

Functional Plant Biology

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Review: Multi-faceted nature of the tRNA
isopentenyltransferase
Siarhei Dabravolski

475–485

A tRNA modification of adenine 37 is universal and known for all living organisms. Adenine 37 isopentenylation is associated with several functions: accurate amino acid selection during proteins synthesis, drug resistance, mitochondrial disorders, cancer suppression and release of bioactive compounds after degradation. Despite the fact that all those functions are highly conserved between species, some of them are not well studied and require further detailed and complex investigation.

Review: Envisioning the immune interactome in
Arabidopsis
Rashmi Maurya, Deepti Srivastava,
Munna Singh and Samir V. Sawant

486–507

Plant defence is imperative for achieving survival and optimum productivity. Protein–protein interactions (PPIs) extensively determine signalling events starting from pathogen recognition to global defence response in the plant defence pathway. Immune progression in *Arabidopsis* was marked by formation and dissociation of immune protein complexes that acts in synchronisation with the presence of pathogen signal. In last decade, binary interaction data and its mapping enhanced our understanding of system regulation and dynamics of the *Arabidopsis* immune interactome. Here, we compile and assess the interaction network, and highlights key regulators of immunity in *Arabidopsis thaliana*.

Review: Epigenetic changes and their relationship
to somaclonal variation: a need to monitor the
micropropagation of plantation crops
Parisa Azizi, Mohamed M. Hanafi,
Mahbod Sahebi, Jennifer A. Harikrishna,
Sima Taheri, Ali Yassoralipour and Abbas Naseh

508–523

Plant tissue culture techniques have helped in the large-scale production of plants through micropropagation and clonal propagation of plant species. Understanding the underlying molecular mechanisms of *in vitro* plant regeneration and propagation is important for detecting sources of change. Epigenetic changes are introduced as a major source of somaclonal variation during tissue culture.

Why are ATP-driven microtubule minus-end
directed motors critical to plants? An overview of
plant multifunctional kinesins
Ifikhar Ali and Wei-Cai Yang

524–536

Correct positioning of nuclei and transport of cellular organelles and vesicles are essential for cell division and movement, proper growth and development of an organism. To perform these functions, organisms use cytoskeletal tracks on which molecular motors (kinesin, dynein and myosin) drive and transport their specific attached cargoes. In this review, we explore the functions of plant kinesin family motors with special focus on the similarities and dissimilarities existed in different plant species with respect to their specific reported cargoes.

Overexpression of *NtSnRK2.2* enhances salt
tolerance in *Nicotiana tabacum* by regulating
carbohydrate metabolism and lateral root
development
Minghong Liu, Jian Wang, Jianyu Gou,
Xiaoyan Wang, Zhigang Li, Xiaoliang Yang and
Shuguang Sun

537–543

Individual *SnRK2* genes might function differently in environmental stress tolerance. *NtSnRK2.2* in *N. tabacum* had a root-predominant expression pattern. Function analysis showed that *NtSnRK2.2* was involved in carbohydrate metabolism and lateral root development. The overexpression of *NtSnRK2.2* resulted in enhanced tolerance to salt stress. Therefore, *NtSnRK2.2* is a multifunctional regulatory factor in plants and has the potential to be used in transgenic breeding to improve salt stress tolerance in crops.

<p>LncRNA improves cold resistance of winter wheat by interacting with miR398</p> <p><i>Qiuwei Lu, Fuye Guo, Qinghua Xu and Jing Cang</i></p>	544–557	<p>That plants endure cold stress in their lifetime is a universal problem that requires a better understanding of molecular mechanisms conferring cold tolerance in plants. Winter wheat possess cold tolerance, so is a good genetic resource contributing towards the goal of improvement of cold tolerance in crops. In winter wheat, lncRNA-miR398-CSD regulate each other to reduce reactive oxygen species caused by cold stress. Our findings offer an improved strategy to crop plants with enhanced stress tolerance.</p>
<p>Interspecific variations in tree allometry and functional traits in subtropical plantations in southern China</p> <p><i>Liwei Zhu, Yanting Hu and Ping Zhao</i></p>	558–564	<p>Interspecific variations in tree allometry and functional traits can reveal a tree's adaptive strategies. Functional traits vary with tree allometry among tree species. Large trees had slender stems, narrower crowns and larger stomatal conductance. To explore the relationship between tree allometry and functional traits provide ways to predict the changes in tree species composition under the condition of environmental changes.</p>
<p>Exogenous application of 24-epibrassinosteroid mitigates NaCl toxicity in flax by modifying free amino acids profile and antioxidant defence system</p> <p><i>Leila Amraee, Fatemeh Rahmani and Babak Abdollahi Mandoulakani</i></p>	565–575	<p>Flax plant is cultivated commercially for its seed, oil and fibres but salinity stress limits worldwide agricultural crop yields. Brassinosteroids (BRs) are a novel class of phytohormone that initiate the adaptive reactions of plant cell metabolism against abiotic and biotic stresses. Our results suggest that seed priming with 24-epiBL has a protective effect on flax plants against salt stress by activation of antioxidative responses, ion homeostasis and modulation of free amino acids composition. Results also indicated that this mitigation was more pronounced in a susceptible cultivar than in a tolerant cultivar.</p>