

Preface

Plant transporters and channels

As plant cells are highly compartmentalized, solute and ion transport across the plasma membrane and intracellular membranes (e.g., mitochondria, plastids, vacuoles, peroxisomes) constitutes a strategic checkpoint for metabolic or developmental processes in plants. In addition, these transporters and ion channels are often critically involved in tolerance reactions of plants to environmental challenges, including drought and salt stress, low nutrient availability, and other stress responses.

The completely sequenced genomes of *Arabidopsis thaliana* and *Oryza sativa* have greatly facilitated a global analysis of plant proteins as a whole or as a subset of proteins, e.g. plant membrane proteins including transporters and channels. A novel plant membrane protein database, ARAMEMNON, was recently established (<http://aramemnon.botanik.uni-koeln.de/>) offering unique features including calculation of consensus transmembrane topologies from numerous individual prediction programs, the collection of subcellular targeting predictions from several programs, and the display of paralogs and orthologs of any transmembrane protein in *Arabidopsis thaliana*, rice, and additional 4800 membrane proteins from 270 other seed plant species.

In this special issue of FEBS Letters, 20 expert reviews illustrate the amazing progress which has been made with respect

to the unravelling of the functions of many plant channels/transporters at the molecular, physiological and structural levels. Various classes of transporters and ion channels in different plant membranes are covered as well as the functions of transporters and ion channels in osmoregulatory processes, cell and organ movements or responses to biotic and abiotic stresses. Plant ATP-binding cassette (ABC) transporters have been dealt with in a recent FEBS Letters special issue published last year (FEBS Lett. (2006) 580, 997–1192).

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