

Preface

It is estimated that the Kingdom Fungi groups have about five million species, and they significantly contribute to the biological interactions that sustain and shape the different ecosystems on Earth. The heterotrophic nature of fungi forces them to interact with other living organisms, and besides some extremophile species, all organisms, unicellular or multicellular, are susceptible to be a source of nutritive macromolecules for the fungal cell. In most of the cases such interaction is established with death cells and tissues, and fungi play a beneficial role helping to clean the environment and recycling the basic building blocks of biomolecules. However, when the interaction occurs with other organisms this could lead to the establishment of mutualistic, commensalism or parasitism. The latter can potentially affect the health and physiological status of the host, leading to the establishment of a disease. Fungi can parasite other fungi, plants, and animals, including the human being. The number of fungal species that cause infections in humans are just a handful, if compared with the fungal biodiversity currently known. It is important to notice that new emerging species adapted to mammalian parasitism are increasing. After viral infections, mycoses are the most frequent infections in humans and are of outstanding interest because the morbidity and mortality associated to them. Depending on the tissues affected, we can classify mycoses as superficial, subcutaneous and systemic or deep-seated infections; and they can be caused by primary pathogens or opportunistic species. Opportunistic fungal infections are of special interest because they are a consequence of a temporal or permanent immunodeficiency, and are associated to high mortality rates. Despite we have several antifungal drugs to treat fungal infections, the diversity is not enough, as some fungal species are naturally resistant to the therapeutic alternatives, or they develop or acquire drug resistance faster than the development of new drugs to combat these pathogens. This book offers a comprehensive overview of medical mycology.

Written by scientists and physicians, it addresses basic aspects of the causative agents and the clinical manifestations of the most common and relevant human mycoses, as well as their diagnosis and the therapeutic alternatives. Further, it discusses the immune response, virulence factors and the development of modern molecular diagnostic tools.

Guanajuato, Mexico
Rio de Janeiro, Brazil

Héctor M. Mora-Montes
Leila M. Lopes-Bezerra

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Mora-Montes, H.; Lopes-Bezerra, L. (Eds.)

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