Preface

Since the initial report of specific DNA amplification using the polymerase chain reaction (PCR) by Kary Mullis and co-workers in 1985, the number of different applications of the technique has grown exponentially. The technique is now considered to be indispensible to molecular biology applications in every field of modern biology. The PCR technique is extremely sensitive and makes it possible to greatly amplify selected DNA sequences from very small quantities of template DNA. Its rapid development and diverse applications have allowed PCR to join other important molecular biology techniques, such as Southern blotting, gene cloning, pulsed field gel electrophoresis, etc., and has literally transformed the way that biologists think about approaching fundamental and applied biological problems. Indeed, PCR's capacity to amplify specific segments of DNA represents a technology that has revolutionized molecular biology.

The purpose of this book is to highlight the many diverse applications that PCR has in basic and applied mycology. The editors have assembled an international group of world-renowned mycologists to illustrate the many application areas of PCR to their specialized fields of applied mycology. It is our hope that the comprehension of this material by the readers will enhance their understanding of the technology and help them to gain new appreciation for the many potential benefits of PCR application.

The text is composed of 15 chapters devoted to PCR principles and applications in a variety of diverse mycological areas. The opening chapter presents a brief overview, and the last chapter (Chapter 15) highlights potential future directions of PCR in mycology. Chapters 2 and 3 cover the many uses of PCR in fungal gene cloning and fungal gene expression. The material presented in Chapter 4 is important because it shows the utility of

PCR in explaining fungal speciation in a more definitive manner. Chapters 5–13 demonstrate the diverse application of PCR to studies of lichen mycobionts (Chapter 5), mycorrhizal fungi (Chapter 6), entomopathogenic fungi (Chapter 8), mycotoxin-producing fungi (Chapter 11) and its numerous applications in plant–fungal interactions (Chapter 13). Chapter 7 presents an interesting review of the use of PCR amplification in helping to determine fungal phylogeny more accurately. Chapters 9 and 10 highlight practical applications of PCR in fungal lignocellulose degradation and its use in the development of highly productive strains of industrially important fungi. Chapters 12 and 14 stress the significance of PCR in medical mycology and in providing a better understanding of the seed-borne disease state.

We are grateful to the many international authorities and specialists in mycology who have graciously consented to share their perspectives and expertise on the diverse applications of PCR amplification in their specialized mycological fields. We are also indebted to Tim Hardwick of CABI Publishing for his continuing encouragement and guidance.

R.P. Elander
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