

Preface

Fungal diseases cause human suffering and enormous economic losses. New approaches for antifungal control are instrumental in meeting the threat imposed by these infectious agents. Such conceptual advances are only possible through the identification of novel biochemical and molecular targets in the fungal cell. The great diversity that exists among pathogenic fungi in terms of lifestyles, infection strategies, and disease symptoms represents a major challenge in the search for common antifungal targets, because it is likely that different attributes will be important for different fungi to cause disease. However, all pathogens share a common need for making the appropriate developmental decisions during induction of the pathogenic program. Such developmental switches are often associated with differentiation processes that require a reset of the cell cycle and the induction of a new morphogenetic program. The ability of pathogenic fungi to modulate their cell cycle and morphogenesis is emerging as a key determinant for successful infection. In the past, experimental approaches to understand regulation of the pathogenic developmental program have focused on the study of signal transduction pathways and transcriptional changes. Today, the study of how genetic virulence programs control morphogenesis and cell cycle offers exciting opportunities to explore the molecular basis of fungal pathogenicity under new angles, which at the same time are complementary to previous approaches in the field.

In the last years there has been a tremendous increase in the amount of research and relevant data on the relationships between morphogenesis, cell cycle, and regulation of virulence programs in pathogenic fungi. This progress has been the subject of a number of excellent reviews over the years. So far, however, the field has lacked a monographic collection where many of these important contributions and views are joined together. In this book we attempted to cover a broad spectrum of taxonomically and biologically diverse fungal pathogens, as well as a number of key topics related to morphogenesis and pathogenesis. The double aim was to provide introductory material for the nonspecialist and also to offer the most recent and updated views on these crucial cell biological processes.

The book is organized in 13 chapters written by qualified researchers on each topic. Each chapter contains an introduction followed by an in-depth and up-to-date analysis of the current state of knowledge on the subject. The chapters were conceived and written autonomously, so that they can be read independently, even though this may have resulted in some repetitiveness of basic concepts.

Finally, we want to thank each and every author for his/her excellent contribution. We are also indebted to the anonymous reviewers who read and made important suggestions to improve the chapters. We also thank Stefan Hohmann for his constant encouragement during the editing process and the staff at Springer Verlag for their continuous help and support to make this book possible.

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