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On the Cover: The cover photo, taken by Dr. Brendan Choat, shows the detailed structure of the *Metasequoia glyptostroboides* pit membrane magnified 46,000 times using scanning electron microscopy. In conifers, water transport occurs through single-celled tracheids that are interconnected by wall perforations, known as intertracheid pits. The pit membrane contained within these structures is composed of a centrally thickened region known as the torus surrounded by a porous margo. Because pit membranes serve to transport water as well as prevent the spread of air by cavitation, natural selection has acted on the torus-margo pit membrane to optimize either drought resistance or pit hydraulic efficiency, depending on the water availability of species' habitats. In this issue, Pittermann et al. (pp. 1919–1931) explore the relationship between the structure and function of torus-margo pit membranes and the evolutionary trajectory of drought resistance in the Cupressaceae family of conifers.

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- [C][W][OA] Activation of Plant Immune Responses by a Gain-of-Function Mutation in an Atypical Receptor-Like Kinase. *Dongling Bi, Yu Ti Cheng, Xin Li, and Yuelin Zhang* 1771
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- [W][OA] Soybean Metabolites Regulated in Root Hairs in Response to the Symbiotic Bacterium *Bradyrhizobium japonicum*. *Laurent Brechenmacher, Zhentian Lei, Marc Libault, Seth Findley, Masayuki Sugawara, Michael J. Sadowsky, Lloyd W. Sumner, and Gary Stacey* 1808
- [W][OA] Variation in Antiherbivore Defense Responses in Synthetic *Nicotiana* Allopolyploids Correlates with Changes in Uniparental Patterns of Gene Expression. *Samir Anssour and Ian T. Baldwin* 1907

WHOLE PLANT AND ECOPHYSIOLOGY

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- [W][OA] The Relationships between Xylem Safety and Hydraulic Efficiency in the Cupressaceae: The Evolution of Pit Membrane Form and Function. *Jarmila Pittermann, Brendan Choat, Steven Jansen, Stephanie A. Stuart, Lucy Lynn, and Todd E. Dawson* 1919
- Calcium Is a Major Determinant of Xylem Vulnerability to Cavitation. *Stephane Herbette and Herve Cochard* 1932

SYSTEMS BIOLOGY, MOLECULAR BIOLOGY, AND GENE REGULATION

- [C][W] Functional Analysis of Amino-Terminal Domains of the Photoreceptor Phytochrome B. *Andrea Palágyi, Kata Terecskei, Éva Ádám, Éva Kevei, Stefan Kircher, Zsuzsanna Mérái, Eberhard Schäfer, Ferenc Nagy, and László Kozma-Bognár* 1834

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The Sterol Methyltransferases SMT1, SMT2, and SMT3 Influence Arabidopsis Development through Nonbrassinosteroid Products. *F. Carland, S. Fujioka, and T. Nelson*

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^[W] Indicates Web-only data.

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