Establishment of cell fate in the female gametophyte follows a predictable pattern. Pagnussat et al. (pages 3578–3592) characterize the Arabidopsis eostre mutant, in which this pattern is perturbed and an additional egg cell is formed in place of a synergid. The authors show that the eostre phenotype is due to misexpression of BELL-LIKE HOMEODOMAIN1, resulting in ectopic activity of BELL-KNOX TALE protein complexes. They find that normal development of the embryo sac depends on suppression of BELL-KNOX TALE complex activity, which is likely mediated by OVATE family proteins. The cover shows a false-color image of an eostre mutant ovule, in which two zygotes (purple) have begun to develop after fertilization of the two egg cells within the embryo sac (pale yellow). The unfertilized central cell nucleus is positioned just above the zygotes but out of the focal plane.
Genomic Changes in Resynthesized Brassica napus and Their Effect on Gene Expression and Phenotype


3403

Genome-Wide Analysis of mRNA Decay Rates and Their Determinants in Arabidopsis thaliana

Reena Narsai, Katharine A. Howell, A. Harvey Millar, Nicholas O’Toole, Ian Small, and James Whelan

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Riboswitch Control of Gene Expression in Plants by Splicing and Alternative 3’ End Processing of mRNAs

Andreas Wachtler, Meral Tunc-Ozdemir, Beth C. Grove, Pamela J. Green, David K. Shintani, and Ronald R. Breaker

3437

Arabidopsis FIERY1, XRN2, and XRN3 Are Endogenous RNA Silencing Suppressors

Isabelle Gy, Virginie Gasciolli, Dominique Laressergues, Jean-Benoît Morel, Julie Gombert, Florence Proux, Caroline Proux, Hervé Vaucheret, and Allison C. Mallory

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P R R 3 Is a Vascular Regulator of TOC1 Stability in the Arabidopsis Circadian Clock

Alessia Para, Eva M. Farré, Takato Imaizumi, José L. Pruneda-Paz, Franklin G. Harmon, and Steve A. Kay

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Distinct Light and Clock Modulation of Cytosolic Free Ca²⁺ Oscillations and Rhythmic CHLOROPHYLL A/B BINDING PROTEIN2 Promoter Activity in Arabidopsis

Xiaodong Xu, Carlos T. Hotta, António N. Dodd, John Love, Robert Sharrock, Young Wha Lee, Qiguang Xie, Carl H. Johnson, and Alex R. Webb

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Nitrate Signaling by the Regulatory Gene NIT2 in Chlamydomonas

Antonio Camargo, Ángel Llamas, Rogene A. Schnell, José J. Higuera, David González-Ballester, Paul A. Lefebvre, Emilio Fernández, and Aurora Galván

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The Homeotic Protein AGAMOUS Controls Late Stamen Development by Regulating a Jasmonate Biosynthetic Gene in Arabidopsis

Toshiro Ito, Kian-Hong Ng, Tze-Soo Lim, Hao Yu, and Elliot M. Meyerowitz

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MALE STERILITY1 Is Required for Tapetal Development and Pollen Wall Biosynthesis

Caiyun Yang, Gema Vizcay-Barrena, Katie Conner, and Zoe A. Wilson

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Arabidopsis MALE STERILITY1 Encodes a PHD-Type Transcription Factor and Regulates Pollen and Tapetum Development

Takuya Ito, Noriko Nagata, Yoshu Yoshiba, Masaru Ohme-Takagi, Hong Ma, and Kazuo Shinozaki

3549

The Central Cell Plays a Critical Role in Pollen Tube Guidance in Arabidopsis

Yan-Hong Chen, Hong-Ju Li, Dong-Qiao Shi, Li Yuan, Jie Liu, Rajini Sreenivasan, Ramamurthy Baskar, Ueli Grossniklaus, and Wei-Cai Yang

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Cell-Fate Switch of Synergid to Egg Cell in Arabidopsis eostre Mutant Embryo Sacs Arises from Misexpression of the BEL1-Like Homeodomain Gene BLH1

Gabriela Carolina Pagnussat, Hee-Ju Yu, and Venkatesan Sundaresan

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Comparison of Petunia inflata S-Locus F-Box Protein (Pi SLF) with Pi SLF–Like Proteins Reveals Its Unique Function in S-RNase–Based Self-Incompatibility

Zhihua Hua, Xiaoying Meng, and Teh-hui Kao

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A Viroid RNA with a Specific Structural Motif Inhibits Chloroplast Development

Maria-Elena Rodio, Sonia Delgado, Angelo De Stradis, María-Dolores Gómez, Ricardo Flores, and Francesco Di Serio

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Synthesis of the D2 Protein of Photosystem II in *Chlamydomonas* Is Controlled by a High Molecular Mass Complex Containing the RNA Stabilization Factor Nac2 and the Translational Activator RBP40

Christian Schwarz, Ingolf Elles, Jens Kortmann, Markus Piotrowski, and Jörg Nickelsen

Photosystem II Assembly and Repair Are Differentially Localized in *Chlamydomonas*

James Uniacke and William Zerges

BIN4, a Novel Component of the Plant DNA Topoisomerase VI Complex, Is Required for Endoreduplication in *Arabidopsis*

Christian Breuer, Nicola J. Stacey, Christopher E. West, Yunde Zhao, Joanne Chory, Hirokazu Tsukaya, Yoshitaka Azumi, Anthony Maxwell, Keith Roberts, and Keiko Sugimoto-Shirasu

Downregulation of Cinnamoyl-Coenzyme A Reductase in Poplar: Multiple-Level Phenotyping Reveals Effects on Cell Wall Polymer Metabolism and Structure

Christian Breuer, Nicola J. Stacey, Christopher E. West, Yunde Zhao, Anthony Maxwell, Keith Roberts, and Keiko Sugimoto-Shirasu

Saturated Very-Long-Chain Fatty Acids Promote Cotton Fiber and *Arabidopsis* Cell Elongation by Activating Ethylene Biosynthesis

Yong-Mei Qin, Chun-Yang Hu, Yu Pang, Alexander J. Kastaniotis, J. Kalervo Hiltunen, and Yu-Xian Zhu

Profilin Is Essential for Tip Growth in the Moss *Physcomitrella patens*

James Uniacke and William Zerges

Glycolytic Enzymes Associate Dynamically with Mitochondria in Response to Respiratory Demand and Support Substrate Channeling

James W.A. Graham, Thomas C.R. Williams, Megan Morgan, Alisdair R. Fernie, R. George Ratcliffe, and Lee J. Sweetlove

Functional Definition of Outer Membrane Proteins Involved in Preprotein Import into Mitochondria

Ryan Lister, Chris Carrie, Owen Duncan, Lois H.M. Ho, Katharine A. Howell, Monika W. Murcha, and James Whelan

Nitrate Efflux at the Root Plasma Membrane: Identification of an *Arabidopsis* Excretion Transporter

Cécile Segonzac, Jean-Christophe Boyer, Emilie Ipotesi, Wojciech Szponarski, Pascal Tillard, Brigitte Touraine, Nicolas Sommerer, Michel Rossignol, and Rémy Gibrat

ARGONAUTE4 Is Required for Resistance to *Pseudomonas syringae* in *Arabidopsis*

Astrid Agorio and Pablo Vera

Structural and Functional Analysis of SGT1 Reveals That Its Interaction with HSP90 Is Required for the Accumulation of Rx, an R Protein Involved in Plant Immunity

Marta Botèr, Béatrice Amigues, Jack Peart, Christian Breuer, Yasuhiro Kadota, Catarina Casais, Geoffrey Moore, Colin Kleanthous, Francoise Ochsenbein, Ken Shirasu, and Raphaël Gueris

SAD2, an Importin β-Like Protein, Is Required for UV-B Response in *Arabidopsis* by Mediating MYB4 Nuclear Trafficking

Jinfeng Zhao, Wenhui Zhang, Yang Zhao, Ximing Gong, Lei Guo, Guoli Zhu, Xuechen Wang, Zhizhong Gong, Karen S. Schumaker, and Yan Guo

Lysigenous Aerenchyma Formation in *Arabidopsis* Is Controlled by *LESION SIMULATING DISEASE1*

Per Mühlenbock, Malgorzata Plaszczyca, Marian Plaszczyca, Ewa Mellerowicz, and Stanislaw Karpinski


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