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On the Cover: The cover illustrates recent advances and current and future concerns in membrane trafficking. Development in fluorescence-based microscopy has permitted overall views of the membrane trafficking apparatus, often in live cells, and accelerated functional assignments of molecules to specific endomembrane compartments. Left-hand panels are tobacco leaf epidermal cells coexpressing the endoplasmic reticulum (ER) marker ssGFP-HDEL and a YFP (in red) fusion to an Arabidopsis Sar1 (top), and the ER marker ssYFP (in red)-HDEL with the Golgi marker St-GFP (bottom). Together they provide an overall view of spatial and functional relationship between ER and Golgi. (Provided by Federica Brandizzi.) Electron tomography studies of samples processed by high-pressure freeze-fixation/freeze substitution provide high-resolution structural views of intracellular structures. The top right panel shows a three-dimensional tomography model image of an Arabidopsis Golgi stack and the late trans-Golgi network compartment, providing an image of the progressive maturation nature of the trans-Golgi network. (Provided by Byung-Ho Kang and L. Andrew Staehelin.) The bottom right panel shows brefeldin A (BFA)-sensitive constitutive cycling of the polar auxin transport protein (PIN1) between the basal plasma membrane and endosomal compartments in an Arabidopsis root segment. (Provided by Jiří Friml.) Recent and future efforts promise to uncover the functional roles of membrane trafficking to whole plant physiology and regulatory mechanisms that underlie the endomembrane system to meet the vesicular demands of cellular processes. The Focus Issue authors discuss recent advances and current efforts and suggest future research paths.

FOCUS ISSUE ON MEMBRANE TRAFFICKING

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- ^{[W][OA]}Drought Induction of Arabidopsis 9-cis-Epoxycarotenoid Dioxygenase Occurs in Vascular Parenchyma Cells. Akira Endo, Yoshiaki Sawada, Hirokazu Takahashi, Masanori Okamoto, Keiichi Ikegami, Hanae Koiwai, Mitsunori Seo, Tomonobu Toyomasu, Wataru Mitsuhashi, Kazuo Shinozaki, Mikio Nakazono, Yuji Kamiya, Tomokazu Koshihara, and Eiji Nambara 1984
- ^[W]Characterization of Single and Double Inactivation Strains Reveals New Physiological Roles for Group 2 σ Factors in the Cyanobacterium *Synechocystis* sp. PCC 6803. Maija Pollari, Liisa Gunnelius, Ilona Tuominen, Virpi Ruotsalainen, Esa Tyystjärvi, Tiina Salminen, and Taina Tyystjärvi 1994
- ^[OA]Investigation of Heavy Metal Hyperaccumulation at the Cellular Level: Development and Characterization of *Thlaspi caerulescens* Suspension Cell Lines. Melinda A. Klein, Hitoshi Sekimoto, Matthew J. Milner, and Leon V. Kochian 2006
- ^[OA]Novel Properties of the Wheat Aluminum Tolerance Organic Acid Transporter (TaALMT1) Revealed by Electrophysiological Characterization in *Xenopus* Oocytes: Functional and Structural Implications. Miguel A. Piñeros, Geraldo M.A. Cançado, and Leon V. Kochian 2131

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- ^{[W][OA]}Histone Modifications and Expression of Light-Regulated Genes in Arabidopsis Are Cooperatively Influenced by Changing Light Conditions. Lan Guo, Junli Zhou, Axel A. Elling, Jean-Benoit F. Charron, and Xing Wang Deng 2070
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- ^{[W][OA]}Silencing Onion Lachrymatory Factor Synthase Causes a Significant Change in the Sulfur Secondary Metabolite Profile. Colin C. Eady, Takahiro Kamoi, Masahiro Kato, Noel G. Porter, Sheree Davis, Martin Shaw, Akiko Kamoi, and Shinsuke Imai 2096
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