ON THE COVER

Many plants alter the shape of their leaves depending on the environment, in a phenomenon called heterophyll. Nakayama et al. (pages 4733–4748) show that heterophyll in the North American lake cress Rorippa aquatica (Brassicaceae) is mediated by KNOX1-dependent regulation of gibberellin (GA) level. The KNOX-GA regulatory module responsible for species-to-species variation seems to have been recruited to determine the differential leaf morphology within a single species as well. The cover illustration by artist Sadamu Yoshizawa depicts the extent of heterophytic morphological variation in R. aquatica.

EDITORIAL

Plant Physiology and The Plant Cell Go Online Only

Cathie Martin and Mike Blatt

4561

A Hopefully Not Too Long Goodbye

Cathie Martin

4562

IN BRIEF

A World Beyond Arabidopsis: Updates on Small RNAs in Plant Development

Nancy R. Hofmann

4564

DNA Methylation in Maize: Toto, I’ve a Feeling We’re Not in Arabidopsis Anymore

Jennifer Mach

4565

Membrane Bound: C2-Domain Abscisic Acid-Related Proteins Help Abscisic Acid Receptors Get Where They Need to Go

Jennifer Lockhart

4566

Examining the Molecular Basis of Heterophylly in North American Lake Cress

Kathleen L. Farquharson

4567

REVIEW

Phytochromes: An Atomic Perspective on Photoactivation and Signaling

E. Sethe Burgie and Richard D. Vierstra

4568

LARGE-SCALE BIOLOGY ARTICLES

An Atlas of Soybean Small RNAs Identifies Phased siRNAs from Hundreds of Coding Genes

Siwaret Arikit, Rui Xia, Atul Kakrana, Kun Huang, Jixian Zhai, Zhe Yan, Oswaldo Valdés-López, Silvas Prince, Theresa A. Musket, Henry T. Nguyen, Gary Stacey, and Blake C. Meyers

4584

Genetic Perturbation of the Maize Methylome

Qing Li, Steven R. Eichten, Peter J. Hermanson, Virginia M. Zaunbrecher, Jawon Song, Jennifer Wendt, Heidi Rosenbaum, Thelma F. Madzima, Amy E. Sloan, Ji Huang, Daniel L. Burgess, Todd A. Richmond, Karen M. McGinnis, Robert B. Meeley, Olga N. Danilevskaya, Matthew W. Vaughn, Shawn M. Kaeppler, Jeffrey A. Jeddeloh, and Nathan M. Springer

4602
Integrated Network Analysis Identifies Fight-Club Nodes as a Class of Hubs Encompassing Key Putative Switch Genes That Induce Major Transcriptome Reprogramming during Grapevine Development

Maria Concetta Palumbo, Sara Zenoni, Marianna Fasoli, Mélanie Massonnet, Lorenzo Farina, Filippo Castiglione, Mario Pezzotti, and Paola Paci

Dissecting the Phenotypic Components of Crop Plant Growth and Drought Responses Based on High-Throughput Image Analysis

Dijun Chen, Kerstin Neumann, Swetlana Friedel, Benjamin Kilian, Ming Chen, Thomas Altmann, and Christian Klukas

Arabidopsis Ensemble Reverse-Engineered Gene Regulatory Network Discloses Interconnected Transcription Factors in Oxidative Stress

Vanessa Vermeirssen, Inge De Clercq, Thomas Van Parys, Frank Van Breusegem, and Yves Van de Peer

The Root Hair “Infectome” of Medicago truncatula Uncovers Changes in Cell Cycle Genes and Reveals a Requirement for Auxin Signaling in Rhizobial Infection

Andrew Breakspear, Chengwu Liu, Sonali Roy, Nicola Stacey, Christian Rogers, Martin Trick, Giulia Morieri, Kirankumar S. Mysore, Jiangqi Wen, Giles E.D. Oldroyd, J. Allan Downie, and Jeremy D. Murray

The dicer-like1 Homolog fuzzy tassel Is Required for the Regulation of Meristem Determinacy in the Inflorescence and Vegetative Growth in Maize

Beth E. Thompson, Christine Basham, Reza Hammond, Queying Ding, Atul Kakrana, Tzuu-Fen Lee, Stacey A. Simon, Robert Meeley, Blake C. Meyers, and Sarah Hake

Transcriptomic Analyses Indicate That Maize Ligule Development Recapitulates Gene Expression Patterns That Occur during Lateral Organ Initiation

Robyn Johnston, Minghui Wang, Qi Sun, Anne W. Sylvester, Sarah Hake, and Michael J. Scanlon

Regulation of the KNOX-GA Gene Module Induces Heterophyllic Alteration in North American Lake Cress

Hokuto Nakayama, Naomi Nakayama, Sumer Seiki, Mikiko Kojima, Hitoshi Sakakibara, Neelima Sinha, and Seisuke Kimura

Site-Specific N-Glycosylation of the S-Locus Receptor Kinase and Its Role in the Self-Incompatibility Response of the Brassicaceae

Masaya Yamamoto, Títima Tantikanjana, Takeshi Nishio, Mikhail E. Nasrallah, and June B. Nasrallah

Proteasome-Mediated Degradation of FRIGIDA Modulates Flowering Time in Arabidopsis during Vernalization

Xiayang Hu, Xiangxiang Kong, Chuntao Wang, Lan Ma, Jinjie Zhao, Jingjing Wei, Xiaoming Zhang, Gary J. Loake, Tieao Zhang, Jinling Huang, and Yongping Yang

Soybean miR172c Targets the Repressive AP2 Transcription Factor NNC1 to Activate ENOD40 Expression and Regulate Nodule Initiation

Youning Wang, Lixiang Wang, Yanmin Zou, Liang Chen, Zhaoming Cai, Senlei Zhang, Fang Zhao, Yinping Tian, Qiong Jiang, Brett J. Ferguson, Peter M. Gresshoff, and Xia Li
C2-Domain Abscisic Acid-Related Proteins Mediate the Interaction of PYR/PYL/RCAR Abscisic Acid Receptors with the Plasma Membrane and Regulate Abscisic Acid Sensitivity in *Arabidopsis* 


Cell Differentiation and Development in *Arabidopsis* Are Associated with Changes in Histone Dynamics at the Single-Cell Level

Stefanie Rosa, Vardis Ntoukakis, Nobuko Ohmido, Ali Pendle, Rita Abranches, and Peter Shaw

The *Arabidopsis* Cellulose Synthase Complex: A Proposed Hexamer of CESA Trimers in an Equimolar Stoichiometry

Joseph L. Hill, Jr., Mustafa B. Hammudi, and Ming Tien

BEL1-LIKE HOMEODOMAIN6 and KNOTTED ARABIDOPSIS THALIANA7 Interact and Regulate Secondary Cell Wall Formation via Repression of *REVOLUTA*

Yuanyuan Liu, Shijun You, Mallorie Taylor-Teeples, Wenhua L. Li, Mathias Schuetz, Siobhan M. Brady, and Carl J. Douglas

A NAP-AAO3 Regulatory Module Promotes Chlorophyll Degradation via ABA Biosynthesis in *Arabidopsis* Leaves

Jiading Yang, Eric Worley, and Michael Udvardi

Stress-Induced Chloroplast Degradation in *Arabidopsis* Is Regulated via a Process Independent of Autophagy and Senescence-Associated Vacuoles

Songhu Wang and Eduardo Blumwald

The *Arabidopsis thaliana* Homolog of the Helicase RTEL1 Plays Multiple Roles in Preserving Genome Stability

Julia Recker, Alexander Knoll, and Holger Puchta

Accessible DNA and Relative Depletion of H3K9me2 at Maize Loci Undergoing RNA-Directed DNA Methylation

Jonathan I. Gent, Thelma F. Madzima, Rechien Bader, Matthew R. Kent, Xiaoyu Zhang, Maikie Stam, Karen M. McGinnis, and R. Kelly Dawe

RHON1 Mediates a Rho-Like Activity for Transcription Termination in Plastids of *Arabidopsis thaliana*

Wei Chi, Baoye He, Nikolay Manavskii, Juan Mao, Daili Ji, Congming Lu, Jean David Rochaix, Jörg Meurer, and Lixin Zhang

MicroRNA408 Is Critical for the HY5-SPL7 Gene Network That Mediates the Coordinated Response to Light and Copper

Huiyong Zhang, Xin Zhao, Jigang Li, Huaqing Cai, Xing Wang Deng, and Lei Li

*Arabidopsis* DPB3-1, a DREB2A Interactor, Specifically Enhances Heat Stress-Induced Gene Expression by Forming a Heat Stress-Specific Transcriptional Complex with NF-Y Subunits

Hikaru Sato, Junyia Mizoi, Hidenori Tanaka, Kyonosin Maruyama, Feng Qin, Yuriko Osakabe, Kyoko Morimoto, Teppie Ohori, Kazuya Kusakabe, Maika Nagata, Kazuo Shinozaki, and Kazuko Yamaguchi-Shinozaki

The *Arabidopsis* Abiotic Stress-Induced TSPO-Related Protein Reduces Cell-Surface Expression of the Aquaporin PIP2;7 through Protein-Protein Interactions and Autophagic Degradation

Charles Hachez, Vasko Veljanovski, Hagen Reinhardt, Damien Guillamot, Celine Vanhee, Francois Chaumont, and Henri Batoko
Virulence Factors of Geminivirus Interact with MYC2 to Subvert Plant Resistance and Promote Vector Performance

Ran Li, Berhane T. Weldegergis, Jie Li, Choonkyun Jung, Jing Qu, Yanwei Sun, Hongmei Qian, ChuanSia Tee, Joop J.A. van Loon, Marcel Dicke, Nam-Hai Chua, Shu-Sheng Liu, and Jian Ye

Some figures in this article are displayed in color online but in black and white in the print edition.

Online version contains Web-only data.

Articles can be viewed online without a subscription.