April 5, 2020

<b>Permissions</b>	<a href="https://www.copyright.com/ccc/openurl.do?sid=pd_hw1532298X&amp;issn=1532298X&amp;WT.mc_id=pd_hw1532298X">https://www.copyright.com/ccc/openurl.do?sid=pd_hw1532298X&amp;issn=1532298X&amp;WT.mc_id=pd_hw1532298X</a>
<b>eTOCs</b>	Sign up for eTOCs at: <a href="http://www.plantcell.org/cgi/alerts/ctmain">http://www.plantcell.org/cgi/alerts/ctmain</a>
<b>CiteTrack Alerts</b>	Sign up for CiteTrack Alerts at: <a href="http://www.plantcell.org/cgi/alerts/ctmain">http://www.plantcell.org/cgi/alerts/ctmain</a>
<b>Subscription Information</b>	Subscription Information for <i>The Plant Cell</i> and <i>Plant Physiology</i> is available at: <a href="http://www.aspb.org/publications/subscriptions.cfm">http://www.aspb.org/publications/subscriptions.cfm</a>