The cover shows a montage of different tie-dyed2 (tdy2) mutant maize (Zea mays) leaves. tdy2 mutant leaves display variegated green and yellow regions, with starch and soluble sugars hyperaccumulating in the latter regions. In this issue, Slewinski et al. (pp. 1540–1550) physiologically characterize defects in tdy2 leaves and molecularly identify the Tdy2 gene. Tdy2 encodes a callose synthase and is highly expressed in the veins of developing leaves. tdy2 yellow leaf regions exhibit incomplete vascular maturation and defective solute transport between the phloem companion cells and sieve elements. Hence, Tdy2 functions during vein development, which ultimately affects symplastic trafficking into the phloem translocation stream. Photo credit: Tom Slewinski.

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Peter V. Minorsky

BREAKTHROUGH TECHNOLOGIES

Rosette Tracker: An Open Source Image Analysis Tool for Automatic Quantification of Genotype Effects. Jonas De Vylder, Filip Vandebussche, Yuming Hu, Wilfried Philips, and Dominique Van Der Straeten

SCIENTIFIC CORRESPONDENCE

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Altered Starch Turnover in the Maternal Plant Has Major Effects on Arabidopsis Fruit Growth and Seed Composition. Vasileos M.E. Andriotis, Marilyn J. Pike, Sabine L. Schwarz, Stephen Rawsthorne, Trevor L. Wang, and Alison M. Smith

Loss of Lon1 in Arabidopsis Changes the Mitochondrial Proteome Leading to Altered Metabolite Profiles and Growth Retardation without an Accumulation of Oxidative Damage. Cory Solheim, Lei Li, Polydefkis Hatzopoulos, and A. Harvey Millar

Impact of the Absence of Stem-Specific β-Glucosidases on Lignin and Monolignols. Aurélie Chapelle, Kris Morreel, Ruben Vanholme, Philippe Le-Bris, Halima Morin, Catherine Lapierre, Wout Boerjan, Lise Jouanin, and Nathalie Demont-Caulet

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Misexpression of a Chloroplast Aspartyl Protease Leads to Severe Growth Defects and Alters Carbohydrate Metabolism in Arabidopsis. Eleonora Paparelli, Silvia Gonzali, Sandro Parlanti, Giacomo Novi, Federico M. Giorgi, Francesco Licausi, Monika Kosmacz, Regina Feil, John E. Lunn, Henrike Brust, Joost T. van Dongen, Martin Steup, and Pierdomenico Perata

Crystal Structures of Physcomitrella patens AOC1 and AOC2: Insights into the Enzyme Mechanism and Differences in Substrate Specificity. Piotr Neumann, Florian Brodhun, Kristin Sauer, Cornelia Herrfurth, Mats Hamberg, Jens Brinkmann, Julia Scholz, Achim Dickmanns, Ivo Feussner, and Ralf Ficner

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Tie-dyed2 Encodes a Callose Synthase That Functions in Vein Development and Affects Symplastic Trafficking within the Phloem of Maize Leaves. Thomas L. Slewinski, R. Frank Baker, Adam Stubert, and David M. Braun

Distinct Cell Wall Architectures in Seed Endosperms in Representatives of the Brassicaceae and Solanaceae. Kieran J.D. Lee, Bas J.W. Dekkers, Tina Steinbrecher, Cherie T. Walsh, Antony Bacic, Léonie Bentsink, Gerhard Leubner-Metzger, and J. Paul Knox

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Vacuolar CAX1 and CAX3 Influence Auxin Transport in Guard Cells via Regulation of Apoplastic pH. Daeshik Cho, Florent Villiers, Laetitia Kronicewicz, Sangmee Lee, You Jin Seo, Kendal D. Hirschi, Nathalie Leonhardt, and June M. Kawak

A Comparative Study of Ethylene Growth Response Kinetics in Eudicots and Monocots Reveals a Role for Gibberellin in Growth Inhibition and Recovery. Joonyup Kim, Rebecca L. Wilson, J. Brett Case, and Brad M. Binder

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[1][W][OA] Targeted Systems Biology Profiling of Tomato Fruit Reveals Coordination of the Yang Cycle and a Distinct Regulation of Ethylene Biosynthesis during Postclimacteric Ripening.  Bram Van de Poel, Inge Bulens, Aikaterina Markoula, Maarten L.A.T.M. Hertog, Rozemarijn Dreesen, Markus Wirtz, Sandy Vandoninck, Yasmin Oppermann, Johan Keulemans, Ruediger Hell, Etienne Waelkens, Maurice P. De Proft, Margret Sauter, Bart M. Nicolai, and Annetie H. Geeraerd

[1][W][OA] Poplar Wood Rays Are Involved in Seasonal Remodeling of Tree Physiology.  Christina Larisch, Marcus Dittrich, Henning Wildhagen, Silke Latuher, Jörg Fromm, Andrea Polle, Rainer Hedrich, Heinz Renenberg, Tobias Müller, and Peter Ache

[1][W][OA] Proteasome-Mediated Turnover of Arabidopsis MED25 Is Coupled to the Activation of FLOWERING LOCUS T Transcription.  Sabrina Inigo, Adrián N. Giraldez, Joanne Chory, and Pablo D. Cerdán

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