

The electronic form of this issue, available as of April 12, 2010, at [www.plantphysiol.org](http://www.plantphysiol.org), is considered the journal of record.

**On the Cover:** The cover shows a scanning electron micrograph of the abaxial leaf surface of a peppermint (*Mentha × piperita*) leaf. The evident spherical structures are peltate glandular trichomes, the sites of monoterpenoid essential oil biosynthesis and storage. In this issue, Rios-Esteva et al. (pp. 2105–2119) report on the utilization of an iterative approach that involves mathematical modeling and experimental testing to identify the determinants of essential oil composition and yield in highly specialized peltate glandular trichomes. Importantly, simulations of monoterpene profiles are based entirely on experimental measurements and are performed without any curve fitting or other computational optimizations. The good fit between simulations and experimentally determined monoterpene profiles indicates that the regulation of essential oil biosynthesis is now well understood at various levels of control, including environmental, developmental, and transgenic effects on transcript abundance, enzyme expression dynamics, glandular trichome size and distribution, and pathway feedback regulation. This opens up new opportunities for guiding metabolic engineering and molecular breeding efforts aimed at modulating monoterpenoid essential oil profiles. The cover image was taken by Dr. Glenn Turner using a FEI Quanta 200 F SEM in environmental mode at the Franceschi Microscopy and Imaging Center of Washington State University.

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- <sup>[OA]</sup>Regulated Ethylene Insensitivity through the Inducible Expression of the Arabidopsis *etr1-1* Mutant Ethylene Receptor in Tomato. *Daniel R. Gallie* 1928
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- [W][OA] Nitric Oxide Mediates the Hormonal Control of Crassulacean Acid Metabolism Expression in Young Pineapple Plants. *Luciano Freschi, Maria Aurineide Rodrigues, Douglas Silva Domingues, Eduardo Purgatto, Marie-Anne Van Sluys, Jose Ronaldo Magalhaes, Werner M. Kaiser, and Helenice Mercier* 1971
- [W] Export of Vacuolar Manganese by AtNRAMP3 and AtNRAMP4 Is Required for Optimal Photosynthesis and Growth under Manganese Deficiency. *Viviane Lanquar, Magali Schnell Ramos, Françoise Lelièvre, Hélène Barbier-Brygoo, Anja Krieger-Liszkay, Ute Krämer, and Sébastien Thomine* 1986
- [W][OA] AtNUDX6, an ADP-Ribose/NADH Pyrophosphohydrolase in Arabidopsis, Positively Regulates NPR1-Dependent Salicylic Acid Signaling. *Kazuya Ishikawa, Kazuya Yoshimura, Kazuo Harada, Eiichiro Fukusaki, Takahisa Ogawa, Masahiro Tamoi, and Shigeru Shigeoka* 2000
- [W] Complexation of Arsenite with Phytochelatins Reduces Arsenite Efflux and Translocation from Roots to Shoots in Arabidopsis. *Wen-Ju Liu, B. Alan Wood, Andrea Raab, Steve P. McGrath, Fang-Jie Zhao, and Jörg Feldmann* 2211

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- [C][W][OA] Abscisic Acid-Induced Resistance against the Brown Spot Pathogen *Cochliobolus miyabeanus* in Rice Involves MAP Kinase-Mediated Repression of Ethylene Signaling. *David De Vleeschauwer, Yinong Yang, Casiana Vera Cruz, and Monica Höfte* 2036
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- [W][OA] The Role of Heterologous Chloroplast Sequence Elements in Transgene Integration and Expression. *Tracey Ruhlman, Dheeraj Verma, Nalapalli Samson, and Henry Daniell* 2088

- <sup>[W]</sup><sup>[OA]</sup>Mathematical Modeling-Guided Evaluation of Biochemical, Developmental, Environmental, and Genotypic Determinants of Essential Oil Composition and Yield in Peppermint Leaves. *Rigoberto Rios-Esteva, Iris Lange, James M. Lee, and B. Markus Lange* 2105
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