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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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- [W][OA] Involvement of Silicon Influx Transporter OsNIP2;1 in Selenite Uptake in Rice. *Xue Qiang Zhao, Namiki Mitani, Naoki Yamaji, Ren Fang Shen, and Jian Feng Ma* 1871
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- [C][W] Nitric Oxide Functions as a Signal and Acts Upstream of AtCaM3 in Thermotolerance in Arabidopsis Seedlings. *Yi Xuan, Shuo Zhou, Lei Wang, Yudou Cheng, and Liqun Zhao* 1895

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- [W][OA] A Customized Gene Expression Microarray Reveals That the Brittle Stem Phenotype *fs2* of Barley Is Attributable to a Retroelement in the *HvCesA4* Cellulose Synthase Gene. *Rachel A. Burton, Gang Ma, Ute Baumann, Andrew J. Haroey, Neil J. Shirley, Jillian Taylor, Filomena Pettolino, Antony Bacic, Mary Beatty, Carl R. Simmons, Kanwarpal S. Dhugga, J. Antoni Rafalski, Scott V. Tingey, and Geoffrey B. Fincher* 1716
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- [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

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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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<sup>[W]</sup> Indicates Web-only data.

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