IN BRIEF

The Plant Cell Reviews Aspects of Photobiology: It’s a Matter of Stop ‘n Go
Nancy A. Eckardt

Geminivirus Vectors Deliver Reagents for Plant Genome Engineering
Jennifer Mach

En Garde! Inhibition of an Actin Depolymerizing Factor Activates Immune Responses during Plant–Microbe Interactions
Kathleen L. Farquharson

Getting in Shape? Leaves Work It Out with KANADI1
Jennifer Mach

REVIEWS

Mathematical Models Light Up Plant Signaling
Yin Hoon Chew, Robert W. Smith, Harriet J. Jones, Daniel D. Seaton, Ramon Grima, and Karen J. Halliday

The UV-B Photoreceptor UVR8: From Structure to Physiology
Gareth I. Jenkins

Phototropism: Growing towards an Understanding of Plant Movement
Emmanuel Liscum, Scott K. Askinosie, Daniel L. Leuchtman, Johanna Morrow, Kyle T. Willenburg, and Diana Roberts Coats

PIFs: Systems Integrators in Plant Development
Pablo Leivar and Elena Monte

Multiple Layers of Posttranslational Regulation Refine Circadian Clock Activity in Arabidopsis
Pil Joon Seo and Paloma Mas

LARGE-SCALE BIOLOGY ARTICLES

Transcriptional Regulation of Fruit Ripening by Tomato FRUITFULL Homologs and Associated MADS Box Proteins
Masaki Fujisawa, Yoko Shima, Hiroyuki Nakagawa, Mamiko Kitagawa, Junji Kimbara, Toshitsugu Nakano, Takaumi Kasumi, and Yasuhiro Ito

In Vivo Mapping of Arabidopsis Scaffold/Matrix Attachment Regions Reveals Link to Nucleosome-Disfavoring Poly(dA:dT) Tracts
Pete E. Pascuzzi, Miguel A. Flores-Vergara, Tae-Jin Lee, Bryon Sosinski, Matthew W. Vaughn, Linda Hanley-Bowdoin, William F. Thompson, and George C. Allen

ON THE COVER

The ability to precisely modify DNA in cells offers great opportunities for basic and applied research, yet it remains difficult to achieve for most plant species. Baltes et al. (pages 151–163) demonstrate the feasibility of using geminivirus replicons for genome engineering in Arabidopsis and tobacco. They engineer geminivirus vectors to repair a nonfunctional gus:nptII reporter gene and demonstrate the production of leaf cells, calli, and plantlets with precise DNA sequence changes. The cover is a composite image of tobacco leaf tissue showing individual cells that have undergone gene targeting with geminivirus vectors to restore GUS activity (blue specks; background image) and a shoot that was regenerated from transformed leaf cells (foreground).
Insights into the Maize Pan-Genome and Pan-Transcriptome

Candice N. Hirsch, Jillian M. Foerster, James M. Johnson, Rajandep S. Sekhon, German Muttoni, Brieanne Vaillancourt, Francisco Peñagaricano, Erika Lindquist, Mary Ann Pedraza, Kerrie Barry, Natalia de Leon, Shawn M. Kaeppler, and C. Robin Buell

Extensive Translational Regulation of Gene Expression in an Allopolyploid (Glycine dolichocarpa)

Jeremy E. Coate, Haim Bar, and Jeff J. Doyle

RESEARCH ARTICLES

DNA Replicons for Plant Genome Engineering

Nicholas J. Baltes, Javier Gil-Humanes, Tomas Cermak, Paul A. Atkins, and Daniel F. Voytas

A Wheat SIMILAR TO RCD-ONE Gene Enhances Seedling Growth and Abiotic Stress Resistance by Modulating Redox Homeostasis and Maintaining Genomic Integrity

Shuantao Liu, Shuwei Liu, Mei Wang, Tiandi Wei, Chen Meng, Meng Wang, and Guangmin Xia

The BOY NAMED SUE Quantitative Trait Locus Confers Increased Meiotic Stability to an Adapted Natural Allopolyploid of Arabidopsis

Isabelle M. Henry, Brian P. Dilkes, Anand Tyagi, Jian Gao, Brian Christensen, and Luca Comai

The Histone Deacetylase Inhibitor Trichostatin A Promotes Totipotency in the Male Gametophyte

Hui Li, Mercedes Soriano, Jan Cordewener, Jose M. Muiño, Tijitske Riksen, Hiroyuki Fukukoda, Gerco C. Engenent, and Kim Boutiller

ANGUSTIFOLIA3 Binds to SWI/SNF Chromatin Remodeling Complexes to Regulate Transcriptome during Arabidopsis Leaf Development

Liesbeth Vercruyssen, Aurine Verkest, Nathalie Gonzalez, Ken S. Heyndrickx, Dominique Eckhout, Soon-Ki Han, Teddy Jégou, Rafał Archacki, Jelle Van Leene, Megan Andriankaja, Stefanie De Bodt, Thomas Abeel, Frederik Coppens, Stijn Dhondt, Liesbeth De Milde, Mattias Vermeeersch, Katrien Maleux, Kris Gevaert, Andrzej Jerzmanowski, Moussa Benhamed, Doris Wagner, Klaus Vandepoele, Geert De Jaeger, and Dirk Inzé

Arabidopsis WRKY57 Functions as a Node of Convergence for Jasmonic Acid– and Auxin-Mediated Signaling in Jasmonic Acid–Induced Leaf Senescence

Yanjuan Jiang, Gang Liang, Shizhuo Yang, and Diqiu Yu

Arabidopsis KANADI1 Acts as a Transcriptional Repressor by Interacting with a Specific cis-Element and Regulates Auxin Biosynthesis, Transport, and Signaling in Opposition to HD-ZIPIII Factors

Tengbo Huang, Yael Harrar, Changfa Lin, Brenda Reinhart, Nicole R. Newell, Franklin Talavera-Rauh, Samuel A. Hokin, M. Kathryn Barton, and Randall A. Kerstetter

Interaction between MYC2 and ETHYLENE INSENSITIVE3 Modulates Antagonism between Jasmonate and Ethylene Signaling in Arabidopsis

Susheng Song, Huang Huang, Hua Gao, Jiaojiao Wang, Dewei Wu, Xili Liu, Shuhua Yang, Qingzhe Zhai, Chuanyou Li, Tiancong Qi, and Daoxin Xie

AUXIN BINDING PROTEIN1 Links Cell Wall Remodeling, Auxin Signaling, and Cell Expansion in Arabidopsis

Sébastien Paque, Grégory Mouille, Laurie Grandont, David Alabadí, Cyril Gaertner, Arnaud Goyallon, Philippe Muller, Catherine Primard-Brisset, Rodnay Sormani, Miguel A. Blázquez, and Catherine Perrot-Rechenmann
The Arabidopsis SIAMESE-RELATED Cyclin-Dependent Kinase Inhibitors SMR5 and SMR7 Regulate the DNA Damage Checkpoint in Response to Reactive Oxygen Species

Dalong Yi, Claire Lessa Alvim Kamei, Toon Cools, Sandy Vanderauwera, Naoki Takahashi, Yoko Okushima, Thomas Eekhout, Kaoru Okamoto Yoshiyama, John Larkin, Hilde Van den Daele, Phillip Conklin, Anne Britt, Masaaki Umeda, and Lieven De Veylder

The Role of Arabidopsis ABCG9 and ABCG31 ATP Binding Cassette Transporters in Pollen Fitness and the Deposition of Seryl Glycosides on the Pollen Coat

Hyunjoo Choi, Kiyoshi Ohyama, Yu-Young Kim, Jun-Young Jin, Saet Buyl Lee, Yasuyo Yamaoka, Toshiya Muranaka, Mi Chung Suh, Sho zo Fujioka, and Youngsook Lee

Arabidopsis Microtubule-Destabilizing Protein 25 Functions in Pollen Tube Growth by Severing Actin Filaments

Tao Qin, Xiaomin Liu, Jiejie Li, Jingbo Sun, Leina Song, and Tonglin Mao

ACTIN DEPOLYMERIZING FACTOR4 Regulates Actin Dynamics during Innate Immune Signaling in Arabidopsis

Jessica L. Henty-Ridilla, Jiejie Li, Brad Day, and Christopher J. Staiger

Nitric Oxide–Triggered Remodeling of Chloroplast Bioenergetics and Thylakoid Proteins upon Nitrogen Starvation in Chlamydomonas reinhardtii

Lili Wei, Benoit Derrien, Arnaud Gautier, Laura Houille-Vernes, Alizée Malnoé, Fabrice Rappaport, Catherine de Vitry, Olivier Vallon, Yves Choquet, and Francis-André Wollman

Thylakoid FtsH Protease Contributes to Photosystem II and Cytochrome b6f Remodeling in Chlamydomonas reinhardtii under Stress Conditions

Alizée Malnoé, Fei Wang, Jacqueline Girard-Bascou, Francis-André Wollman, and Catherine de Vitry

Cardiolipin-Mediated Mitochondrial Dynamics and Stress Response in Arabidopsis

Ronghui Pan, A. Daniel Jones, and Jianping Hu

GLUTELIN PRECURSOR ACCUMULATION3 Encodes a Regulator of Post-Golgi Vesicular Traffic Essential for Vacuolar Protein Sorting in Rice Endosperm

Yulong Ren, Yihua Wang, Feng Liu, Kunneng Zhou, Yu Ding, Feng Zhou, Ying Wang, Kai Liu, Lu Gan, Weiwei Ma, Xiaohua Han, Xin Zhang, Xiuping Guo, Fuqing Wu, Zhijun Cheng, Jiul ian Wang, Cailin Lei, Qibing Lin, Ling Jiang, Chuan yin Wu, Yiqun Bao, Haiyang Wang, and Jianmin Wan

Structural and Functional Modularity of the Orange Carotenoid Protein: Distinct Roles for the N- and C-Terminal Domains in Cyanobacterial Photoprotection

Ryan L. Leverenz, Denis Jallet, Ming-De Li, Richard A. Mathies, Diana Kirillovsky, and Cheryl A. Kerfeld

The Protein Phosphatase RCF2 and Its Interacting Partner NAC019 Are Critical for Heat Stress–Responsive Gene Regulation and Thermotolerance in Arabidopsis

Qingmei Guan, Xiule Yue, Haitao Zeng, and Jianhua Zhu

NITROGEN LIMITATION ADAPTATION Recruits PHOSPHATE2 to Target the Phosphate Transporter PT2 for Degradation during the Regulation of Arabidopsis Phosphate Homeostasis

Bong Soo Park, Jun Sung Seo, and Nam-Hai Chua

The Arabidopsis Mediator Complex Subunits MED16, MED14, and MED2 Regulate Mediator and RNA Polymerase II Recruitment to CBF-Responsive Cold-Regulated Genes

Piers A. Hemsley, Charlotte H. Hurst, Ewon Kaliyadasa, Rebecca Lamb, Marc R. Knight, Elizabeth A. De Cothi, John F. Steele, and Heather Knight
An E4 Ligase Facilitates Polyubiquitination of Plant Immune Receptor Resistance Proteins in *Arabidopsis* [485]
Yan Huang, Sean Minaker, Charlotte Roth, Shuai Huang, Philip Hieter, Volker Lipka, Marcel Wiermer, and Xin Li

The Rice TAL Effector–Dependent Resistance Protein XA10 Triggers Cell Death and Calcium Depletion in the Endoplasmic Reticulum [497]
Dongsheng Tian, Junxia Wang, Xuan Zeng, Keyu Gu, Chengxiang Qiu, Xiaobei Yang, Zhiyun Zhou, Melling Goh, Yanchang Luo, Maki Murata-Hori, Frank F. White, and Zhongchao Yin

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