Chloroplasts multiply by division, which is accomplished by constriction of envelope membranes at the division site. Okazaki et al. (663–674) show that PLASTID DIVISION1 (PDV1) and PDV2 proteins interact specifically with phosphatidylinositol 4-phosphate (PI4P) and PI4P negatively regulates chloroplast division. The cover image shows chloroplasts in single mesophyll cells of Arabidopsis pdv1 pdv2 (upper left), pdv1 (upper right), pdv2 treated with PI4K inhibitor (middle left), the wild type (middle right), the wild type treated with PI4K inhibitor (lower left), and a PDV2- and DRP5B-overexpressing plant treated with PI4K inhibitor (lower right).

ON THE COVER

IN BRIEF

Downstream of a Kinase Cascade: A Trihelix Transcription Factor Represses Immune Genes 481
Nancy R. Hofmann

Gaming the System: How Hungry Nematodes Get Plants to Produce Feeding Sites for Them 482
Jennifer Lockhart

Uncovering the Unexpected Site of Biosynthesis of a Major Cell Wall Component in Grasses 483
Jennifer Lockhart

Clarifying the Opaque: Identification of Direct Targets of Maize Opaque2 484
Jennifer Mach

LARGE-SCALE BIOLOGY ARTICLES

Identification and Mode of Inheritance of Quantitative Trait Loci for Secondary Metabolite Abundance in Tomato 485
Saleh Alseekh, Takayuki Tohge, Regina Wendenberg, Federico Scossa, Nooshin Omranian, Jie Li, Sabrina Kleessen, Patrick Giavalisco, Tzili Pieban, Bernd Mueller-Roeber, Dani Zamir, Zoran Nikoloski, and Alisdair R. Fernie

RNA Sequencing of Laser-Capture Microdissected Compartments of the Maize Kernel Identifies Regulatory Modules Associated with Endosperm Cell Differentiation 513

RESEARCH ARTICLES

Genome-Wide Characterization of cis-Acting DNA Targets Reveals the Transcriptional Regulatory Framework of Opaque2 in Maize 532
Chaobin Li, Zhenyi Qiao, Weili Qi, Qian Wang, Yue Yuan, Xi Yang, Yuanping Tang, Bing Mei, Yuanda Lv, Han Zhao, Han Xiao, and Rentao Song
Evolutionary Patterns and Coevolutionary Consequences of MIRNA Genes and MicroRNA Targets Triggered by Multiple Mechanisms of Genomic Duplications in Soybean

Meixia Zhao, Blake C. Meyers, Chunmei Cai, Wei Xu, and Jianxin Ma

546

Coordinated Rates of Evolution between Interacting Plastid and Nuclear Genes in Geraniaceae


563

Cleavage of INDOLE-3-ACETIC ACID INDUCIBLE28 mRNA by MicroRNA847 Upregulates Auxin Signaling to Modulate Cell Proliferation and Lateral Organ Growth in Arabidopsis

Jing-Jing Wang and Hui-Shan Guo

574

The Calcium-Dependent Protein Kinase CPK28 Regulates Development by Inducing Growth Phase-Specific, Spatially Restricted Alterations in Jasmonic Acid Levels Independent of Defense Responses in Arabidopsis

Susanne Matschi, Katharina Hake, Marco Herde, Bettina Hause, and Tina Romeisa

591

A Cascade of Sequentially Expressed Sucrose Transporters in the Seed Coat and Endosperm Provides Nutrition for the Arabidopsis Embryo

Li-Qing Chen, I Winnie Lin, Xiao-Qing Qu, Davide Sosso, Heather E. McFarlane, Alejandra Londoño, A. Lacey Samuels, and Wolf B. Frommer

607

Transcription Factors SOD7/NGAL2 and DPA4/NGAL3 Act Redundantly to Regulate Seed Size by Directly Repressing KLU Expression in Arabidopsis

Yueying Zhang, Liang Du, Ran Xu, Rongfeng Cui, Jianjun Hao, Caixia Sun, and Yunhai Li

620

The Ubiquitin Receptors DA1, DAR1, and DAR2 Redundantly Regulate Endoreduplication by Modulating the Stability of TCP14/15 in Arabidopsis

Yuancheng Peng, Liangliang Chen, Yaru Lu, Yingbao Wu, Jack Dumenil, Zhengge Zhu, Michael W. Bevan, and Yunhai Li

649

Phosphatidylinositol 4-Phosphate Negatively Regulates Chloroplast Division in Arabidopsis

Kumiko Okazaki, Shin-ya Miyagishima, and Hajime Wada

663

Binding of SEC11 Indicates Its Role in SNARE Recycling after Vesicle Fusion and Identifies Two Pathways for Vesicular Traffic to the Plasma Membrane

Rucha Karnik, Ben Zhang, Sakharam Waghmare, Christin Aderhold, Christopher Grefen, and Michael R. Blatt

675

Small Glycosylated Lignin Oligomers Are Stored in Arabidopsis Leaf Vacuoles

Oana Dima, Kris Morreel, Bartel Vanholme, Hoon Kim, John Ralph, and Wout Boerjan

695

The Rice CK2 Kinase Regulates Trafficking of Phosphate Transporters in Response to Phosphate Levels

Jiety Chen, Yifeng Wang, Fei Wang, Jian Yang, Mingxing Gao, Changying Li, Yingyao Liu, Yu Liu, Naoki Yamaji, Jian Feng Ma, Javier Paz-Ares, Laurent Nussaume, Shuqun Zhang, Keke Yi, Zhongchang Wu, and Ping Wu

711
Arabidopsis Chloroplast Mini-Ribonuclease III Participates in rRNA Maturation and Intron Recycling

Amber M. Hotto, Benoît Castandet, Laetitia Gilet, Andrea Higdon, Ciarán Condon, and David B. Stern

DENEDDYLASE1 Deconjugates NEDD8 from Non-Cullin Protein Substrates in Arabidopsis thaliana

Julia Mergner, Stephanie Heinzmeier, Bernhard Kuster, and Claus Schwechheimer

Determining the Subcellular Location of Synthesis and Assembly of the Cell Wall Polysaccharide (1,3; 1,4)-β-D-Glucan in Grasses

Sarah M. Wilson, Yin Ying Ho, Edwin R. Lampugnani, Allison M.L. Van de Meene, Melissa P. Bain, Antony Bacic, and Monika S. Doblin

An Upstream Open Reading Frame Is Essential for Feedback Regulation of Ascorbate Biosynthesis in Arabidopsis

William A. Laing, Marcela Martínez-Sánchez, Michele A. Wright, Sean M. Bulley, Di Brewster, Andrew P. Dare, Maysoon Rassam, Daisy Wang, Roy Storey, Richard C. Macknight, and Roger P. Hellens

The bHLH Transcription Factor bHLH104 Interacts with IAA-LEUCINE RESISTANT3 and Modulates Iron Homeostasis in Arabidopsis

Jie Zhang, Bing Liu, Mengshu Li, Dongru Feng, Honglei Jin, Peng Wang, Jun Liu, Feng Xiong, Jinfa Wang, and Hong-Bin Wang

The Small GTPase ROP10 of Medicago truncatula Is Required for Both Tip Growth of Root Hairs and Nod Factor-Induced Root Hair Deformation

Ming-Juan Lei, Qi Wang, Xiaolin Li, Aimin Chen, Li Luo, Yajun Xie, Guan Li, Da Luo, Kirankumar S. Mysore, Jiangqi Wen, Zhi-Ping Xie, Christian Staehelin, and Yan-Zhang Wang

Activation of Symbiosis Signaling by Arbuscular Mycorrhizal Fungi in Legumes and Rice

Jongho Sun, J. Benjamin Miller, Emma Granqvist, Audrey Wiley-Kalil, Enrico Gobbato, Fabienne Maillet, Sylvain Cottaz, Eric Samain, Muthusubramanian Venkateshwaran, Sébastien Fort, Richard J. Morris, Jean-Michel Ané, Jean Dénarié, and Giles E.D. Oldroyd

Phosphorylation of Trihelix Transcriptional Repressor ASR3 by MAP KINASE4 Negatively Regulates Arabidopsis Immunity

Bo Li, Shan Jiang, Xiao Yu, Cheng Cheng, Sixue Chen, Yanbing Cheng, Joshua S. Yuan, Daohong Jiang, Ping He, and Libo Shan

ENHANCED DISEASE RESISTANCE4 Associates with CLATHRIN HEAVY CHAIN2 and Modulates Plant Immunity by Regulating Relocation of EDR1 in Arabidopsis

Guangheng Wu, Simu Liu, Yaofei Zhao, Wei Wang, Zhaosheng Kong, and Dingzhong Tang

In Planta Variation of Volatile Biosynthesis: An Alternative Biosynthetic Route to the Formation of the Pathogen-Induced Volatile Homoterpenes DMNT via Triterpene Degradation in Arabidopsis Roots

Reza Sohrabi, Jung-Hyun Huh, Somayesadat Badieyan, Liva Harinmantainina Rakotondraibe, Daniel J. Kliebenstein, Pablo Sobrado, and Dorothea Tholl

The Cyst Nematode Effector Protein 10A07 Targets and Recruits Host Posttranslational Machinery to Mediate Its Nuclear Trafficking and to Promote Parasitism in Arabidopsis

A Chaperone Function of NO CATALASE ACTIVITY1 Is Required to Maintain Catalase Activity and for Multiple Stress Responses in Arabidopsis

Jing Li, Juntao Liu, Guoqiang Wang, Joon-Yung Cha, Guannan Li, She Chen, Zhen Li, Jinghua Guo, Caiguo Zhang, Yongqing Yang, Woe-Yeon Kim, Dae-Jin Yun, Karen S. Schumaker, Zhongzhou Chen, and Yan Guo

Tudor Staphylococcal Nuclease Links Formation of Stress Granules and Processing Bodies with mRNA Catabolism in Arabidopsis

Emilio Gutierrez-Beltran, Panagiotis N. Moschou, Andrei P. Smertenko, and Peter V. Bozhkov

CORRECTIONS


OPEN Articles can be viewed online without a subscription.
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>eTOCs</td>
<td>Sign up for eTOCs at: <a href="http://www.plantcell.org/cgi/alerts/ctmain">http://www.plantcell.org/cgi/alerts/ctmain</a></td>
</tr>
<tr>
<td>CiteTrack Alerts</td>
<td>Sign up for CiteTrack Alerts at: <a href="http://www.plantcell.org/cgi/alerts/ctmain">http://www.plantcell.org/cgi/alerts/ctmain</a></td>
</tr>
<tr>
<td>Subscription Information</td>
<td>Subscription Information for The Plant Cell and Plant Physiology is available at: <a href="http://www.aspb.org/publications/subscriptions.cfm">http://www.aspb.org/publications/subscriptions.cfm</a></td>
</tr>
</tbody>
</table>