

**On the Cover:** The modular assembly of genetic parts into synthetic circuits of different complexity enables the engineering of novel functionalities as well as the understanding of complex signaling and metabolic networks in plants. Synthetic biology offers new possibilities to revolutionize the field of plant biology by improving and expanding endogenous properties of the plant and developing novel traits. In the future, these “smart plants” will contribute to enhanced crop productivity and thereby help overcoming the global challenge of feeding an ever-growing world population. Image credit: Justine Braguy.

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[OPEN] MoChlo: A Versatile, Modular Cloning Toolbox for Chloroplast Biotechnology. Alessandro Occhialini, Agnieszka A. Piatek, Alexander C. Pfothenhauer, Taylor P. Frazier, C. Neal Stewart Jr., and Scott C. Lenaghan

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*A screen of Rubus idaeus berry fractions for bioactivity against Huntington's disease identified salidroside, which was then produced by metabolically engineered microorganisms.*

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*A biological device consisting of mammalian, fungal, and plant components drives gene expression in an oxygen-dependent manner.*

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[OPEN]Split-TALE: A TALE-Based Two-Component System for Synthetic Biology Applications in Planta. Tom Schreiber, Anja Prange, Tina Hoppe, and Alain Tissier

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[OPEN]Enzyme Fusion Removes Competition for Geranylgeranyl Diphosphate in Carotenogenesis. Maurizio Camagna, Alexander Grundmann, Cornelia Bär, Julian Koschmieder, Peter Beyer, and Ralf Welsch

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[OPEN]Novel Nuclear Functions of Arabidopsis ARGONAUTE1: Beyond RNA Interference. Mateusz Bajczyk, Susheel Sagar Bhat, Lukasz Szewc, Zofia Szweykowska-Kulinska, Artur Jarmolowski, and Jakub Dolata

*Argonaute1 activity is not limited to the cytoplasm and has been found to be associated with the regulation of gene expression in the nucleus and to be tightly associated with chromatin and transcription.*

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### RESEARCH REPORT

[OPEN]Massive Tandem Proliferation of ELIPs Supports Convergent Evolution of Desiccation Tolerance across Land Plants. Robert VanBuren, Jeremy Pardo, Ching Man Wai, Sterling Evans, and Dorothea Bartels

*A recurrent gene duplication event is found in all surveyed resurrection plant genomes supporting convergent evolution of this trait.*

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[<sup>OPEN</sup>] The Role of G $\beta$  Protein in Controlling Cell Expansion via Potential Interaction with Lipid Metabolic Pathways. Swarup Roy Choudhury, Maria A. Marlin, and Sona Pandey

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[<sup>OPEN</sup>] Linking Duplication of a Calcium Sensor to Salt Tolerance in *Eutrema salsugineum*. Shea M. Monihan, Choong-Hwan Ryu, Courtney A. Magness, and Karen S. Schumaker

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