Preface

The powerful approaches of molecular biology and the tools of recombinant DNA technology are transforming plant biochemistry and genetics and are leading to a new wave of research in these areas. In particular, the potential applications of molecular genetics in crop breeding, nitrogen fixation, and photosynthesis have drawn the interests of scientists in both the academic and industrial communities. The need for a cohesive collection of the current techniques now used in plant molecular biology and genetics has become obvious and is the subject of this volume.

The emphasis is on the isolation and characterization of nuclear, chloroplast, and mitochondrial nucleic acids and the factors and systems involved in replication and gene expression. Procedures for the isolation of cell walls, chloroplast membranes, and membrane proteins are also included. Finally, current techniques to carry out plant cell culture and protoplast formation are described as are vectors for gene transfer and the isolation and detection of plant viruses.

In preparing this work, we were keenly aware of related contributions in this series and other volumes that covered plant biochemistry, photosynthesis, and recombinant DNA technology and attempted to minimize overlap as much as possible. Because of space limitations, this volume is focused almost exclusively on higher plants, although we realize that there have been rapid advances in understanding the molecular genetics of photosynthetic bacteria, *Euglena,* and other related organisms.

We would like to take this opportunity to express our deep appreciation to the authors for their valuable contributions and to the staff of Academic Press for their support throughout this endeavor.

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