The electronic form of this issue, available as of August 13, 2007, at www.plantphysiol.org, is considered the journal of record.

On the Cover: Physcomitrella patens is tolerant of high levels of NaCl and can maintain growth at Na⁺ concentrations detrimental to most vascular plants. This tolerance is suggested to be due to the expression of one or two ENA-type Na⁺-ATPases, which are absent in vascular plants. In this issue, Lunde et al. (pp. 1786–1796) show that PpENA1 is important under moderate salt stress. When grown in 100 mM NaCl, wild-type Physcomitrella is able to maintain a higher K⁺ to Na⁺ ratio and growth rate compared to the PpENA1 (ena1) gene knockout.

The tissue-specific expression of PpENA1 in Physcomitrella was determined by fusing the PpENA1 promoter to a GUS-reporter gene. In the nonstressed gametophyte (left), GUS staining was confined to the stem, the basal part of the leaves, and to a small number of rhizoids originating from the base of the gametophyte. No staining was present in the apical part of the leaf, and staining was less pronounced in the top leaves compared to the leaves closer to the base of the gametophyte. The staining was significantly stronger but still confined to the same tissues in gametophytes exposed to 100 mM NaCl (right). Cover image by Christina Lunde.

ON THE INSIDE

Peter V. Minorsky

LETTER TO THE EDITOR

Structural Organization and a Standardized Nomenclature for Plant Endo-1,4-β-Glucanases (Cellulases) of Glycosyl Hydrolase Family 9. Breeanna R. Urbanowicz, Alan B. Bennett, Elena del Campillo, Carmen Catalá, Takahisa Hayashi, Bernard Henrissat, Herman Höfte, Simon J. McQueen-Mason, Sara E. Patterson, Oded Shoseyov, Tuula T. Teeri, and Jocelyn K.C. Rose

GENOME ANALYSIS


RESEARCH ARTICLES

BIOCHEMICAL PROCESSES AND MACROMOLECULAR STRUCTURES

[OA] Localization of Members of the γ-Glutamyl Transpeptidase Family Identifies Sites of Glutathione and Glutathione S-Conjugate Hydrolysis. Melinda N. Martin, Pilar H. Saladores, Elton Lambert, André O. Hudson, and Thomas Leustek

How a Plant Lectin Recognizes High Mannose Oligosaccharides. Abel García-Pino, Lieven Buts, Lode Wyns, Anne Imberty, and Remy Loris

BIOENERGETICS AND PHOTOSYNTHESIS


Phosphorylation of Phosphoenolpyruvate Carboxylase Is Not Essential for High Photosynthetic Rates in the C4 Species Flaveria bidentis.  Tsuyoshi Furumoto, Katsura Izui, Vanda Quinn, Robert T. Farbuck, and Susanne von Caemmerer 1936


CELL BIOLOGY AND SIGNAL TRANSDUCTION

Silencing of the Major Salt-Dependent Isoform of Pectinesterase in Tomato Alters Fruit Softening.  Thanh D. Phan, Wen Bo, Gill West, Grantley W. Lycett, and Gregory A. Tucker 1960

DEVELOPMENT AND HORMONE ACTION


ENVIRONMENTAL STRESS AND ADAPTATION TO STRESS


Exclusion of Na+ via Sodium ATPase (PpENA1) Ensures Normal Growth of Physcomitrella patens under Moderate Salt Stress.  Christina Lunde, Damian P. Drew, Andrew K. Jacobs, and Mark Tester 1786

A Higher Plant Δ8 Sphingolipid Desaturase with a Preference for (Z)-Isomer Formation Confers Aluminum Tolerance to Yeast and Plants.  Peter R. Ryan, Qing Liu, Petra Sperling, Bei Dong, Stefan Franke, and Emmanuel Delllaize 1968

Rice Shaker Potassium Channel OsKAT1 Confers Tolerance to Salinity Stress on Yeast and Rice Cells.  Toshihiro Obata, Hiroko K. Kitamoto, Atsuko Nakamura, Atsunori Fukuda, and Yoshiyuki Tanaka 1978

GENETICS, GENOMICS, AND MOLECULAR EVOLUTION

Genome-Wide Gene Expression Profiling Reveals Conserved and Novel Molecular Functions of the Stigma in Rice.  Meina Li, Wenyiing Xu, Wenqiang Yang, Zhaosheng Kong, and Yongbiao Xue 1797

Continued on next page
Between-Species Analysis of Short-Repeat Modules in Cell Wall and Sex-Related Hydroxyproline-Rich Glycoproteins of Chlamydomonas.  
Jae-Hyeok Lee, Sabine Waffenschmidt, Linda Small, and Ursula Goodenough 1813

Novel Insights into Seed Fatty Acid Synthesis and Modification Pathways from Genetic Diversity and Quantitative Trait Loci Analysis of the Brassica C Genome.  
Guy C. Barker, Tony R. Larson, Ian A. Graham, James R. Lynn, and Graham J. King 1827

Related Arabidopsis Serine Carboxypeptidase-Like Sinapoylglucose Acyltransferases Display Distinct But Overlapping Substrate Specificities.  
Christopher M. Fraser, Michael G. Thompson, Amber M. Shirley, John Ralph, Jessica A. Schoenherr, Taksina Sinlapadech, Mark C. Hall, and Clint Chapple 1986

PLANTS INTERACTING WITH OTHER ORGANISMS

Impacts of T-Phylloplanin Gene Knockdown and of Helianthus and Datura Phylloplanins on Peronospora tabacina Spore Germination and Disease Potential.  
Antoaneta B. Kroumova, Ryan W. Shepherd, and George J. Wagner 1843

Auxin Influx Activity Is Associated with Frankia Infection during Actinorhizal Nodule Formation in Casuarina glauca.  
Benjamin Péret, Ranjan Swarup, Leen Jansen, Gaëlle Devos, Florence Auguy, Myriam Collin, Carole Santi, Valérie Hocher, Claudine Franche, Didier Bogusz, Malcolm Bennett, and Laurent Laplaze 1852

Resistance to Botrytis cinerea in sitiens, an Abscisic Acid-Deficient Tomato Mutant, Involves Timely Production of Hydrogen Peroxide and Cell Wall Modifications in the Epidermis.  
Bob Asselbergh, Katrien Curvers, Soraya C. França, Kris Audenaert, Marnik Vuylsteke, Frank Van Breusegem, and Monica Höfte 1863

Comparative Transcriptome Analysis Reveals Common and Specific Tags for Root Hair and Crack-Entry Invasion in Sesbania rostrata.  
Ward Capoen, Jeroen Den Herder, Stephane Rombauts, Jeroen De Gussem, Annick De Keyser, Marcelle Holsters, and Sofie Goormachtig 1878

Continued from preceding page

Involvement of a Soybean ATP-Binding Cassette-Type Transporter in the Secretion of Genistein, a Signal Flavonoid in Legume-Rhizobium Symbiosis.  
Akifumi Sugiyama, Nobukazu Shitan, and Kazufumi Yazaki 2000

WHOLE PLANT AND ECOPHYSIOLOGY

Leaf Maximum Photosynthetic Rate and Venation Are Linked by Hydraulics.  
Tim J. Brodribb, Taylor S. Feild, and Gregory J. Jordan 1890

SYSTEMS BIOLOGY, MOLECULAR BIOLOGY, AND GENE REGULATION

A Genomics Approach Reveals That Aroma Production in Apple Is Controlled by Ethylene Predominantly at the Final Step in Each Biosynthetic Pathway.  

Continued on next page
Mutations in the Type II Protein Arginine Methyltransferase AtPRMT5 Result in Pleiotropic Developmental Defects in Arabidopsis. Yanxi Pei, Lifang Niu, Falong Lu, Chunyan Liu, Jixian Zhai, Xiangfeng Kong, and Xiaofeng Cao


CORRECTIONS

An IRE-Like AGC Kinase Gene, MtIRE, Has Unique Expression in the Invasion Zone of Developing Root Nodules in Medicago truncatula. C. Pislariu and R. Dickstein

Mechanisms of Cross Talk between Gibberellin and Other Hormones. D. Weiss and N. Ori

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.