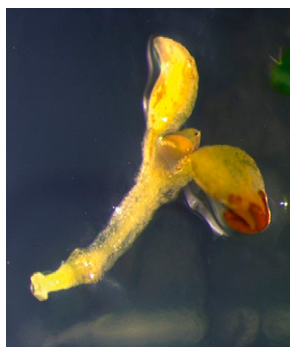


T H E
PLANT
C E L L

Volume 30 Number 6 June 2018

The electronic form of this issue, available at www.plantcell.org, is the journal of record.

ON THE COVER



Tissue and cell identity in plants is extraordinarily plastic. A variety of chromatin-based regulatory mechanisms ensure that gene expression occurs in the appropriate tissues. One such mechanism, deposition of the histone tail modification H3K27me₃, represses genes in a tissue-specific manner. Carter et al. (pages 1337–1352) propose the existence of an epigenetic pathway linking H3K27me₃ enrichment with enrichment of the histone variant H2A.Z, an epigenetic mark associated with inducible changes in gene expression state. This presents intriguing possibilities for the epigenetic basis of plant developmental plasticity. Furthermore, the authors uncover roles for the chromatin remodelers PKL and PIE1, which promote enrichment of H3K27me₃ and H2A.Z, respectively. The cover image shows an Arabidopsis seedling lacking PKL and PIE1 with severe defects in development and organogenesis.

IN BRIEF

- A New Polysaccharide with a Long Evolutionary History**^[OPEN] 1165
Peter Ulvskov and Jesper Harholt
- Divide and Conquer: High-Throughput Screening of Chlamydomonas Cell Cycle Mutants**^[OPEN] 1167
Patrice A. Salomé
- Nitrate Ahoy! Shoot Cytokinin Signals Integrate Growth Responses with Nitrogen Availability**^[OPEN] 1169
Sonali Roy
- Is Genetic Evolution Predictable?**^[OPEN] 1171
Brook T. Moyers

LETTER TO THE EDITOR

- ERULUS Is a Plasma Membrane-Localized Receptor-Like Kinase That Specifies Root Hair Growth by Maintaining Tip-Focused Cytoplasmic Calcium Oscillations**^[OPEN] 1173
Taegun Kwon, J. Alan Sparks, Fuqi Liao, and Elison B. Blancaflor

LARGE-SCALE BIOLOGY ARTICLES

- Comprehensive Discovery of Cell-Cycle-Essential Pathways in *Chlamydomonas reinhardtii*** 1178
Michal Breker, Kristi Lieberman, and Frederick R. Cross
- The Defense Phytohormone Signaling Network Enables Rapid, High-Amplitude Transcriptional Reprogramming during Effector-Triggered Immunity**^[OPEN] 1199
Akira Mine, Carolin Seyfferth, Barbara Kracher, Matthias L. Berens, Dieter Becker, and Kenichi Tsuda
- Response to Persistent ER Stress in Plants: A Multiphasic Process That Transitions Cells from Prosurvival Activities to Cell Death**^[OPEN] 1220
Renu Srivastava, Zhaoxia Li, Giulia Russo, Jie Tang, Ran Bi, Usha Muppurala, Sivanandan Chudalayandi, Andrew Severin, Mingze He, Samuel I. Vaitkevicius, Carolyn J. Lawrence-Dill, Peng Liu, Ann E. Stapleton, Diane C. Bassham, Federica Brandizzi, and Stephen H. Howell

Editor in Chief
Sabeeha Merchant

Senior Features Editor
Nancy A. Eckardt

Features Editor
Mary Williams

Science Editors
Greg Bertoni
Kathleen L. Farquharson
Nancy R. Hofmann
Jennifer Lockhart
Jennifer M. Mach

Managing Editor
Jennifer A. Regala

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: 301/296-0908

Online at www.plantcell.org



© 2018 American Society of Plant Biologists. All rights reserved.

RESEARCH ARTICLES

- Responses to Systemic Nitrogen Signaling in Arabidopsis Roots Involve *trans*-Zeatin in Shoots** 1243
Arthur Poitout, Amandine Crabos, Ivan Petřík, Ondřej Novák, Gabriel Krouk, Benoît Lacombe, and Sandrine Ruffel
- The AWPM-19 Family Protein OsPM1 Mediates Abscisic Acid Influx and Drought Response in Rice** 1258
Lingya Yao, Xuan Cheng, Zongying Gu, Wei Huang, Shou Li, Linbo Wang, Yong-Fei Wang, Ping Xu, Hong Ma, and Xiaochun Ge
- Phytochrome B Requires PIF Degradation and Sequestration to Induce Light Responses across a Wide Range of Light Conditions** 1277
Eunae Park, Yeojae Kim, and Giltso Choi
- Functional Characterization of a Glycosyltransferase from the Moss *Physcomitrella patens* Involved in the Biosynthesis of a Novel Cell Wall Arabinoglucan** 1293
Alison W. Roberts, Jelle Lahnstein, Yves S.Y. Hsieh, Xiaohui Xing, Kuok Yap, Arielle M. Chaves, Tess R. Scavuzzo-Duggan, George Dimitroff, Andrew Lonsdale, Eric Roberts, Vincent Bulone, Geoffrey B. Fincher, Monika S. Doblin, Antony Bacic, and Rachel A. Burton
- The KNOX1 Transcription Factor SHOOT MERISTEMLESS Regulates Floral Fate in Arabidopsis^[OPEN]** 1309
Ohad Roth, John P. Alvarez, Matan Levy, John L. Bowman, Naomi Ori, and Eilon Shani
- Parallel Evolution of Common Allelic Variants Confers Flowering Diversity in *Capsella rubella*^[OPEN]** 1322
Li Yang, Hui-Na Wang, Xing-Hui Hou, Yu-Pan Zou, Ting-Shen Han, Xiao-Min Niu, Jie Zhang, Zhong Zhao, Marco Todesco, Sureshkumar Balasubramanian, and Ya-Long Guo
- The Chromatin Remodelers PKL and PIE1 Act in an Epigenetic Pathway That Determines H3K27me3 Homeostasis in Arabidopsis** 1337
Benjamin Carter, Brett Bishop, Kwok Ki Ho, Ru Huang, Wei Jia, Heng Zhang, Pete E. Pascuzzi, Roger B. Deal, and Joe Ogas
- A Suppressor Screen for AGO1 Degradation by the Viral F-Box P0 Protein Uncovers a Role for AGO DUF1785 in sRNA Duplex Unwinding^[OPEN]** 1353
Benoît Derrien, Marion Clavel, Nicolas Baumberger, Taichiro Iki, Alexis Sarazin, Thibaut Hacquard, María Rosa Ponce, Véronique Ziegler-Graff, Hervé Vaucheret, José Luis Micol, Olivier Voinnet, and Pascal Genschik

[OPEN] Articles can be viewed without a subscription.

The Plant Cell (eISSN 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 The Sheridan Group, Waterbury, VT. For matters regarding library 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. Send all inquiries regarding advertising to Alison Bashian, Advertising & Sponsorship Sales; telephone 703/964-1240 x280; fax 703/964-1246; e-mail abashian@conferencemanagers.com. The online version of *The Plant Cell* is available at 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 10, 2021

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