ON THE COVER

APETALA3 (AP3) genes, which specify petal and stamen identity in flowering plants, arose from a major gene duplication event that led to paralogous euAP3 and TM6 gene lineages in the core eudicots. Analysis of AP3/DEF and TM6 genes in petunia (Rijpkema et al., pages 1819–1832) and tomato (de Martino et al., pages 1833–1845) show that TM6 functions mainly in determining stamen identity and exhibits typical C-class expression patterns in both species, whereas AP3 functions as a typical B-class gene involved in both petal and stamen identity. The results further show that subfunctionalization of the two lineages has led to somewhat different patterns of expression in these closely related species. The cover shows petunia wild-type (top left), petunia tm6/+ def mutant (bottom left), tomato wild-type (top right), and tomato ap3 mutant (bottom right) flowers.

IN THIS ISSUE

Functional Divergence of AP3 Genes in the MAD World of Flower Development 1779
Nancy A. Eckardt

IN BRIEF

Ferredoxin-Thioredoxin System Plays a Key Role in Plant Response to Oxidative Stress 1782
Nancy A. Eckardt

Complexities of R Gene Evolution in Arabidopsis 1783
Nancy A. Eckardt

CURRENT PERSPECTIVE ESSAY

Florigen Coming of Age after 70 Years 1783
Jan A.D. Zeevaart

RESEARCH ARTICLES

High Rate of Chimeric Gene Origination by Retroposition in Plant Genomes 1791
Wen Wang, Hongkun Zheng, Chuanzhu Fan, Jun Li, Junjie Shi, Zhengqiu Cai, Guojie Zhang, Dongyuan Liu, Jianguo Zhang, Soren Vang, Zhike Lu, Gane Ka-Shiu Wong, Manyuan Long, and Jun Wang

A Genome-Wide Survey of R Gene Polymorphisms in Arabidopsis 1803
Erica G. Bakker, Christopher Toomajian, Martin Kreitman, and Joy Bergelson

Functional Analyses of Two Tomato APETALA3 Genes Demonstrate Diversification in Their Roles in Regulatory Floral Development 1833
Gemma de Martino, Irvin Pan, Eyal Emmanuel, Avraham Levy, and Vivian F. Irish

Poplar FT2 Shortens the Juvenile Phase and Promotes Seasonal Flowering 1846
Chuan-Yu Hsu, Yunxia Liu, Dawn S. Luthe, and Cetin Yuceer

AGL80 Is Required for Central Cell and Endosperm Development in Arabidopsis 1862
Michael F. Portereiko, Alan Lloyd, Joshua G. Steffen, Jayson A. Punwani, Denichiro Otsuga, and Gary N. Drews

AUXIN RESPONSE FACTOR8 Is a Negative Regulator of Fruit Initiation in Arabidopsis 1873
Marc Goetz, Adam Vivian-Smith, Susan D. Johnson, and Anna M. Koltonow

Arabidopsis ABA INSENSITIVE4 Regulates Lipid Mobilization in the Embryo and Reveals Repression of Seed Germination by the Endosperm 1887
Steven Penfield, Yi Li, Alison D. Gilday, Stuart Graham, and Ian A. Graham

KNAT6: An Arabidopsis Homeobox Gene Involved in Meristem Activity and Organ Separation 1900
Enric Belles-Boix, Olivier Hamant, Sarah Melissa Witiak, Halima Morin, Jan Traas, and Veronique Pautot