

# Preface

Fungi have a major role in natural ecosystems and in agriculture. This is particularly relevant for fungal species whose main niche is either soil, rhizosphere, plant roots, or above-ground plant tissues. The sequences of fungal genomes provide a new window to observe and understand how fungi recycle organic material in the soil, engage in positive and negative interactions with plant roots, and attack plants as pathogens. An unprecedented amount of sequence information has accumulated over the past decade, and researchers are now looking for ways to extract biological information. We assembled this volume in the hope that comparison across species will help bring focus to what is similar or different in the genomes of soil saprophytes, symbionts, and plant pathogens. There are now so many sequences that any attempt to catalog what is known for all fungi would require not one but tens of volumes and would quickly become out of date. Rather, we chose examples of species where particular principles can be illustrated. The reasons are diverse: from importance in ecology, agriculture, or medicine to model species that may have been convenient for applying a certain technique. If the approaches from one species eventually lead to fruitful work in another, we will be able to look back on a successful contribution to the science of fungi in its new genomic framework.

We are grateful to the authors of the chapters of this volume for all their thoughts and efforts. In particular, each chapter develops a unique approach that often reflects not only the fungal species studied but also the viewpoint, research priorities, and expertise of the research community studying each species. The fungal genome sequencing projects are the source of this book, which two decades ago would have been difficult to even imagine. Many of the contributors have been central participants in the genome projects or guiding future ones, and we hope to share the satisfaction of seeing a growing contribution of the genomics of soil, rhizosphere, and plant-interacting fungi to ecology, biotechnology, and sustainable agriculture. We would like to express our sincere thanks to the series editor Prof. Dr. Ajit Varma for supporting this project from the start and for his help in

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