ON THE COVER

Photosynthetic light harvesting in plants is regulated by phosphorylation-driven state transitions, involving the functional redistribution of the major light-harvesting complex II (LHCII) to balance the relative excitation of PSI and PSII. Pietrzykowska et al. (pages 3646–3660) show that despite their nearly identical amino acid composition, the functional roles of Lhcb1 and Lhcb2 are different but complementary. Results show that both Lhcb1 and Lhcb2 are required for state transitions, but neither alone is sufficient. Lhcb1 was found to be important for grana stacking and membrane reorganization during state transitions, while Lhcb2 has more of a role in mediating the association of LHCII to PSI. The cover image shows electron micrographs of Arabidopsis wild type (top) and an lhcb1 mutant (bottom; generated using artificial microRNA) in state 1 (left) or state 2 (right).

IN BRIEF

A Rice KNOX Transcription Factor Represses Brassinosteroid Production in the Shoot Apical Meristem

Kathleen L. Farquharson

Advice to the Lovelorn Polyploid Plant

Jennifer Mach

Supply Route: ABCG Transporters Act in the Construction of Suberin Barriers

Nancy R. Hofmann

LARGE-SCALE BIOLOGY ARTICLES

Genome-Wide Analysis of Alternative Splicing in Zea mays: Landscape and Genetic Regulation

Shawn R. Thatcher, Wengang Zhou, April Leonard, Bing-Bing Wang, Mary Beatty, Gina Zastrow-Hayes, Xiangyu Zhao, Andy Baumgarten, and Bailin Li

RESEARCH ARTICLES

Genome-Wide Study of KNOX Regulatory Network Reveals Brassinosteroid Catabolic Genes Important for Shoot Meristem Function in Rice

Katsutoshi Tsuda, Nori Kurata, Hajime Ohyanagi, and Sarah Hake

ROP3 GTPase Contributes to Polar Auxin Transport and Auxin Responses and Is Important for Embryogenesis and Seedling Growth in Arabidopsis

Jia-bao Huang, Huili Liu, Min Chen, Xiaojuan Li, Mingyan Wang, Yali Yang, Chunling Wang, Jiaqing Huang, Guolan Liu, Yuting Liu, Jian Xu, Alice Y. Cheung, and Li-zhen Tao

MYB118 Represses Endosperm Maturation in Seeds of Arabidopsis

Guillaume Barthole, Alexandra To, Chloé Marchive, Véronique Brunaud, Ludivine Soubigou-Taconnat, Nathalie Berger, Bertrand Dubreucq, Lolic Lepiniec, and Sébastien Baud

Overexpression of the Tomato Pollen Receptor Kinase LePRK1 Rewires Pollen Tube Growth to a Blebbing Mode

Cai-Ping Gui, Xin Dong, Hai-Kuan Liu, Wei-Jie Huang, Dong Zhang, Shu-Jie Wang, Maria Laura Barberini, Xiao-Yan Gao, Jorge Muschietti, Sheila McCormick, and Wei-Hua Tang

ON THE COVER
Hypomethylated Pollen Bypasses the Interploidy Hybridization Barrier in *Arabidopsis*

Nicole Schatlowski, Philip Wolff, Juan Santos-González, Vera Schott, Alexey Siretskiy, Rod Scott, Hisashi Tamaru, and Claudia Köhler

ABCG Transporters Are Required for Suberin and Pollen Wall Extracellular Barriers in *Arabidopsis*

Vandana Yadav, Isabel Molina, Kosala Ranathunge, Indira Queralta Castillo, Steven J. Rothstein, and Jason W. Reed

BBX19 Interacts with CONSTANS to Repress *FLOWERING LOCUS T* Transcription, Defining a Flowering Time Checkpoint in *Arabidopsis*

Chang-Quan Wang, Cade Guthrie, Mostafa Khoshhal Sarmast, and Katayoon Dehesh

Structural Basis for the Oligomerization of the MADS Domain Transcription Factor SEPALATA3 in *Arabidopsis*


Resolving Distinct Genetic Regulators of Tomato Leaf Shape within a Heteroblastic and Ontogenetic Context

Daniel H. Chitwood, Aashish Ranjan, Ravi Kumar, Yasunori Ichihashi, Kristina Zumstein, Lauren R. Headland, Enrique Ostría-Gallardo, José A. Aguilar-Martínez, Susan Bush, Leonela Carriedo, Daniel Fulop, Giera C. Martinez, Jie Peng, Julin N. Maloof, and Neelima R. Sinhaa

Arabidopsis DE-ETIOLATED1 Represses Photomorphogenesis by Positively Regulating Phytochrome-Interacting Factors in the Dark

Jie Dong, Dafang Tang, Zhaoxu Gao, Renbo Yu, Kunlun Li, Hang He, William Terzaghi, Xing Wang Deng, and Haodong Chen

The Light-Harvesting Chlorophyll *a/b* Binding Proteins Lhcb1 and Lhcb2 Play Complementary Roles during State Transitions in *Arabidopsis*

Malgorzata Pietrzykowska, Marjaana Suorsa, Dmitry A. Semchonok, Mikko Tikkanen, Egbert J. Boekema, Eva-Mari Aro, and Stefan Jansson

The Small Regulatory RNA SyR1/PsrR1 Controls Photosynthetic Functions in Cyanobacteria


*Arabidopsis* DE-ETIOLATED1 RNase H2 Deficiency Counteracts the Needs for the WEE1 Checkpoint Kinase but Triggers Genome Instability

Pooneh Kalhorzadeh, Zhubing Hu, Toon Cools, Simon Amiard, Eva-Maria Willing, Nancy De Winne, Kris Gevaert, Geert De Jaeger, Korbinian Schneeberger, Charles I. White, and Lieven De Veylder

How Vacuolar Sorting Receptor Proteins Interact with Their Cargo Proteins: Crystal Structures of Apo and Cargo-Bound Forms of the Protease-Associated Domain from an *Arabidopsis* Vacuolar Sorting Receptor

Fang Luo, Yu Hang Fong, Yongliun Zeng, Jinbo Shen, Liwen Jiang, and Xiaoqiang Wang

Structural Studies of Cinnamoyl-CoA Reductase and Cinnamyl-Alcohol Dehydrogenase, Key Enzymes of Monolignol Biosynthesis

Spatio-Temporal Dynamics of Fructan Metabolism in Developing Barley Grains

Manuela Peukert, Johannes Thiel, Darin Peshev, Winfriede Weschke, Wim Van den Ende, Hans-Peter Mock, and Andrea Matros

A Root-Expressed L-Phenylalanine:4-Hydroxyphenylpyruvate Aminotransferase Is Required for Tropane Alkaloid Biosynthesis in Atropa belladonna

Matthew A. Bedewitz, Elsa Góngora-Castillo, Joseph B. Uebler, Eliana Gonzales-Vigli, Krystle E. Wiegert-Rininger, Kevin L. Childs, John P. Hamilton, Brieanne Vaillancourt, Yun-Soo Yeo, Joseph Chappell, Dean DellaPenna, A. Daniel Jones, C. Robin Buell, and Cornelius S. Barry

Sterol Side Chain Reductase 2 Is a Key Enzyme in the Biosynthesis of Cholesterol, the Common Precursor of Toxic Steroidal Glycoalkaloids in Potato

Satoru Sawai, Kiyoshi Ohyama, Shuhei Yasumoto, Hikaru Seki, Tetsumi Sakuma, Takashi Yamanoto, Yumiko Takebayashi, Mikiko Kojima, Hitoshi Sakakibara, Toshio Aoki, Toshiya Muranaka, Kazuki Saito, and Naoyuki Umemoto

Phenylcoumaran Benzylic Ether Reductase Prevents Accumulation of Compounds Formed under Oxidative Conditions in Poplar Xylem

Claudiu Niculaes, Kris Morreel, Hoon Kim, Fachuang Lu, Lauren S. McKee, Bart Ivens, Jurgen Haustraete, Bartel Vanholme, Riet De Rycke, Magnus Hertzberg, Jorg Fromm, Vincent Bulone, Andrea Polle, John Ralph, and Wout Boerjan

Multiple N-Glycans Cooperate in the Subcellular Targeting and Functioning of Arabidopsis KORRIGAN1

Stephan Rips, Nolan Bentley, In Sil Jeong, Justin L. Welch, Antje von Schaewen, and Hisashi Koiwa

Adjustment of Host Cells for Accommodation of Symbiotic Bacteria: Vacuole Defunctionalization, HOPS Suppression, and TIP1g Retargeting in Medicago

Aleksandr Gavrin, Brent N. Kaiser, Dietmar Geiger, Stephen D. Tyerman, Zhenqyu Wen, Ton Bisseling, and Elena E. Fedorova

CORRECTION

The Caspase-Related Protease Separate (Extra Spindle Poles) Regulates Cell Polarity and Cytokinesis in Arabidopsis

Moschou, P.N., Smertenko, A.P., Minina, E.A., Fukada, K., Savenkov, E.I., Robert, S., Hussey, P.J., and Bozhkov, P.V.

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

Online version contains Web-only data.

Articles can be viewed online without a subscription.
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>eTOCs</td>
<td>Sign up for eTOCs at: <a href="http://www.plantcell.org/cgi/alerts/ctmain">http://www.plantcell.org/cgi/alerts/ctmain</a></td>
</tr>
<tr>
<td>CiteTrack Alerts</td>
<td>Sign up for CiteTrack Alerts at: <a href="http://www.plantcell.org/cgi/alerts/ctmain">http://www.plantcell.org/cgi/alerts/ctmain</a></td>
</tr>
<tr>
<td>Subscription Information</td>
<td>Subscription Information for <em>The Plant Cell</em> and <em>Plant Physiology</em> is available at: <a href="http://www.aspb.org/publications/subscriptions.cfm">http://www.aspb.org/publications/subscriptions.cfm</a></td>
</tr>
</tbody>
</table>