ON THE COVER

The Rosea1, Rosea2, and Venosa genes encode MYB-related transcription factors active in the flowers of Antirrhinum majus. Schwinn et al. (pages 831–851) show that these genes control the intensity and pattern of anthocyanin pigmentation in flowers. Despite the structural similarity of these proteins, they influence the expression of target genes encoding the enzymes of anthocyanin biosynthesis with different specificities. Different Antirrhinum species show striking differences in their patterns and intensities of floral pigmentation due to variations in the activity of the Rosea and Venosa loci. The resulting patterns of pigmentation may provide visual guides for bees, attracting them to enter and pollinate the closed flowers. Cover photograph by Vernon Clarke shows the floral phenotype of the Venosa+ allele of A. majus.

IN THIS ISSUE

Genetic and Epigenetic Regulation of Embryogenesis 781
Nancy A. Eckardt

IN BRIEF

Energy Dissipation: New Role for a Carotenoid Protein in Cyanobacteria 785
Interorganellar Communication: Protein Synthesis in Organelles Influences Nuclear Photosynthetic Gene Expression
Nancy A. Eckardt

CURRENT PERSPECTIVE ESSAY

Studies of Abscisic Acid Perception Finally Flower 786
Ruth R. Finkelstein

HISTORICAL PERSPECTIVE ESSAY

Plant Circadian Rhythms 792
C. Robertson McClung

RESEARCH ARTICLES

DNA Methylation Is Critical for Arabidopsis Embryogenesis and Seed Viability 805
Wenyan Xiao, Kendra D. Custard, Roy C. Brown, Betty E. Lemmon, John J. Harada, Robert B. Goldberg, and Robert L. Fischer

Arabidopsis GLUTAMINE-RICH PROTEIN23 Is Essential for Early Embryogenesis and Encodes a Novel Nuclear PPR Motif Protein That Interacts with RNA Polymerase II Subunit III
Yong-He Ding, Nai-You Liu, Zuo-Shun Tang, Jie Liu, and Wei-Cai Yang

A Small Family of MYB-Regulatory Genes Controls Floral Pigmentation Intensity and Pattern in the Genus Antirrhinum
Kathy Schwinn, Julien Venail, Yongjin Shang, Steve Mackay, Vibeke Alm, Eugenio Butelli, Ryan Oyama, Paul Bailey, Kevin Davies, and Cathie Martin

The TORNADO1 and TORNADO2 Genes Function in Several Patterning Processes during Early Leaf Development in Arabidopsis thaliana
Gerda Cnops, Pia Neyt, Jeroen Raes, Marica Petrarulo, Hilde Nelissen, Nenad Malenica, Christian Luschnig, Olaf Tietz, Franck Ditengou, Klaus Palme, Abdelkrim Azmi, Els Prinsen, and Mieke Van Lijsebettens

Calcium-Dependent Protein Kinase Isoforms in Petunia Have Distinct Functions in Pollen Tube Growth, Including Regulating Polarity
Gyeong Mee Yoon, Peter E. Dowd, Simon Gilroy, and Andrew G. McCubbin

Arabidopsis TEBICHI, with Helicase and DNA Polymerase Domains, Is Required for Regulated Cell Division and Differentiation in Meristems
Soichi Inagaki, Takamasa Suzuki, Masa-aki Ohto, Hiroko Urawa, Takashi Horiuchi, Kenzo Nakamura, and Atsushi Morikami