

Special Issue on
**Gene Networks Underlying/Associated with Abiotic
Stress Response Signaling in Plants**

CALL FOR PAPERS

Facing off stressful conditions imposed by their environment that could affect their growth and their development throughout their life cycle, plants must be able to perceive, to process, and to translate different stimuli into adaptive responses. From a human point of view, knowledge about plant stress response is also vital for the development of breeding and biotechnological strategies to improve stress tolerance in crops.

Understanding the organism-coordinated responses involves fine description of the mechanisms occurring at the cellular and molecular level. These mechanisms involve numerous components that are organized into complex transduction pathways and networks, from signal perception to physiological responses.

The major challenges of plant signaling are to understand what kind of signals do cells receive, how are these signals recognized, and how do cells respond spatially and temporally to these signals to program a specific response at the organism level. Furthermore, signal transduction cascades involve a large array of molecular and cellular processes that are not restricted to a peculiar stimulus. This has been illustrated in several studies showing extensive cross-talk between signaling pathways. This special issue intends to provide and review recent knowledge on the signaling pathways induced by abiotic and biotic environmental changes such as drought, temperature fluctuations, high salinity, cold, heat, light, nutrient deprivation, pollutants, CO₂, and osmotic stress.

Contributions are expected including original research papers and reviews, focused on the components of the signaling cascades (receptors/sensors, Ca²⁺, MAP kinases, nitric oxide, reactive oxygen species, ion fluxes, etc.) and their role under different stress conditions. We welcome articles dealing with the role of original cellular processes such as epigenetics or small RNAs, intracellular compartmentalization, or retrograde signaling in stress responses. This issue will try to build a bridge between the molecular cell signal transduction cascades and the plant response at the whole organism level. Finally, “omics” techniques and network modelling could decipher the complexity of cell signaling transduction and the triggering of gene expression (upregulation or downregulation).

Potential topics include but are not limited to the following:

- ▶ General overview of the different signaling mechanisms (e.g., posttranslational mechanisms, signalling molecules) involved in stress response at the cellular level
- ▶ How the research on cell signaling will help to understand stress responses at the whole plant level (plant adaptation to drought, sustainable yield, etc.)
- ▶ Data on expressed genes and isoforms in relation to the stress response and the transcription factors networks at the basis of gene expression changes
- ▶ The role of hormones and related intermediates, such as jasmonic acid, OPDA, ethylene, abscisic acid, auxin, brassinosteroids, and cytokinins, and their regulation in different tissues and the response they orchestrate as signaling pathways and gene expression control

Authors can submit their manuscripts through the Manuscript Tracking System at <http://mts.hindawi.com/submit/journals/ijg/asrg/>.

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