On the Cover: The cover photo, taken by Drs. Yong-Ling Ruan and Eric Hines, shows rapidly elongating cotton (Gossypium hirsutum) fiber cells from the outer seed coat epidermis using a confocal microscope for preloaded fluorescent dye, carboxyfluorescein. Each cotton fiber is a single cell that undergoes rapid and synchronized unidirectional expansion to several centimeters long by approximately 18 d after anthesis before it switches to cell wall cellulose synthesis. Thus, cotton fiber represents an excellent cell model to study regulation of cell expansion. In this issue, Wang et al. (pp. 744–756) explore the roles and mechanisms of vacuolar invertase (VIN) in controlling plant cell expansion. They discovered that VIN regulates cotton fiber and Arabidopsis (Arabidopsis thaliana) root elongation in osmotic-dependent and -independent pathways, respectively. The study provides an example that a given protein (e.g. VIN) could control similar developmental processes such as cell expansion through different mechanisms in different cell types.
How Do We Improve Crop Production in a Warming World?  
Elizabeth A. Ainsworth and Donald R. Ort  
Gene Clusters for Secondary Metabolic Pathways: An Emerging Theme in Plant Biology.  
Anne Osbourn  
Plant Immunity: It’s the Hormones Talking, But What Do They Say?  
Adriaan Verhoeven, Saskia C.M. van Wees, and Corné M.J. Pieterse  
The Past, Present, and Future of Vegetative Phase Change.  
R. Scott Poethig  
Understanding Plant Vacuolar Trafficking from a Systems Biology Perspective.  
Abel Rosado and Natasha V. Raikhel  
Pathogen-Associated Molecular Pattern-Triggered Immunity: Veni, Vidi…?  
Cyril Zipfel and Silke Robatzek  
Lignin and Biomass: A Negative Correlation for Wood Formation and Lignin Content in Trees.  
Evandro Novaes, Matias Kirst, Vincent Chiang, Heike Winter-Sederoff, and Ronald Sederoff  
Discover and Connect Cellular Signaling.  
Jen Sheen  
Gibberellin-GID1-DELLA: A Pivotal Regulatory Module for Plant Growth and Development.  
Tai-ping Sun  
Molecular Basis of Plant Cold Acclimation: Insights Gained from Studying the CBF Cold Response Pathway.  
Michael F. Thomashow  
The Puzzle of Phloem Pressure.  
Robert Turgeon  
Quantitative Trait Loci, Epigenetics, Sugars, and MicroRNAs: Quaternaries in Phosphate Acquisition and Use.  
Carroll P. Vance  
Enhancing C₃ Photosynthesis.  
Susanne von Caemmerer and John R. Evans  
From Endosymbiosis to Synthetic Photosynthetic Life.  
Andreas P.M. Weber and Katherine W. Osteryoung  
Evolution of C₄ Photosynthesis—Looking for the Master Switch.  
Peter Westhoff and Udo Gowik

ON THE INSIDE

Peter V. Minorsky

BREAKTHROUGH TECHNOLOGIES

Ina Weissflog, Nadine Vogler, Denis Akimov, Andrea Delilit, Doreea Schachtschabel, Ales Svatos, Wilhelm Boland, Benjamin Dietzek, and Jürgen Popp  
Jeongsk Kim and David E. Somers  
[OA]Stacking Multiple Transgenes at a Selected Genomic Site via Repeated Recombinase-Mediated DNA Cassette Exchanges.  
Zhongsen Li, Bryan P. Moon, Aiqiu Xing, Zhan-Bin Liu, Richard P. McDell, Howard G. Damade, and S. Carl Falco

RESEARCH ARTICLES

BIOCHEMICAL PROCESSES AND MACROMOLECULAR STRUCTURES

Yan Liang, Ahmed Faik, Marcia Kieliszewski, Li Tan, Wen-Liang Xu, and Allan M. Showalter  
Cécile Vriet, Tracey Welham, Andreas Brachmann, Marilyn Pike, Jodie Pike, Jillian Perry, Martin Parniske, Shusei Sato, Satoshi Tabata, Alison M. Smith, and Trevor L. Wang  
Raymond Campbell, Laurence J.M. Dureux, Wayne L. Morris, Jenny A. Morris, Jeffrey C. Suttle, Gavin Ramsay, Glenn J. Bryan, Pete E. Hedley, and Mark A. Taylor

iv
Continued on next page


Analysis of the Rice Mitochondrial Carrier Family Reveals Anaerobic Accumulation of a Basic Amino Acid Carrier Involved in Arginine Metabolism during Seed Germination. Nicolas L. Taylor, Katharine A. Howell, Joshua L. Heazlewood, Tzu Yien W. Tan, Reena Narsai, Shaobai Huang, James Whelan, and A. Harvey Millar

Extracellular Nucleotides Elicit Cytosolic Free Calcium Oscillations in Arabidopsis. Kiwonu Tanaka, Sarah J. Swanson, Simon Gilroy, and Gary Stacey

Tethering Factors Required for Cytokinesis in Arabidopsis. Martha Thellmann, Katarzyna Rybak, Knut Thiele, Gerhard Wanner, and Farhah F. Assaad

Leaf Senescence Signaling: The Ca^{2+}-Conducting Arabidopsis Cyclic Nucleotide Gated Channel2 Acts through Nitric Oxide to Repress Senescence Programming. Wei Ma, Andries Smigel, Robin K. Walker, Wolfgang Moeder, Keiko Yoshioka, and Gerald A. Berkowitz

Evidence That High Activity of Vacuolar Invertase Is Required for Cotton Fiber and Arabidopsis Root Elongation through Osmotic Dependent and Independent Pathways, Respectively. Lu Wang, Xiao-Rong Li, Heng Lian, Di-An Ni, Yu-ke He, Xiao-Ya Chen, and Yong-Ling Ruan


The Plant-Specific SR45 Protein Negatively Regulates Glucose and ABA Signaling during Early Seedling Development in Arabidopsis. Raquel Fonseca Carvalho, Sofia Domingues Carvalho, and Paula Duque

Vernalization-Mediated VIN3 Induction Overcomes the LIKE-HETEROCHROMATIN PROTEIN1/POLYCOMB REPRESSION COMPLEX2-Mediated Epigenetic Repression. Dong-Hwan Kim, Brett R. Zografos, and Sihun Sung

Reproductive Development Modulates Gene Expression and Metabolite Levels with Possible Feedback Inhibition of Artemisinin in Artemisia annua. Patrick R. Arsenault, Daniel Vail, Kristin K. Wobbe, Karen Erickson, and Pamela J. Weathers


A Gain-of-Function Mutation in the Arabidopsis Disease Resistance Gene RPP4 Confers Sensitivity to Low Temperature. Xiaozhen Huang, Jianyong Li, Fei Bao, Xiaoyan Zhang, and Shuhua Yang


Proper Levels of the Arabidopsis Cohesion Establishment Factor CTF7 Are Essential for Embryo and Megagametophyte, But Not Endosperm, Development. Ling Jiang, Li Yuan, Ming Xia, and Christopher A. Makaroff
PLANTS INTERACTING WITH OTHER ORGANISMS

The glabra1 Mutation Affects Cuticle Formation and Plant Responses to Microbes. Ye Xia, Keshun Yu, Duroy Navarre, Kenneth Seebold, Aardra Kachroo, and Pradeep Kachroo 833

Abscisic Acid Deficiency Causes Changes in Cuticle Permeability and Pectin Composition That Influence Tomato Resistance to Botrytis cinerea. Katrien Curvers, Hamed Seifi, Grégoire Mouille, Riet de Rycke, Bob Asselbergh, Annelies Van Hecke, Dieter Vanderschaeghe, Herman Höfte, Nico Callewaert, Frank Van Breusegem, and Monica Höfte 847


WHOLE PLANT AND ECOPHYSIOLOGY


Tyloses and Phenolic Deposits in Xylem Vessels Impede Water Transport in Low-Lignin Transgenic Poplars: A Study by Cryo-Fluorescence Microscopy. Peter Kitin, Steven L. Voelker, Frederick C. Meinzer, Hans Beeckman, Steven H. Strauss, and Barbara Lachenbruch 887

Endogenous Abscisic Acid as a Key Switch for Natural Variation in Flooding-Induced Shoot Elongation. Xin Chen, Ronald Pierik, Anton J.M. Peeters, Hendrik Poorter, Eric J.W. Visser, Heidrun Huber, Hans de Kroon, and Laurentius A.C.J. Voesenek 969


Nonreductive Iron Uptake Mechanism in the Marine Alveolate Chromera velia. Robert Sutak, Jan Šlapeta, Mabel San Roman, Jean-Michel Camadro, and Emmanuel Lesuisse 991

SYSTEMS BIOLOGY, MOLECULAR BIOLOGY, AND GENE REGULATION

Transcriptional-Metabolic Networks in β-Carotene-Enriched Potato Tubers: The Long and Winding Road to the Golden Phenotype. Gianfranco Diretto, Salim Al-Babili, Raffaela Tavazza, Federico Scossa, Véla Papacchioni, Melina Migliore, Peter Beyer, and Giovanni Giuliani 899

The Seed Composition of Arabidopsis Mutants for the Group 3 Sulfate Transporters Indicates a Role in Sulfate Translocation within Developing Seeds. Hélène Zuber, Jean-Claude Davidian, Grégoire Aubert, Delphine Aimé, Maya Belgazri, Raphael Lagun, Dimitri Heintz, Markus Wirtz, Rüdiger Hell, Richard Thompson, and Karine Gallardo 913

Coexpression Analysis Identifies Rice Starch Regulator1, a Rice AP2/EREBP Family Transcription Factor, as a Novel Rice Starch Biosynthesis Regulator. Fang-Fang Fu and Hong-Wei Xue 927


13C-Tracer and Gas Chromatography-Mass Spectrometry Analyses Reveal Metabolic Flux Distribution in the Oleaginous Microalga Chlorella protothecoides. Wei Xiong, Lixia Liu, Chao Wu, Chen Yang, and Qingyu Wu 1001

CORRECTIONS

Phosphatidic Acid Inhibits Blue Light-Induced Stomatal Opening via Inhibition of Protein Phosphatase 1. A. Takemiya and K.-i. Shimazaki 1012

Arabinogalactan-Proteins: Key Regulators at the Cell Surface? M. Ellis, J. Egelund, C.J. Schultz, and A. Bacic

RETRACTION


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