On the Cover: Epifluorescence image of Ostreococcus tauri cells. Blue reflects the nucleus stained with the DNA-specific dye DAPI, and red is the natural chlorophyll autofluorescence derived from the chloroplast. O. tauri is the smallest free-living eukaryote known on the planet and falls within the Prasinophyceae, at the base of the green lineage. This prasinophyte and its relative Micromonas pusilla are emerging as important models not only for plant systems biology, but also for study of primary production, or CO2 fixation, in the world’s oceans. Ostreococcus is known as a bloomer, sporadically reaching high biomass especially in coastal settings, whereas Micromonas has a broader range, extending from tropical waters into the Arctic Ocean. These organisms have been an international priority for genome sequencing; two complete sequences are available for Ostreococcus and two Micromonas genomes are in progress. Comparative genomics are facilitating rapid progress in understanding the evolutionary and ecological biology of these widespread marine “picoeukaryotes.” Each cell harbors a single Golgi apparatus, nucleus, chloroplast, and mitochondrion. Epifluorescence image by Alexandra Z. Worden and Augustin Engman.

ON THE INSIDE

Peter V. Minorsky

HIGH IMPACT

Protein S-Nitrosylation: Potential Targets and Roles in Signal Transduction. Aleel K. Grennan

UPDATE

Mechanisms of Cross Talk between Gibberellin and Other Hormones. David Weiss and Naomi Ori

GENOME ANALYSIS

Distinct Expression Patterns of Natural Antisense Transcripts in Arabidopsis. Stefan R. Henz, Jason S. Cumbie, Kristin D. Kasschau, Jan U. Lohmann, James C. Carrington, Detlef Weigel, and Markus Schmid

BREAKTHROUGH TECHNOLOGIES

High-Throughput, High-Sensitivity Analysis of Gene Expression in Arabidopsis. Richard Martin Kris, Stephen Felder, Michael Deyholos, Georgina M. Lambert, James Hinton, Ihab Botros, Ralph Martel, Bruce Seligmann, and David W. Galbraith

RESEARCH ARTICLES

BIOCHEMICAL PROCESSES AND MACROMOLECULAR STRUCTURES

Monoacylglycerols Are Components of Root Waxes and Can Be Produced in the Aerial Cuticle by Ectopic Expression of a Suberin-Associated Aroyltransferase. Yonghua Li, Fred Beisson, John Ohhrogge, and Mike Pollard
Continued from preceding page

[OA] Inositol 1,3,4,5,6-Pentakisphosphate 2-Kinase from Maize: Molecular and Biochemical Characterization. Yuejin Sun, Mark Thompson, Gaofeng Lin, Holly Butler, Zhifang Gao, Scott Thornburgh, Kerrn Yau, Doug A. Smith, and Vipula K. Shukla


[OA] Ethylene Insensitivity Results in Down-Regulation of Rubisco Expression and Photosynthetic Capacity in Tobacco. Danny Tholen, Thijs L. Pons, Laurentius A.C.J. Voesenek, and Hendrik Poorter


[OA] Effects of the Lack of Phosphatidylglycerol on the Donor Side of Photosystem II. Isamu Sakurai, Naoki Mizusawa, Shunsuke Ohashi, Masami Kobayashi, and Hajime Wada

[OA] Identification of the Photorespiratory 2-Phosphoglycolate Phosphatase, PGLP1, in Arabidopsis. Sandra Schwarte and Hermann Bauwe

CELL BIOLOGY AND SIGNAL TRANSDUCTION

[WI] Phosphatidylinositol 4-Kinase Activation Is an Early Response to Salicylic Acid in Arabidopsis Suspension Cells. Ondřej Krinke, Eric Ruelland, Olga Valentová, Chantal Vergnolle, Jean-Pierre Renou, Ludovine Taconnat, Matyáš Flemr, Lenka Burketová, and Alain Zachowski


DEVELOPMENT AND HORMONE ACTION

[WI] [OA] HAWAIIAN SKIRT: An F-Box Gene That Regulates Organ Fusion and Growth in Arabidopsis. Zinnia H. González-Carranza, Unchalee Rompa, Janny L. Peters, Anuj M. Bhatt, Carol Wagtstaff, Anthony D. Stead, and Jeremy A. Roberts

[WI] The Nuclear Pore Protein AtTPR Is Required for RNA Homeostasis, Flowering Time, and Auxin Signaling. Yannick Jacob, Chareerat Mongkolsirivatanawat, Kira M. Veley, Sang Yeol Kim, and Scott D. Michaels

Continued on next page
ENVIRONMENTAL STRESS AND ADAPTATION TO STRESS

Genome-Wide Gene Expression Analysis Reveals a Critical Role for CRYPTOCHROME1 in the Response of Arabidopsis to High Irradiance. Tatjana Kleine, Peter Kindgren, Catherine Benedict, Luke Hendrickson, and Åsa Strand

Effects of Iron Deficiency on Iron Binding and Internalization into Acidic Vacuoles in Dunaliella salina. Yakov Paz, Eyal Shimoni, Meira Weiss, and Uri Pick

Characterization of Stress-Responsive CIPK Genes in Rice for Stress Tolerance Improvement. Yong Xiang, Yuemin Huang, and Lizhong Xiong

A Reassessment of the Function of the So-Called Compatible Solutes in the Halophytic Plumbaginaceae Limonium latifolium. David Gagneul, Abdelkader Aïnouche, Claire Duhamel, Raphaël Lugan, François Robert Larher, and Alain Bouchereau

Increased Abundance of Proteins Involved in Phytosiderophore Production in Boron-Tolerant Barley. John Patterson, Kris Ford, Andrew Cassin, Siria Natera, and Antony Bacic

GENETICS, GENOMICS, AND MOLECULAR EVOLUTION

Identification of a Novel Chloroplast Protein AtNYE1 Regulating Chlorophyll Degradation during Leaf Senescence in Arabidopsis. Guodong Ren, Kun An, Yang Liao, Xiao Zhou, Yajun Cao, Huijiang Zhao, Xiaochun Ge, and Benke Kuai

Evolution of Flavone Synthase I from Parsley Flavanone 3β-Hydroxylase by Site-Directed Mutagenesis. Yvonne Helen Gebhardt, Simone Witte, Holger Steuber, Ulrich Matern, and Stefan Martens


Patterns of Selection and Tissue-Specific Expression among Maize Domestication and Crop Improvement Loci. Kristina M. Hufford, Payan Canaran, Doreen H. Ware, Michael D. McMullen, and Brandon S. Gaut

PLANTS INTERACTING WITH OTHER ORGANISMS

Transcriptome Analysis of Arbuscular Mycorrhizal Roots during Development of the Prepenetration Apparatus. Valeria Siciliano, Andrea Genre, Raffaella Balestrini, Gilda Cappella, Pierre J.G.M. deWit, and Paola Bonfante

The COMATOSE ATP-Binding Cassette Transporter Is Required for Full Fertility in Arabidopsis. Steven Footitt, Daniela Dietrich, Aaron Fait, Alisada R. Fernie, Michael J. Holdsworth, Alison Baker, and Frederica L. Theodoulou

Tomato Mitogen-Activated Protein Kinases LeMPK1, LeMPK2, and LeMPK3 Are Activated during the Cf-4/Avr4-Induced Hypersensitive Response and Have Distinct Phosphorylation Specificities. Iris J.E. Stulemeijer, Johannes W. Stratmann, and Matthieu H.A.J. Joosten

Medicago truncatula Root Nodule Proteome Analysis Reveals Differential Plant and Bacteroid Responses to Drought Stress. Estibaliz Larraínzar, Stefanie Wienkoop, Wolfram Weckwerth, Rubén Ladrena, Cesar Arrese-Igor, and Esther M. González

A Single Binding Site Mediates Resistance- and Disease-Associated Activities of the Effector Protein NIP1 from the Barley Pathogen Rhynchosporium secalis. Klaas A.E. van’t Slot, Angela Gierlich, and Wolfgang Knogge

WHOLE PLANT AND ECOPHYSIOLOGY

The Developmental Pattern of Tomato Fruit Wax Accumulation and Its Impact on Cuticular Transpiration Barrier Properties: Effects of a Deficiency in a β-Ketoacyl-Coenzyme A Synthase (LeCER6). Jana Leide, Ulrich Hildebrandt, Kerstin Reussing, Markus Riederer, and Gerd Vogg
Down-Regulation of a SILENT INFORMATION REGULATOR2-Related Histone Deacetylase Gene, OsSRT1, Induces DNA Fragmentation and Cell Death in Rice. Limin Huang, Qianwen Sun, Fujun Qin, Chen Li, Yu Zhao, and Dao-Xiu Zhou 1508


Functional Characterization of the Arabidopsis Eukaryotic Translation Initiation Factor 5A-2 That Plays a Crucial Role in Plant Growth and Development by Regulating Cell Division, Cell Growth, and Cell Death. Haizhong Feng, Qingguo Chen, Jian Feng, Jian Zhang, Xiaohui Yang, and Jianru Zuo 1531

Identification of a Bipartite Jasmonate-Responsive Promoter Element in the Catharanthus roseus ORCA3 Transcription Factor Gene That Interacts Specifically with AT-Hook DNA-Binding Proteins. Débora Vom Endt, Marina Soares e Silva, Jan W. Kijne, Giancarlo Pasquali, and Johan Memelink 1680


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

Indicates Web-only data.

Open Access articles can be viewed online without a subscription.