
Preface

Rice is the staple food for a large segment of the world population and global demand for rice production will continue to grow as we add more than two billion human inhabitants to the world population by 2050. Also increasing are the constraints for crop production posed by resource shortages and environmental degradation. As a response to these challenges, the international scientific community has made tremendous progress in rice functional and evolutionary genomics and biotechnology research over the last decade. This includes, but is not limited to, genomic resources such as a gold standard reference genome sequence, the generation of hundreds of thousands of mutant lines, collections of full length cDNAs, and databases for global expression profiles and natural variation. Hundreds of rice genes have now been cloned and molecularly characterized which have led to an enhanced understanding of agronomic traits and the underpinning of important biological processes. This book is devoted to a comprehensive coverage of the advances in such research.

The chapters are organized with the following considerations in mind: (1) rice is a model for genomic research of cereals for which we intended to present the features of the rice genome and the tools available and required for genomic studies; (2) rice is a crop that urgently needs genetic improvement for which we provide the current state of our molecular understanding of traits that are vital for varietal development; and (3) the model system of rice is different from *Arabidopsis*, and thus we must highlight and illustrate the advances in our understanding of the unique and important biological processes of this important cereal. We are very pleased that our goal has been achieved, thanks to the tireless efforts of the contributors.

This book is for the series on Plant Genetics and Genomics by Springer Publishing Co. Credit for initiating this effort goes to Richard Jorgensen, the Series Editor, and Amna Ahmed, Publishing Editor. This book enjoys the advantage that each chapter is presented by an authority on the subject with the latest developments. We sincerely thank all the authors for their dedicated efforts, and their time and talent in writing the chapters. We are particularly indebted to Gurdev Khush for his willingness to write the Foreword. We also thank Daniel Dominguez for his hard work in the communication and progress tracking.

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