

Special Issue

Molecular Genetics and Molecular Breeding in Plants: Advances, Applications, and Future Directions

Message from the Guest Editors

Plant molecular genetics and breeding play a critical role in tackling global issues like food security, sustainable agriculture, and climate adaptation. Breakthroughs in genome editing, next-generation sequencing, and multi-omics approaches have transformed our capacity to analyze plant genomes, modify key traits, and streamline breeding processes. Yet, converting these innovations into resilient, high-yield crops demands overcoming biological, technical, and ethical barriers. This Special Issue highlights interdisciplinary advances bridging molecular genetics, genomics, and breeding, with a focus on improving crop yield, stress resilience, and nutrition. We invite submissions on CRISPR-driven trait development, AI-assisted predictive breeding, functional genomics, and phenomics-omics integration. Research addressing regulatory constraints, biodiversity protection, and inclusive technology deployment is also welcome. Original studies, reviews, and perspectives linking theory to real-world solutions are encouraged. By uniting geneticists, breeders, and policymakers, this issue aims to catalyze next-gen crop improvement strategies.

Guest Editors

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Message from the Editorial Board

Biomolecules is a multidisciplinary open-access journal that reports on all aspects of research related to biogenic substances, from small molecules to complex polymers. We invite manuscripts of high scientific quality that pertain to the diverse aspects relevant to organic molecules, irrespective of the biological question or methodology. We aim for a competent, fair peer review and rapid publication. Please look at some of the exciting work that has been published in *Biomolecules* so far. We would be delighted to welcome you as one of our authors.

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