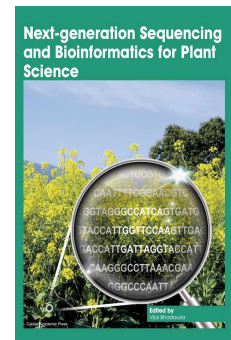


Next-generation Sequencing and Bioinformatics for Plant Science



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Next-generation sequencing coupled with high-performance computing methods have revolutionised the field of plant breeding and genetics.

In this timely overview of the field, expert scientists review current developments in next-generation sequencing and bioinformatics and discuss their application in understanding and improving agronomic traits such as yield, drought tolerance and disease resistance. The up-to-date reviews cover genome assembly and annotation, omics technologies, structural variations, abnormal chromosome number, chromosomal rearrangement, copy number variation, mobile elements, sequencing of small RNA nucleotides and transcription factor binding sites. Specific topics include the evolution analysis of rice, maize, sorghum and orchids, fruit development and ripening, plant disease resistance, fusarium head blight and stripe rust resistance in wheat and rice, host defence and pathogen virulence, crop design with improved resistance, and biotic and abiotic stress tolerance.

This is a useful review of current developments in next-generation sequencing and essential reading for plant geneticists and crop scientists.

Editorial. (Vijai Bhaduria and Lucia Popescu)

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Chapter 2. Next-Generation Sequencing Promoted the Release of Reference Genomes and Discovered Genome Evolution in Cereal Crops (Yong Huang, Haiyang Liu and Yongzhong Xing)

Chapter 3. Advanced Applications of Next-Generation Sequencing Technologies to Orchid Biology (Chuan-Ming Yeh, Zhong-Jian Liu and Wen-Chieh Tsai)

Chapter 4. Bioinformatics Resources for Plant Genomics: Opportunities and Bottlenecks in The -omics Era (Luca Ambrosino, Chiara Colantuono, Francesco Monticcolo and Maria Luisa Chiusano)

Chapter 5. Applications of Bioinformatics to Plant Biotechnology (Diego F. Gomez-Casati, María V. Busi, Julieta Barchiesi, Diego A. Peralta, Nicolás Hedin and Vijai Bhaduria)

Chapter 6. Quantitative Genetics of Disease Resistance in Wheat (Vijai Bhaduria and Lucia Popescu)

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