According to the ABC(DE) model for flower development, C-genes are required for stamen and carpel development and floral determinacy, whereas D-genes were proposed to be required for ovule identity. Both C- and D-genes belong to the AGAMOUS subfamily of MADS box transcription factors. Heijmans et al. (pages 2305–2317) investigated the role of the two C-type and two D-type MADS box proteins in petunia (Petunia hybrida) and show that the C- and D-genes overlap functionally in determining ovule identity and in floral termination. In addition, the two C-genes overlap largely in stamen and carpel identity specification, unlike the pronounced subfunctionalization observed in other species. The cover image shows the inside of an ovary (ovary walls removed) of a triple mutant line in which the function of both D-genes (FLORAL BINDING PROTEIN7 [FBP7] and FBP11) and one of the two C-genes (PETUNIA MADS BOX GENE3) has been disrupted, leading to the development of a giant ovary and the homeotic conversion of the ovules into carpel-like structures.
Leaf Asymmetry as a Developmental Constraint Imposed by Auxin-Dependent Phyllotactic Patterning

Daniel H. Chitwood, Lauren R. Headland, Aashish Ranjan, Ciera C. Martinez, Siobhan A. Braybrook, Daniel P. Koenig, Cris Kuhlmeier, Richard S. Smith, and Neelima R. Sinha

Antisense Inhibition of the 2-Oxoglutarate Dehydrogenase Complex in Tomato Demonstrates Its Importance for Plant Respiration and during Leaf Senescence and Fruit Maturation

Wagner L. Araújo, Takayuki Tohge, Sonia Osorio, Marc Lohse, Ilse Balbo, Ina O. Krahmer, Agata Sienkiewicz-Poręba, Björn Usadel, Adriano Nunes-Nesi, and Alisdair R. Fernie

A shrunk2-2 Transgene Increases Maize Yield by Acting in Maternal Tissues to Increase the Frequency of Seed Development

L. Curtis Hannah, Brandon Futch, James Bing, Janine R. Shaw, Susan Boehlein, Jon D. Stewart, Robert Beiriger, Nikolaos Georgelis, and Thomas Greene

Epistatic Natural Allelic Variation Reveals a Function of AGAMOUS-LIKE6 in Axillary Bud Formation in Arabidopsis

Xueqing Huang, Sigi Effgen, Rhonda Christiane Meyer, Klaus Tères, and Maarten Koornneef

Nicotianamine Functions in the Phloem-Based Transport of Iron to Sink Organs, in Pollen Development and Pollen Tube Growth in Arabidopsis

Mara Schuler, Ruben Rellán-Alvárez, Claudia Fink-Straube, Javier Abadia, and Petra Bauer

Gsp1 Triggers the Sexual Developmental Program Including Inheritance of Chloroplast DNA and Mitochondrial DNA in Chlamydomonas reinhardtii

Yoshiki Nishimura, Yoshiharu Shikanai, Soichi Nakamura, Maki Kawai-Yamada, and Hirofumi Uchimiya

Preferential Retention of Circadian Clock Genes during Diploidization following Whole Genome Triplication in Brassica rapa

Ping Lou, Jian Wu, Feng Chen, Laura G. Cressman, Xiaoou Wang, and C. Robertson McClung

A Self-Regulatory Circuit of CIRCADIAN CLOCK-ASSOCIATED1 Underlies the Circadian Clock Regulation of Temperature Responses in Arabidopsis

Pil Joon Seo, Mi-Jeong Park, Mi-Hye Lim, Sang-Gyu Kim, Minyoung Lee, Ian T. Baldwin, and Chung-Mo Park

Metabolism and Growth in Arabidopsis Depend on the Daytime Temperature but Are Temperature-Compensated against Cool Nights

Eva-Theresa Pyl, Maria Piques, Alexander Ivakov, Waltraud Schulze, Hirofumi Ishihara, Mark Stitt, and Ronan Sulipce

TIME FOR COFFEE Represses Accumulation of the MYC2 Transcription Factor to Provide Time-of-Day Regulation of Jasmonate Signaling in Arabidopsis

Jieun Shin, Katharina Heidrich, Alfredo Sanchez-Villarreal, Jane E. Parker, and Seth J. Davis

Arabidopsis PYP/PYL/RCAR Receptors Play a Major Role in Quantitative Regulation of Stomatal Aperture and Transcriptional Response to Abscisic Acid


A PPF-Type Phosphatase Holoenzyme Directly Regulates PIN Phosphorylation and Auxin Efflux in Arabidopsis

Mingqiu Dai, Chen Zhang, Urszula Kania, Fang Chen, Qin Xue, Tyra Mccray, Gang Li, Genji Qin, Michelle Wakeley, William Terzaghi, Janmin Wan, Yunde Zhao, Jian Xu, Jiří Friml, Xing Wang Deng, and Haiyang Wang

Auxin Controls Arabidopsis Adventitious Root Initiation by Regulating Jasmonic Acid Homeostasis

Laurent Gutiérrrez, Gaëlle Mongelard, Kristyana Flokova, Daniel I. Pa˘curar, Ondřej Novák, Paul Staswick, Mariusz Kowalczyk, Monica Pácurar, Hervé Demaillé, Gaia Geiss, and Catherine Bellini

The Recent Evolution of a Symbiotic Ion Channel in the Legume Family Altered Ion Conductance and Improved Functionality in Calcium Signaling

Muthusubramanian Venkateshwaran, Ana Cosme, Lu Han, Mari Banba, Kenneth A. Satyshur, Enrico Schleiff, Martin Parniske, Haruko Imaizumi-Anraku, and Jean-Michel Ané
A Plasma Membrane Receptor Kinase, GHR1, Mediates Abscisic Acid- and Hydrogen Peroxide-Regulated Stomatal Movement in Arabidopsis

Deping Hua, Cun Wang, Junna He, Hui Liao, Ying Duan, Ziqiang Zhu, Yan Guo, Zhizhong Chen, and Zhizhong Gong

DWARF AND LOW-TILLERING Acts as a Direct Downstream Target of a GSK3/SHAGGY-Like Kinase to Mediate Brassinosteroid Responses in Rice

Hongning Tong, Linchuan Liu, Yun Jin, Lin Du, Yanhai Yin, Qian Qian, Lihuang Zhu, and Chengcai Chu

Ethylene Signaling Negatively Regulates Freezing Tolerance by Repressing Expression of CBF and Type-A ARR Genes in Arabidopsis

Yiting Shi, Shouwei Tian, Lingyan Hou, Xiaozhen Huang, Xiaoayan Zhang, Hongwei Guo, and Shuhua Yang

Identification of a Photosystem II Phosphatase Involved in Light Acclimation in Arabidopsis

Iga Samol, Alexey Shapiguzov, Björn Ingelsson, Geoffrey Fucile, Michèle Crèvecoeur, Alexander V. Vener, Jean-David Rochaix, and Michel Goldschmidt-Clermont

Degradation of Arabidopsis CRY2 Is Regulated by SPA Proteins and Phytochrome A

Guido Weidler, Sven zur Oven-Krockhaus, Michael Heunemann, Christian Orth, Frank Schleifenbaum, Klaus Harter, Ute Hoecker, and Alfred Batschauer

Demethylesterification of the Primary Wall by PECTIN METHYLESTERASE3 Provides Mechanical Support to the Arabidopsis Stem

Shoko Hongo, Kaori Sato, Ryusuke Yokoyama, and Kazuhiko Nishitani

Arabidopsis MYC2 Interacts with DELLA Proteins in Regulating Sesquiterpene Synthase Gene Expression

Gao-Jie Hong, Yue-Yi Xue, Ying-Bo Mao, Ling-Jian Wang, and Xiao-Ya Chen

Fe Sparing and Fe Recycling Contribute to Increased Superoxide Dismutase Capacity in Iron-Starved Chlamydomonas reinhardtii

M. Dudley Page, Michael D. Allen, Janette Kropat, Eugen I. Urzica, Steven J. Karpowicz, Scott T. Hsieh, Joseph A. Loo, and Sabeeha S. Merchant

Crystal Structure of Arabidopsis Cyclophilin38 Reveals a Previously Uncharacterized Immunophilin Fold and a Possible Autoinhibitory Mechanism

Dileep Vasudevan, Aigen Fu, Sheng Luan, and Kunchithapadam Swaminathan

Dual Location of the Mitochondrial Preprotein Transporters B14.7 and Tim23-2 in Complex I and the TIM17:23 Complex in Arabidopsis Links Mitochondrial Activity and Biogenesis

Yan Wang, Chris Carrie, Estelle Giraud, Dina Elhafez, Reena Narsai, Owen Duncan, James Whelan, and Monika W. Murcha

Structure of Soybean β-Cyanoalanine Synthase and the Molecular Basis for Cyanide Detoxification in Plants

Hankuil Yi, Matthew Juergens, and Joseph M. Jez