

**On the Cover:** Plants are exquisite in their capacity to convert photons of light through photosynthetic fixation of carbon dioxide into sugars that are assimilated and partitioned from source to sink tissues, including roots and flowers. Oxygen is utilized for efficient conversion of sugars to ATP via aerobic respiration in mitochondria. This Focus Issue on Energy: Light and Oxygen Dynamics evaluates the plant's exquisite integration of light and oxygen with sugar sensing to maximize development and fitness. The cover contrasts the canopy of rice in environments that differ in the availability of light and oxygen. On the left, the plant is submerged and on the right solar radiation, oxygen and carbon dioxide are represented. The cover was created by graphic artist Alexander Bailey of Berkeley, California, USA.

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[<sup>CC-BY</sup>] Branched Pectic Galactan in Phloem-Sieve-Element Cell Walls: Implications for Cell Mechanics. Thomas A. Torode, Rachel O’Neill, Susan E. Marcus, Valérie Cornuault, Sara Pose, Rebecca P. Lauder, Stjepan K. Kračun, Maja Gro Rydahl, Mathias C. F. Andersen, William G. T. Willats, Siobhan A. Braybrook, Belinda J. Townsend, Mads H. Clausen, and J. Paul Knox

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*Arabidopsis VPS38 is required for the intracellular localization of PI3P, an important lipid regulator of endosomal and vacuolar trafficking.*

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*A transmembrane protein conserved broadly in plants and animals promotes antiviral silencing by enhancing the amplification of virus-derived small interfering RNAs.*

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[<sup>OPEN</sup>] The Brassicaceae Family Displays Divergent, Shoot-Skewed NLR Resistance Gene Expression. David Munch, Vikas Gupta, Asger Bachmann, Wolfgang Busch, Simon Kelly, Terry Mun, and Stig Uggerhøj Andersen

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[<sup>OPEN</sup>] Regulation of Hormonal Control, Cell Reprogramming, and Patterning during De Novo Root Organogenesis. *Estefano Bustillo-Avendaño, Sergio Ibáñez, Oscar Sanz, Jessica Aline Sousa Barros, Inmaculada Gude, Juan Perianez-Rodríguez, José Luis Micol, Juan Carlos Del Pozo, Miguel Angel Moreno-Risueno, and José Manuel Pérez-Pérez*

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NDH-PSI Supercomplex Assembly Precedes Full Assembly of the NDH Complex in Chloroplast.  
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[OPEN] Preferential Distribution of Boron to Developing Tissues Is Mediated by the Intrinsic Protein OsNIP3.  
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*Mineral deposition in Ficus leaves is highly regulated, and some of the minerals function in light distribution to enhance photosynthesis, depending upon the mineral location in the leaf.* 1751

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[OPEN] Dynamics of Ethylene Production in Response to Compatible Nod Factor. Dugald Reid, Huijun Liu, Simon Kelly, Yasuyuki Kawaharada, Terry Mun, Stig U. Andersen, Guilhem Desbrosses, and Jens Stougaard

*The host plant Lotus japonicus produces ethylene in response to compatible Nod-factor to regulate nitrogen-fixing symbiosis.* 1764

[OPEN] STOREKEEPER RELATED1/G-Element Binding Protein (STKR1) Interacts with Protein Kinase SnRK1. Madlen Nietzsche, Tiziana Guerra, Saleh Alseekh, Marcel Wiermer, Sophia Sonnewald, Alisdair R. Fernie, and Frederik Börnke

*STKR1-overexpressing plants show many phenotypic changes that have previously been associated with SnRK1 overexpression, and thus STKR1 could act as a downstream component of SnRK1 signaling.* 1773

[OPEN] Glucose-Induced Trophic Shift in an Endosymbiont Dinoflagellate with Physiological and Molecular Consequences. Tingting Xiang, Robert E. Jinkerson, Sophie Clowez, Cawa Tran, Cory J. Krediet, Masayuki Onishi, Phillip A. Cleves, John R. Pringle, and Arthur R. Grossman

*Glucose induces dramatic physiological changes in the dinoflagellate Symbiodinium strain SSB01, although there is very little modulation of nuclear gene expression.* 1793

[OPEN] Laccase GhLac1 Modulates Broad-Spectrum Biotic Stress Tolerance via Manipulating Phenylpropanoid Pathway and Jasmonic Acid Synthesis. Qin Hu, Ling Min, Xiyan Yang, Shuangxia Jin, Lin Zhang, Yaoyao Li, Yizan Ma, Xuewei Qi, Dongqin Li, Hongbo Liu, Keith Lindsey, Longfu Zhu, and Xianlong Zhang

*Modification of GhLac1 expression leads to redirection of phenylpropanoid metabolism and alteration of JA synthesis to confer broad spectrum resistance to both pathogens and pests.* 1808

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[<sup>OPEN</sup>] Involvement of Adapter Protein Complex 4 in Hypersensitive Cell Death Induced by Avirulent Bacteria. Noriyuki Hatsugai, Aya Nakatsuji, Osamu Unten, Kimi Ogasawara, Maki Kondo, Mikio Nishimura, Tomoo Shimada, Fumiaki Katagiri, and Ikuko Hara-Nishimura

*The adapter protein 4 is involved in plant immunity associated with vacuolar-plasma membrane fusion and in hypersensitive cell death triggered by type-III effector recognition on the plasma membrane.*

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[<sup>OPEN</sup>] The Kinase OsCPK4 Regulates a Buffering Mechanism That Fine-Tunes Innate Immunity. Jiyang Wang, Shanzhi Wang, Ke Hu, Jun Yang, Xiaoyun Xin, Wenqing Zhou, Jiangbo Fan, Fuhao Cui, Baohui Mou, Shiyong Zhang, Guoliang Wang, and Wenxian Sun

*OsCPK4 has dual functions in rice in promoting the degradation and stability of OsRLCK176 to fine-tune plant immunity through modulating the phosphorylation state of OsRLCK176.*

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TCP Transcription Factors Regulate Shade Avoidance via Directly Mediating the Expression of Both *PHYTOCHROME INTERACTING FACTORS* and Auxin Biosynthetic Genes. Yu Zhou, Dongzhi Zhang, Jiaying An, Hongju Yin, Shuang Fang, Jinfang Chu, Yunde Zhao, and Jia Li

*TCP17 acts as a key factor in regulating shade-induced hypocotyl rapid growth by directly promoting the transcriptional levels of PIFs and auxin biosynthesis genes.*

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[<sup>OPEN</sup>] Transcription Factor-Mediated Control of Anthocyanin Biosynthesis in Vegetative Tissues. Nikolay S. Outchkourov, Rumyana Karlova, Matthijs Hölscher, Xandra Schrama, Ikram Blilou, Esmer Jongedijk, Carmen Diez Simon, Aalt D. J. van Dijk, Dirk Bosch, Robert D. Hall, and Jules Beekwilder

*Plants accumulate secondary metabolites to adapt to environmental conditions.*

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