Special Issue

Molecular Genetics and Functional Genomics for the Breeding of Cereal Crops

Message from the Guest Editors

With the development of genome sequencing and gene-editing technologies, the genetic improvement of cereal crops has been greatly accelerated in the past ten years. Especially, efficient genetic transformation systems have been established in maize, indica rice and wheat by using plant-regeneration-related genes (WUS2, BBM and GRF-GIF) or modifying culture and selection regimes (PureWheat). Model genotypes of rice and millet with dwarfing plant heights, short growth periods, and high transformation efficiency have been created for genetic study. Many important germplasms or mutants have been developed, and many genes of interest have been dissected for functional regulation in cereal crops by applying transgenic and CRISPR/Cas9 techniques. Additionally, more convenient molecular markers have been designed and employed in the breeding of cereal crops. On the whole, optimal progress has been achieved in cereal crops regarding molecular genetics, functional genomics, transformation, gene editing, and marker-assisted selective breeding. It is necessary to organize a Special Issue to report some novel results and opinions related to the aspects aforementioned in cereal crops.

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