The electronic form of this issue, available as of May 11, 2006, at www.plantphysiol.org, is considered the journal of record.

On the Cover: Fruit from crop species display a variety of shapes and sizes. An understanding of the molecular mechanisms underlying differences in morphology may provide insight into pathways controlling fruit development. To make comparisons within and across species, consistent measurements of shape attributes and terms for these features need to be implemented. In this issue, Brewer et al. (pp. 15–25) describe a novel software program, Tomato Analyzer, which quickly, objectively, and accurately measures fruit shape attributes in a high-throughput manner. The terms for the attributes are introduced for future incorporation into a fruit trait ontology. Although the program is named Tomato Analyzer, the application can also accurately quantify attributes such as fruit area, length, and width, as well as complex attributes such as angles, blockiness, obovoid, and triangle shape, in all fruit shown on the cover. Cover design by Marin Talbot Brewer.

ON THE INSIDE

Peter V. Minorsky

BREAKTHROUGH TECHNOLOGIES

LucTrap Vectors Are Tools to Generate Luciferase Fusions for the Quantification of Transcript and Protein Abundance in Vivo. Luz Irina A. Calderon-Villalobos, Carola Kuhne, Hanbing Li, Mario Rosso, Bernd Weisshaar, and Claus Schwechheimer

BIOINFORMATICS

Development of a Controlled Vocabulary and Software Application to Analyze Fruit Shape Variation in Tomato and Other Plant Species. Marin Talbot Brewer, Lixin Lang, Kikuo Fujimura, Nancy Dujmovic, Simon Gray, and Esther van der Knaap

SCIENTIFIC CORRESPONDENCE

Sequencing Multiple and Diverse Rice Varieties. Connecting Whole-Genome Variation with Phenotypes. Kenneth L. McNally, Richard Bruskiewich, David Mackill, C. Robin Buell, Jan E. Leach, and Hei Leung

RESEARCH ARTICLES

BIOCHEMICAL PROCESSES AND MACROMOLECULAR STRUCTURES

Proteomic Analysis of Seed Filling in Brassica napus. Developmental Characterization of Metabolic Isozymes Using High-Resolution Two-Dimensional Gel Electrophoresis. Martin Hajduch, Jill E. Casteel, Katherine E. Hurrelmeyer, Zhao Song, Ganesh Kumar Agrawal, and Jay J. Thelen

Continued on next page
Continued from preceding page

Cytochrome c Is Released in a Reactive Oxygen Species-Dependent Manner and Is Degraded via Caspase-Like Proteases in Tobacco Bright-Yellow 2 Cells en Route to Heat Shock-Induced Cell Death.  
Rosa Anna Vacca, Daniela Valenti, Antonella Bobba, Riccardo Sandro Merafina, Salvatore Passarella, and Ersilia Marra

Maize cDNAs Expressed in Endosperm Encode Functional Farnesyl Diphosphate Synthase with Geranylgeranyl Diphosphate Synthase Activity.  
Miguel Cervantes-Cervantes, Cynthia E. Gallagher, Changfu Zhu, and Eleanore T. Wurtzel

BIOENERGETICS AND PHOTOSYNTHESIS

Asaph B. Cousins, Murray Badger, and Susanne von Caemmerer

CELL BIOLOGY AND SIGNAL TRANSDUCTION

Identification and Characterization of a Stress-Inducible and a Constitutive Small Heat-Shock Protein Targeted to the Matrix of Plant Peroxisomes.  
Changle Ma, Martin Haslbeck, Lavanya Babujee, Olaf Jahn, and Sigrun Reumann

Cryptochrome 1 from Brassica napus Is Up-Regulated by Blue Light and Controls Hypocotyl/Stem Growth and Anthocyanin Accumulation.  
Mithu Chatterjee, Pooja Sharma, and Jitendra P. Khurana

Plastid Cues Posttranscriptionally Regulate the Accumulation of Key Enzymes of the Methylyerythritol Phosphate Pathway in Arabidopsis.  
Susanna Sauret-Güeto, Patricia Botella-Pavía, Úrsula Flores-Pérez, Jaime F. Martínez-García, Carolina San Román, Patricia León, Albert Boronat, and Manuel Rodríguez-Concepción

Identification of Primary Target Genes of Phytochrome Signaling. Early Transcriptional Control during Shade Avoidance Responses in Arabidopsis.  
Irma Roig-Villanova, Jordi Bou, Céline Sorin, Paul F. Devlin, and Jaime F. Martínez-García

DEVELOPMENT AND HORMONE ACTION

CYP707A1 and CYP707A2, Which Encode Abscisic Acid 8’-Hydroxylases, Are Indispensable for Proper Control of Seed Dormancy and Germination in Arabidopsis.  
Masanori Okamoto, Ayuko Kuwahara, Mistunori Seo, Tetsuo Kusihoro, Tadao Asami, Nobuhiro Hirai, Yuji Kamiya, Tomokazu Koshiba, and Eiji Nambara

G-Protein Complex Mutants Are Hypersensitive to Abscisic Acid Regulation of Germination and Postgermination Development.  
Sona Pandey, Jin-Gui Chen, Alan M. Jones, and Sarah M. Assmann

ENVIRONMENTAL STRESS AND ADAPTATION TO STRESS

An Improved Grafting Technique for Mature Arabidopsis Plants Demonstrates Long-Distance Shoot-to-Root Transport of Phytochelatins in Arabidopsis.  
Alice Chen, Elizabeth A. Komives, and Julian I. Schroeder

Continued on next page

Functional Characterization of Ice Plant SKD1, an AAA-Type ATPase Associated with the Endoplasmic Reticulum-Golgi Network, and Its Role in Adaptation to Salt Stress. Yingtzy Jou, Chih-Pin Chiang, Guang-Yuh Jauh, and Hungchen Emi Yen


GENETICS, GENOMICS, AND MOLECULAR EVOLUTION


Gene Expression Profiling Using cDNA Microarray Analysis of the Sexual Reproduction Stage of the Unicellular Charophycean Alga Closterium peracerosum-strigosum-littorale Complex. Hiroyuki Sekimoto, Yoichi Tanabe, Yuki Tsuchikane, Hiroshi Shirosaki, Hiroo Fukuda, Taku Demura, and Motomi Ito

PLANTS INTERACTING WITH OTHER ORGANISMS

Recruitment of Novel Calcium-Binding Proteins for Root Nodule Symbiosis in Medicago truncatula. Junqi Liu, Susan S. Miller, Michelle Graham, Bruna Bucciarelli, Christina M. Catalano, D. Janine Sherrier, Deborah A. Samac, Sergey Ivashuta, Maria Fedorova, Peter Matsumoto, J. Stephen Gantt, and Carroll P. Vance

Xanthan Induces Plant Susceptibility by Suppressing Callose Deposition. Maximina H. Yun, Pablo S. Torres, Mohamed El Oirdi, Luciano A. Rijgo, Rocío González-Lamothe, María Rosa Marano, Atílio P. Castagnaro, Marcelo A. Dankert, Kamal Bouarab, and Adrián A. Vojnov

Medicago truncatula Mutants Demonstrate the Role of Plant Calcium Oxalate Crystals as an Effective Defense against Chewing Insects. Kenneth L. Korth, Sarah J. Doege, Sang-Hyuck Park, Fiona L. Goggin, Qin Wang, S. Karen Gomez, Guangjie Liu, Lingling Jia, and Paul A. Nakata

Adenylate-Coupled Ion Movement. A Mechanism for the Control of Nodule Permeability to O2 Diffusion. Hui Wei and David B. Layzell

WHOLE PLANT AND ECOPHYSIOLOGY

The Shoot-Specific Expression of γ-Glutamylcysteine Synthetase Directs the Long-Distance Transport of Thiol-Peptides to Roots Conferring Tolerance to Mercury and Arsenic. Yujing Li, Om Parkash Dankher, Laura Carreira, Aaron P. Smith, and Richard B. Meagher
SYSTEMS BIOLOGY, MOLECULAR BIOLOGY, AND GENE REGULATION


[O] Indicates Web-only data.

[OA] Open Access articles can be viewed online without a subscription.