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Multi-omics Approaches in Agricultural Crops to Unravel Responses to Environmental Stresses and Advance Sustainable Agriculture

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Message from the Guest Editor

The rapidly changing climate and environmental conditions pose significant challenges to global food security and sustainability. Understanding the complex molecular, physiological, and epigenetic mechanisms underlying plant responses to environmental stresses is crucial for developing stress-tolerant, high-yielding, and nutritionally rich crop varieties. Multi-omics approaches have emerged as powerful tools for dissecting intricate networks of genes, proteins, metabolites, and epigenetic modifications involved in plant stress responses. This Special Issue aims to bring together research employing multi-omics approaches, data integration strategies, and systems biology techniques to unravel the functional genomics of crop plants under environmental stress conditions, with a particular focus on the impact on yield, quality, and nutritional properties. We welcome contributions that explore the potential of omics-driven breeding strategies, sustainable agricultural practices, and the role of beneficial microorganisms in developing climate-resilient and stress-tolerant crop varieties, ensuring food security, nutritional quality, and environmental sustainability under climate change.



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