
Preface

The first edition of *Plant Stress Tolerance: Methods and Protocols* under the series of Methods in Molecular Biology was published in 2010. We were very gratified with its popularity. In the first edition all pertinent protocols could not be accommodated and also the fact that Plant Biology has witnessed a fast pace of molecular research over the last few years is the motivation to bring the second edition.

Given the more frequent episodes of drought, increasing heat or cold as well as saline-affected areas throughout the world, probing plant responses to abiotic stresses has become one of the top priority research areas now. This second edition begins with review chapters: Besides an updated review on oxidative stress responses newly emerging areas such as epigenetics, long noncoding RNAs, and microbiome in adaptation to abiotic stresses were included. The protocols included are genetic screens, quantifying in vivo molecular interactions, identifying DNA methylation and histone modifications, identifying stress-responsive genes that are differentially translated, proteomics, phosphoproteomics, posttranslational redox modifications, metabolomics, and lipidomics. Additionally, the protocols on determining sulfate, sulfite, thiosulfate, sulfolipids, and enzymes associated with sulfite toxicity as well as glutathione were included. The remaining methodology chapters cover a wide range of topics such as distinguishing superoxide dismutases, determining polyamines, quantifying ABA levels, silencing stress-responsive microRNAs, and identifying microbes that promote drought tolerance. I hope that this volume meets the demands of both new and established researchers who are interested in this area of plant biology research.

I thank the contributors who are instrumental in bringing this volume. I also thank Prof. John Walker, who gave me the opportunity to edit the second edition. Finally I also thank Prof. John Gustafson, Head, Department of Biochemistry and Molecular Biology, Oklahoma State University, for his encouragement to take up this task.

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