Preface

Streptococci are Gram-positive bacteria capable of causing a wide spectrum of diseases in humans and animals. Group A streptococci (*Streptococcus pyogenes*) are exclusively human pathogenic bacteria. Group C and group G streptococci, which were traditionally considered as animal pathogenic bacteria, are emerging as causative organisms of human diseases. The diseases caused by streptococci range from self-limiting manifestations such as pharyngitis or impetigo to life-threatening diseases such as necrotizing fasciitis and streptococcal toxic shock syndrome. The disease burden of streptococcal infections is extremely high worldwide. More than 600 million persons, mostly children, suffer from streptococcal pharyngitis every year. There are 600 thousand cases of invasive disease with high mortality. Another problem is the sequelae of streptococcal infections in the form of acute rheumatic fever and rheumatic heart disease. About 15 million children are suffering from rheumatic heart disease, and approximately one million new cases are registered every year. Streptococcal diseases are considered as one of the most important groups of neglected communicable diseases.

Antibiotics alone have not been able to reduce the disease burden and in spite of many efforts no effective vaccine is available. One reason for unsuccessful attempts to develop a vaccine is the complexity of pathogenic mechanisms of streptococci. To establish and maintain an infection, streptococci evade host-immune defenses through their heterogeneity, bind and exploit host proteins for their own advantage, trigger their own internalization by host cell in order to persist and evade action of antibiotics, express surface proteins with similarity to host proteins to cause autoimmune diseases. The list of perplexing properties is far from complete so that streptococci remain a major health hazard and a real challenge for scientists, clinicians, and public health workers.

A prerequisite to develop and design novel combat strategies is a complete understanding of the pathogenic mechanisms. In recent years, the host–pathogen interactions have been shown to play a key role in streptococcal diseases. These interactions therefore represent promising intervention targets. This volume is completely devoted to understand streptococcal diseases. The volume has

10 chapters starting with streptococcal diseases and burden and going on to epidemiology, adaptation and transmission, molecular mechanisms of different diseases as well as sequelae, and ending with vaccine development and clinical management. All the authors are well-known in this field and have contributed enormously to the knowledge beyond the state-of-the-art. This volume will be a useful reference work for clinicians, microbiologists, public health workers, students of medicine and microbiology as well as a large number of scientists working in this field. The volume would provide new avenues for the scientists to meet the challenge of streptococcal diseases and would contribute to developing novel control strategies. The volume will be dedicated to millions of patients who have experienced the streptococcal infections and their sequelae.

I am grateful to Prof. Dr. Klaus Aktories from University of Freiburg for encouraging me to edit this volume. A short while ago, I visited his institute to give a talk after which he thought that it would be an interesting volume for CTMI. I am also thankful to all the contributors to find time from their tight schedules and deliver excellent chapters. All chapters provide state-of-the-art information and there is hardly any overlap among the different chapters. I am grateful to Springer staff, especially Ms. Schlitzberger for their help and to Prof. Manfred Rohde, Dr. Patric Nitsche-Schmitz, and Helga Brink from the Department of Medical Microbiology of our center.

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