On the Cover: The identification of the genetic network controlling progress through the plant cell cycle has opened the doors to numerous investigations in which expression of these genes has been altered and the outcome on plant development observed. These investigations have addressed the fundamental question of the relationship between overall size and shape of an organ and the proliferation of an organ’s constituent cells. An underlying assumption of these investigations has been that the altered frequency of cell division resulting from these manipulations causes the changes in organ size and shape observed. In this issue, Kuwabara et al. (2196–2206) have manipulated the expression of genes involved in the G1/S phase transition of the plant cell cycle and performed a quantitative temporal and spatial analysis of the patterns of cell division and the changes in leaf morphology that occur. Their results indicate that although changes of cell division frequency are induced, these changes occur after changes in leaf shape. In contrast, there was a tight correlation between the timing of altered cell size resulting from these manipulations and altered leaf form. The results indicate that altered cell division frequency does not underpin leaf morphogenesis but that the influence of cell cycle regulators on the cell size at which division occurs may play an important role in mediating the genetic control of leaf shape. The image shows an Arabidopsis (Arabidopsis thaliana) leaf in which new cell plates are visualized by aniline blue staining. Quantification of cell plate distribution by Asuka Kuwabara, coupled with the use of image analysis tools developed by Andreas Backhaus and the analysis of patterns in different genetic backgrounds generated by Robert Malinowski, enabled this work.

ON THE INSIDE

Peter V. Minorsky

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[C][W]Quantification of the Brassinosteroid Insensitive1 Receptor in Planta. G. Wilma van Esse, Adrie H. Westphal, Ramya Preethi Surendran, Catherine Albrecht, Boudevijn van Veen, Jan Willem Borst, and Sacco C. de Vries

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[W] Nuclear Localization and Interaction with COP1 Are Required for STO/BBX24 Function during Photomorphogenesis. Hui Li, Katrin Marquardt, Martin Indorf, Dominic Jutt, Stefan Kircher, Gunther Neuhäusel, and Marta Rodríguez-Franco 1772

[W][OA] Assembly and Sorting of the Tonoplast Potassium Channel AtTPK1 and Its Turnover by Internalization into the Vacuole. Marie Maitrejean, Michael M. Wudick, Camilla Voelker, Bhakti Prinsi, Bernd Mueller-Roeber, Katrin Czempinski, Emanuela Pedrazzini, and Alessandro Vitale 1783


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[C][W][OA] A Mechanistic Link between STM and CUC1 during Arabidopsis Development. Silvana V. Spinelli, Ana Paula Martin, Ivana L. Viola, Daniel H. Gonzalez, and Javier F. Palatnik 1894

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Heterosis in Rice Seedlings: Its Relationship to Gibberellin Content and Expression of Gibberellin Metabolism and Signaling Genes. Qian Ma (马谦), Peter Hedden, and Qifa Zhang (张启发) 1905

A Shift toward Smaller Cell Size via Manipulation of Cell Cycle Gene Expression Acts to Smoothen Arabidopsis Leaf Shape. Asuka Kurobara, Andreas Backhaus, Robert Malinowski, Marion Bauch, Lee Hunt, Toshiyuki Nagata, Nick Monk, Guido Sanguinetti, and Andrew Fleming 2196

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Conserved and Divergent Rhythms of Crassulacean Acid Metabolism-Related and Core Clock Gene Expression in the Cactus Opuntia ficus-indica. Izaskun Mallona, Marcos Egea-Cortines, and Julia Weiss 1978

Increase in Tomato Locule Number Is Controlled by Two Single-Nucleotide Polymorphisms Located Near WUSCHEL. Stéphane Muñoz, Nicolas Ranc, Emmanuel Botton, Aurélie Béard, Sophie Rolland, Philippe Duffé, Yolande Carretero, Marie-Christine Le Paslier, Corinne Delalande, Mondher Bouzayen, Dominique Brunel, and Mathilde Causse 2244

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The Arabidopsis Mitochondria-Localized Pentatricopeptide Repeat Protein PGN Functions in Defense against Necrotrophic Fungi and Abiotic Stress Tolerance. Kristin Laluk, Syman AbuQamar, and Tesfaye Mengiste 2053

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