Special Issue

Exploring and Applying Genes for Plant Breeding and Crop Improvement

Message from the Guest Editor

Global food security is under unprecedented pressure, with the population projected to reach 9.1 billion by 2050, requiring a 70% increase in food production amid rising challenges from climate change, pests, and resource depletion. To meet this demand, traditional crop improvement strategies must adopt advanced genetic technologies to rapidly develop resilient, high-yield varieties. Recent advancements in genome sequencing, CRISPR-based editing, and pan-genome analyses have transformed the discovery of agronomically vital traits, even in crops with complex genomes. Innovations in multi-omics, machine learning, and high-throughput phenotyping now enable the precise identification of key traits such as disease resistance, environmental stress tolerance, and nutritional quality. Equally crucial is harnessing underutilized genetic resources, wild relatives, and orphan crops to unlock novel traits for biotic/abiotic stress tolerance and adaptability. We invite foundational and applied research with the aim of fostering interdisciplinary collaboration in order to advance next-generation crop breeding.

Guest Editor

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Message from the Editor-in-Chief

Plants is an open access journal which provides an advanced forum for research findings in areas related to plant function, its physiology, biology, taxonomy, stresses, and its interactions with other organisms. It publishes original research articles, reviews, reports, conference proceedings (peer reviewed full articles) and communications. In original research papers, it is important that full experimental details are provided. We also encourage timely reviews and commentaries on topics of interest to the plant research community.

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