ON THE COVER

Flower development requires accurate patterning of the floral organ identity genes since their misexpression leads to homeotic conversion of one floral organ type into another. The cover image illustrates a subtle defect in the patterning of the homeotic B-class genes in the petunia ben mutant, leading to a partial homeotic conversion of sepals into petals. Morel et al. (pages 1605–1621) analyzed the mechanisms that pattern the floral homeotic B- and C-functions during petunia flower development and discovered that BEN, a TOE-type AP2, confines the C-function to the inner petunia floral whorls, in parallel with the microRNA BLIND. In turn, they show that the petunia AP2-type ROB genes repress the B-function (but not the C-function) in the first floral whorl, together with BEN. These findings suggest that the molecular mechanisms controlling the spatial restriction of the floral organ identity genes are more diverse than the well-conserved B and C floral organ identity functions. Photo by Michiel Vandenbussche.

IN BRIEF

Tracking the Bacterial Type III Secretion System: Visualization of Effector Delivery Using Split Fluorescent Proteins
Jennifer Mach

BEN, ROB, and the Making of a Petunia Flower
Jennifer Lockhart

Exploring Maize Leaf Architecture from Different Angles
Jennifer Lockhart

The Who, What, and Where of Plant Polyprenol Biosynthesis Point to Thylakoid Membranes and Photosynthetic Performance
Nancy R. Hofmann

Crossover Guard: MEICA1 Prevents Meiotic Mishaps
Jennifer Mach

BREAKTHROUGH REPORTS

Direct and Indirect Visualization of Bacterial Effector Delivery into Diverse Plant Cell Types during Infection
Elizabeth Henry, Tania Y. Toruno, Alain Jauneau, Laurent Deslandes, and Gitta Coaker

Spatiotemporal Monitoring of Pseudomonas syringae Effectors via Type III Secretion Using Split Fluorescent Protein Fragments
Eunsook Park, Hye-Young Lee, Jongchan Woo, Doil Choi, and Savithramma P. Dinesh-Kumar

LARGE-SCALE BIOLOGY ARTICLE

AspWood: High-Spatial-Resolution Transcriptome Profiles Reveal Uncharacterized Modularity of Wood Formation in Populus tremula
David Sundell, Nathaniel R. Street, Manoj Kumar, Ewa J. Mellerowicz, Melis Kucukoglu, Christoffer Johnsson, Vikash Kumar, Chanaka Mannapperuma, Nicolas Delhomme, Ove Nilsson, Hannele Tuominen, Edouard Pesquet, Urs Fischer, Tottie Niittylä, Björn Sundberg, and Torgeir R. Hvidsten
RESEARCH ARTICLES

Divergence of the Floral A-Function between an Asterid and a Rosid Species 1605
Patrice Morel, Klaas Heijmans, Frédérique Rozier, Jan Zethof, Sophy Chamot, Suzanne Rodrigues Bento, Aurélie Violette-Guiraud, Pierre Chambrier, Christophe Trehin, and Michiel Vandenbussche

Maize YABBY Genes drooping leaf1 and drooping leaf2 Regulate Plant Architecture 1622
Josh Strable, Jason G. Wallace, Erica Unger-Wallace, Sarah Briggs, Peter J. Bradbury, Edward S. Buckler, and Erik Vollbrecht

ZHOUPI and KERBEROS Mediate Embryo/Endosperm Separation by Promoting the Formation of an Extracuticular Sheath at the Embryo Surface 1642
Steven Moussu, Nicolas M. Doll, Sophy Chamot, Lysiane Brocard, Audrey Creff, Chloé Fourquin, Thomas Widiez, Zachary L. Nimchuk, and Gwyneth Ingram

Homologs of PROTEIN TARGETING TO STARCH Control Starch Granule Initiation in Arabidopsis Leaves 1657
David Seung, Julien Boudet, Jonathan Monroe, Tina B. Schreier, Laure C. David, Melanie Abt, Kuan-Jen Lu, Martina Zanella, and Samuel C. Zeeman

A Plastid Phosphatidylglycerol Lipase Contributes to the Export of Acyl Groups from Plastids for Seed Oil Biosynthesis 1678
Kun Wang, John E. Froehlich, Agnieszka Zienkiewicz, Hope Lynn Hersh, and Christoph Benning

Meiotic Chromosome Association 1 Interacts with TOP3α and Regulates Meiotic Recombination in Rice 1697
Qing Hu, Yafei Li, Hongjun Wang, Yi Shen, Chao Zhang, Guijie Du, Ding Tang, and Zhukuan Cheng

Polyprenols Are Synthesized by a Plastidial cis-Prenyltransferase and Influence Photosynthetic Performance 1709
Tariq A. Akhtar, Przemyslaw Surowiecki, Hanna Siekierska, Magdalena Kania, Kristen Van Gelder, Kevin A. Rea, Lilia K.A. Virta, Maritza Vatta, Katarzyna Gawarecka, Jacek Wojcik, Witold Danikiewicz, Daniel Buszewicz, Ewa Swiezeawska, and Liliana Surmacz

Suppressors of the Chloroplast Protein Import Mutant tic40 Reveal a Genetic Link between Protein Import and Thylakoid Biogenesis 1726
Jocelyn Bédard, Raphael Trösch, Feijie Wu, Qihua Ling, Ursula Flores-Pérez, Mats Töpel, Fahim Nawaz, and Paul Jarvis

A Lipid-Anchored NAC Transcription Factor Is Translocated into the Nucleus and Activates Glyoxalase I Expression during Drought Stress 1748
Mei Duan, Rongxue Zhang, Fugui Zhu, Zhenqian Zhang, Lanming Gou, Jiangqi Wen, Jiangli Dong, and Tao Wang