Preface

The new developments in the decade that has passed since the publication of our first edition of *DNA Fingerprinting in Plants and Fungi* have been more impressive than one could ever have imagined at that time. Our first edition encompassed basically all published work that employed DNA fingerprinting in plant or fungal research. In the present edition, we not only had to restrict ourselves to plants, but we also faced the difficult task of extracting a reasonable "core collection" from the tremendous number of scientific articles that had appeared on the topic. We would like to express our apologies to the many authors whose work could not be mentioned because of space limitations, despite the more than 1600 references already listed.

Applications of DNA fingerprinting have blossomed in applied as well as in basic plant sciences. In addition, the diversity of techniques has increased as well. In particular, the balance of hybridization- vs. PCR-based methods has completely been reversed during the last 10 years, with the latter now being the mainstay of most molecular laboratories. We have the strong impression that the publications related to the methodology and applications of PCR-based DNA fingerprinting behave like the DNA in a PCR, i.e., they amplify exponentially. Given that a simple update would never have worked, writing the new edition basically meant writing a completely new book.

The availability of new techniques and new equipment also indicated that we had to write for an even more diverse audience than before. There are still complete novices around, but the starting level of students has generally improved. Although we have still attempted to present the basic protocols and principles, we have also included some background theory as well as numerous references for and descriptions of more sophisticated methodology. The book is therefore intended to serve as a benchtop manual for the beginner as well as a key reference for a wide variety of DNA profiling techniques and applications.

Ten years ago, the average plant molecular marker laboratory employed random amplified polymorphic DNAs (RAPDs) and restriction fragment length polymorphism (RFLP) fingerprinting, whereas the advanced research institutions had already switched to microsatellites and amplified fragment length polymorphisms (AFLPs). Today, the latter two techniques are commonplace in many laboratories, whereas the avant-garde has turned its attention to single-nucleotide polymorphisms (SNPs) and DNA microarrays. It may be assumed that SNPs will become routine markers in the next 10 years or so, but it is quite difficult to predict what kind of exciting novel marker technologies will be on the market in 2014.

If the number of techniques and their applications keep increasing as they have done during the last decade, it is also difficult to imagine what a book like the one you have in your hands will look like another 10 years from now. In any case, we hope that the present book will assist in establishing DNA fingerprinting technology in a broad range of laboratories involved in plant research.