

Current Topics in Microbiology and Immunology

Marcio L. Rodrigues *Editor*

# Fungal Physiology and Immunopathogenesis

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# Preface

Fungal diseases have been neglected for decades, which has negatively impacted the expansion of Medical Mycology and the rate of knowledge generation in this field. However, an unacceptably high number of deaths due to fungal infections (1.5 million people every year) has stimulated an appreciable expansion of Medical Mycology. Regrettably, the unquestionable progress achieved during the last two decades is still insufficient to place fungal infections at the level of knowledge generation and innovation that is observed for other infectious diseases. For instance, there are no licensed antifungal vaccines. Treatment of fungal diseases is unaffordable for millions of patients living under socio-economical restrictions. When available, antifungal treatment is expensive and associated with many undesirable side effects. The most recent antifungal drug introduced into clinics is now 18 years old. We are now facing the unexpected emergence of multidrug-resistant fungal pathogens and the alternatives to fighting this problem are very limited. This complex scenario reveals our unpreparedness to deal with clinical conditions deriving from fungal infections. These problems are likely a consequence of reduced funding for fungal research, which is much lower than that available for diseases of similar impact to human health. In summary, even with the expansion of Mycology and great scientific contributions in the last decades, it is clear that the field of fungal diseases demands more research and consequently accelerated the generation of knowledge and innovation.

The great scientific advances resulting in more sophisticated and comprehensive methods for the analysis of biological questions related to human health has positively impacted Medical Mycology research. Unquestionably, the methodological advances developed in Genetics, Immunology, Systems Biology, and Cell Biology have improved our understanding on how fungal pathogens interact with the host, resulting in the generation of damage to host tissues or the control of fungal infections. In this context, this volume efficiently illustrates the progress of

knowledge generation in Medical Mycology. We invite the reader to visit the recent findings showing how fungal cells dynamically respond to different stimuli to cause damage to host cells or to adapt to different microenvironments related to disease progress or control.

Curitiba, Brazil

Marcio L. Rodrigues

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