

MOLECULAR MEDICAL MICROBIOLOGY

Second Edition



VOLUME I

Yi-Wei Tang, Max Sussman, Dongyou Liu,
Ian Poxton, and Joseph Schwartzman



Molecular Medical Microbiology

Volume 1

Second Edition

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Preface to the First Edition

The first edition of *Molecular Medical Microbiology* (ISBN: 9780126775303), which was published in three volumes by Academic Press in 2002, was the first comprehensive and accessible reference on the subject and consisted of over 103 chapters, organized into 17 major sections.

The molecular aspects of medical microbiology have advanced very rapidly since then and the time has come to bring the book up to date. In 2010, I was honoured to receive an invitation from Denise Penrose, a Senior Acquisitions Editor of Elsevier then, to compile the second edition of this well-received book. In early 2011, almost 10 years after the publication of the original edition, five of us from Australia, the UK and the USA: Dongyou Liu, Ian Poxton, Joseph Schwartzman, and Max Sussman, the editor-in-chief of the original edition, in addition to myself, formed an editorial team to produce the second edition to be published by Elsevier under the Academic Press imprint.

This 2nd edition of *Molecular Medical Microbiology* continues along the same lines as the founding edition. A decade ago molecular knowledge concerning individual pathogenic groups of bacteria varied widely and this was reflected in the way that authors structured their contributions. The editors expect that a similarly varied approach will continue in the new edition. It is a major reference work in three volumes intended primarily for practicing medical and clinical microbiologists, as well as graduate students and senior medical students. The primary focus is on the molecular and genetic aspects of pathogenic bacteria of medical importance that are becoming increasingly relevant in basic research and clinical practice. For this reason, morphological and phenotypic aspects of microbiology were not dealt with in any detail, except where such information is essential to support an understanding of the molecular and genetic aspects.

In Volume 1, Sections 1–4 (Chapters 1–28) deal with fundamental structural and functional aspects of bacteria; and Sections 5–6 (Chapter 29–42) cover principles and methods in relation to clinical diagnosis and treatment. In Volumes 2 and 3, individual groups and/or species of pathogenic bacteria are discussed. These chapters are grouped together as far as possible in a system-orientated manner to emphasize their clinical significance. In order to support this approach, particularly for non-clinical and laboratory-based microbiologists, the opening chapter to each system-orientated section of the book is a 'Clinical Overview'. This is intended to provide an accessible account of the clinical 'pictures' and pathophysiology of the infections caused by the organisms dealt with in related system-orientated chapters.

Broadly speaking, as indicated by the title, the scope of this book should cover non-bacterial 'microorganisms', such as viruses, fungi, parasites and even prions. To follow the gear of the first edition, the editors have decided to exclude these non-bacterial pathogens from the second edition. Your feedback is greatly appreciated.

Finally, I want to thank the authors and my fellow editors who devoted their time and efforts to produce and/or edit chapters. I also thank the staff at Elsevier, especially Denise Penrose, who initiated the whole project, and Halima Williams. Finally, I greatly appreciate the constant encouragement of my family members, Haijing, Jenny and George, through this arduous undertaking. Without their unwavering faith and full support, I would never have had the courage to commence this project.

Yi-Wei Tang

New York, New York, USA

July 2014

Preface to the First Edition

The Expanding Concept

The developments of the last almost fifty years suggested that the time might be ripe for a book dedicated to medical microbiology as seen from a molecular vantage point. Such a project faces the problem that the subject is immense and growing at an intimidating rate even while this book was being edited. Nevertheless, I hope that it is at least a faithful representation of the subject.

Molecular medical microbiology cannot, of course, stand in isolation from the 'whole organism' approach of the pre-molecular age that is so well described in many standard texts. It was felt, therefore, that to make the size of the book manageable, contributors could safely assume that readers in search of information about the more classical phenotypic and descriptive aspects of the subject would profitably turn elsewhere.

This book is in a way a *prolegomenon*. Molecular medical microbiology is not a 'settled subject' and authors were given only limited guidance about the content and structure of their contributions. Each chapter, therefore, reflects the particular insights and priorities of its authors.

My Advisory Editors were most helpful, especially during the initial planning stages of the project and I am grateful to them for their advice, which in some cases was

sought at very inconvenient times. I wish also to thank all the contributors and particularly those who submitted early and, later in the gestation, readily agreed to revise their chapters.

My successor Professor Carlos Hormaeche has shown his friendship to me in many ways. I am most fortunate, some twelve years after my retirement, to be able to continue work in the Department of Microbiology and Immunology of the Newcastle Medical School.

Finally, the journey from manuscript to printed page is long, often tortuous and sometimes mysterious and a multitude of hands is involved. The eagle and expert eye of my copy editors has saved me from many a lapse. I should like to express my thanks to the many at Academic Press who assisted me at various stages. Particularly deserving of gratitude amongst these are, Dr Tessa Pickering for her assistance and understanding, Dr Lilian Leung and Soma Mitra for their help with keeping a semblance of order and Sutapas Bhattacharya for his reassuring efficiency and limitless knowledge about book production.

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Newcastle Upon Tyne

July 2001

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