
Volume Preface to the Second Edition

Books are old-fashioned. Books are never up-to-date, expensive and impractical. And books don't pay off for those who spend time and effort writing them. All these thoughts are among the first reactions evoked when contacting friends and colleagues to let them know you have accepted an offer to edit a book. Many of these reactions are – to say the worst – entirely true. So why take the effort? A very personal reason is that it was a book (and in fact a very old-fashioned, entirely not up-to-date book) that started my fascination for fungal pathogens when I was a young medical student starting to work on his M.D. thesis in 1997. This book was the 2nd edition of Frank Odds' outstanding compilation *Candida and Candidosis* published in 1988. For me it turned out to be a treasure of information and knowledge that guided me in exploring contemporary literature and helped in understanding a larger context. The reminiscence of this book made me happy and eager to try and put together an equally useful book when Karl Esser asked me to take over editorial responsibility for vol. XII of *The Mycota*, devoted to human fungal pathogens. Whereas the old edition of this volume had been a collection of nuggets from mycological research, I decided that the new edition should be an overview on basic principles in medical mycology, introducing the concepts of fungal virulence for selected and major fungal pathogens, emphasizing the importance of the host and especially the hosts' immune system for the development of fungal infection, and also addressing clinical issues like diagnosis and therapy of fungal infections. Putting together such a broad overview would not have been possible without the help of many colleagues and friends from all over the world. All of them are outstanding experts in their areas of expertise, who have guided and advanced medical mycology in recent years. Several have teamed up to join ideas and thoughts in their chapters. I want to thank all of them for their time and effort and their enthusiasm in contributing to this project despite many other obligations. In addition, my thanks go to Katrin Haupt and Silke Pfohl from my office for helping me to put all the chapters together.

The new volume is divided into four parts or sections. In the first part, we focus on fungal pathogens and introduce concepts of virulence for two model pathogenic fungi: *Aspergillus fumigatus*, an environmental species causing severe exogenous infections in immunocompromised patients, and *Candida albicans*, a colonizer of the human body that can disseminate from its natural habitat to cause invasive candidiasis. In addition, the tools of systems biology – a new approach to understanding complex networks of interaction in mycological research – are introduced. The second part is dedicated to the host, with a focus on innate and adaptive mechanisms of antifungal immunity. Basic concepts in

innate and adaptive antifungal immunity that have seen a remarkable and still-ongoing growth of knowledge in recent years are summarized. The major human pathogen *Cryptococcus neoformans* is introduced in the context of its interaction with macrophages, which is impressively multi-faceted and highly interesting. In addition, we learn about mucosal immunity in *Candida* infections and the pathogen–host interplay in mycoses caused by endemic fungal species. These chapters are complemented by a survey on modern tools for imaging fungus–host interactions, a field that has paved new ways to understanding infection biology. The third part focuses on a clinical point of view on fungal infections and introduces diagnostic principles, major patient collectives at risk and two other major fungal pathogens – *Pneumocystis jirovecii* and the *Mucoraceae*. Finally, in the last part, current approaches to treatment of fungal infection and pharmacokinetics of antifungal drugs are summarized.

I do hope that this overview on medical mycology, which integrates basic concepts with highly innovative up-to-date research, will stimulate the reader and help to interest newcomers while at the same time surprising insiders. If this works, then perhaps someday someone will do with a copy of this book what I did back then with the copy of Frank Odds' book, which is still in my bookshelf: save it from being sorted out by the library. This would make me happy.

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