

Special Issue

Genetic and Epigenetic Control of Plant Genes Responding to Abiotic Stress

Message from the Guest Editor

Plants in natural and agricultural ecosystems face abiotic stresses such as drought, salinity, extreme temperatures, nutrient loss, and radiation. These stresses trigger complex gene expression changes, often mediated by epigenetic mechanisms, particularly DNA methylation, which regulates gene activity to promote adaptation and stress resilience.

This Special Issue focuses on DNA methylation in plant responses to abiotic stress, highlighting its molecular mechanisms, interactions with other chromatin modifications, and roles in development, stress memory, and crop improvement.

Recent advances highlight the flexibility and tissue-specificity of methylation changes, including RNA-directed DNA methylation and active demethylation. Research also explores stress memory, transgenerational epigenetic inheritance, and the potential of epigenetic breeding to enhance crop stress tolerance.

We invite research and review articles on DNA methylation in plant abiotic stress, from mechanistic studies and genome-wide analyses to functional studies of key methylation-related genes and applied research on crop improvement and stress resilience.

Guest Editor

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