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Life Sciences : Plant Physiology

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Abiotic Stress-Mediated Sensing and Signaling in Plants: An Omics Perspective

- Describes impact of various abiotic stresses on plants
- Presents the strategies to cope up with abiotic stress tolerance
- Emphasizes on cross-talk among different abiotic stresses
- Describes sensing and signaling responses mediated by abiotic stresses

The natural environment for plants is composed of a complex set of abiotic and biotic stresses; plant responses to these stresses are equally complex. Systems biology allows us to identify regulatory hubs in complex networks. It also examines the molecular "parts" (transcripts, proteins and metabolites) of an organism and attempts to combine them into functional networks or models that effectively describe and predict the dynamic activities of that organism in different environments. This book focuses on research advances regarding plant responses to abiotic stresses, from the physiological level to the molecular level. It highlights new insights gained from the integration of omics datasets and identifies remaining gaps in our knowledge, outlining additional focus areas for future crop improvement research. Plants have evolved a wide range of mechanisms for coping with various abiotic stresses. In many crop plants, the molecular mechanisms involved in a single type of stress tolerance have since been identified; however, in order to arrive at a holistic understanding of major and common events concerning abiotic stresses, the signaling pathways involved must also be elucidated. To date several molecules, like transcription factors and kinases, have been identified as promising candidates that are involved in crosstalk between stress signalling pathways.

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