

## *Mycobacterium bovis* Infection in Animals and Humans, 2nd Edition

Charles O. Thoen, James H. Steele, and Michael J. Gilsdorf, editors

Blackwell Publishers, Boston, Massachusetts, 2006  
ISBN: 0813809193  
Pages: 329; Price: US \$124.99

The stated purpose of the second edition of *Mycobacterium bovis* Infection in Animals and Humans is to provide medical professionals, allied health scientists, research workers, and graduate students with current information on the significance of *M. bovis* in the control and eradication of tuberculosis in animals and humans. This newest edition deals with topics such as the public health significance of *M. bovis*, pathogenesis of *M. bovis*, epidemiology of *M. bovis* (with an entire chapter on molecular epidemiologic techniques), PCR detection of *M. bovis* with formalin-fixed tissues, and DNA vaccines. As with the first edition, the second edition delivers several updates from various countries on the status of *M. bovis* infection in animals and humans. Little accessible published information has been available on this topic, which makes the book especially useful.

The second edition also deals with several areas not covered in the first edition, including molecular epidemiology, evolution of the *M. tuberculosis* complex, tuberculosis caused by *M. pinnipedii* in fur seals and sea lions, the economics of bovine tuberculosis, and cost-benefit analysis of disease eradication programs. Several chapters deal with timely issues related to tuberculosis in wildlife.

In spite of its strengths, the second edition adds little additional information to material provided in the first edition on the topics of pathogenesis or diagnosis of bovine tuberculosis. In addition, although most of the photomicrographs are adequate, several are of such poor quality that they are of little use. Also, as with any multi-authored volume, some repetition occurs on general topics. The book achieves its stated purposes, however, and will be especially useful as a reference for researchers, regulatory agencies, and graduate students. It will be less informative for those interested in detailed discussions on research in the field of pathogenesis or diagnosis of *M. bovis* infection.

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## Evolution of Microbial Pathogens

H. Steven Seifert and Victor J. DiRita, editors

American Society for Microbiology Press, Washington, DC, 2006  
ISBN: 1-55581-300-3  
Pages: 355; Price: US \$119.95

This book is one of the first to provide an up-to-date view on a fundamental issue in medical microbiology

research: how the accumulated genetic and genomic information is contributing to our understanding of virulence factors and the evolution of virulence in microbial pathogens. The editors should be commended for assembling 35 outstanding contributors, who specialize in various areas of microbial pathogenesis and evolution.

The 14 chapters are grouped into 3 broad sections: general concepts in microbial evolution, environment and the evolution of microbial pathogens, and the evolution of selected pathogenic species and mechanisms. At the beginning of each section, a concise overview of individual chapters integrates the content of the chapters into the section.

In the first section, the 5 chapters introduce the basic processes affecting microbial evolution, from the individual molecular level to the genomic, cellular, and population levels. Well-known concepts such as horizontal (lateral) gene transfer, the relationship between virulence and transmission, and pathogenicity islands are discussed extensively. Of special note are 2 chapters that are often missing in traditional medical microbiology books: 1 describes how long-term experimental evolutionary studies in the laboratory can contribute to our understanding of microbial pathogen evolution in the environment and clinics, and the other describes how gene inactivation and gene loss can be creative forces during the evolution of many microorganisms, especially obligate intracellular pathogens.

In the second section, the 5 chapters review how interactions between microbes and various natural biotic and abiotic factors can influence the origin and evolution of virulence in microbial pathogens. These factors are the physical, chemical, and biologic properties of the soil environment; the plant and animal environments; and to a lesser extent, the

aquatic and atmospheric environments. Other highly topical issues are the evolutions of toxins, secretion systems, and antibiotic resistance.

In the third section, the 4 chapters extensively discuss the evolution of selected groups of microbial pathogens: group A *Streptococcus* and *Staphylococcus aureus*; enteric pathogens such as *Escherichia coli*, *Salmonella enterica*, and *Yersinia* spp.; *Mycobacterium* spp.; and fungal pathogens such as *Candida albicans* and *Cryptococcus neoformans*. The authors provide rich detail of molecular variation within and between populations of these species and describe how patterns of population genetic variation have contributed to our understanding of the evolution of virulence and virulence factors in these pathogens.

I have no major criticism of what is included in this book; rather, I note what is absent, which could have made the book more comprehensive. The first is an overall evolutionary framework of the distribution of microbial pathogens on the phyloge-

netic tree. Such a macro-evolutionary framework would showcase the non-random patterns of the distribution of human pathogens among major phylogenetic groups of microorganisms. Second, although base substitutions, insertions and deletions, homologous recombination, and lateral gene transfer are discussed throughout the book, a generalized quantitative review of the relative contributions of these processes during the evolution of certain groups of microbial pathogens (e.g., *E. coli*) would have been highly informative. These processes are fundamental to the evolution of all groups of organisms, and the analysis of the unparalleled datasets in microbial pathogens can teach us much about the evolution of other groups of organisms. Third, although many human pathogens are globally distributed, a substantial number show geographic specificity and endemism. Therefore, the spatial and temporal patterns of distribution of microbial pathogens within a species and at the species level across the globe are highly relevant to the evolution of

microbial pathogens. Lastly, this book is highly biased toward bacterial pathogens. Only 1 chapter deals with nonbacterial (fungal) pathogens, and no chapter discusses viral or protozoan pathogens, which are responsible for some of our biggest public health threats, e.g., HIV, influenza A, and *Plasmodium falciparum*.

Nevertheless, this is a timely and much-needed book about the evolution of bacterial virulence and its pathogenesis. It will be a valuable resource for researchers in the field of microbial evolution and pathogenesis, senior undergraduate students, graduate students, faculty who teach medical microbiology and microbial evolution, clinical microbiologists, and infectious disease specialists.

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### Correction: Vol. 12, No. 6

In "Coccidioidomycosis as a Common Cause of Community-acquired Pneumonia," by Lisa Valdivia et al., an error occurred in the last sentence on page 961 that continues on page 962. The sentence should read "By using these entry criteria, we found that 3 of the 12 patients with valley fever who underwent radiographic examination had normal radiographs, which is consistent with results of a previous study (3), but did not adhere to Infectious Diseases Society of America or American Lung Association definitions of pneumonia (19)."

The corrected text appears in the online article at <http://www.cdc.gov/ncidod/EID/vol12no06/06-0028.htm>

We regret any confusion this error may have caused.

### Corrections: Vol. 12, No. 7

In "Migratory Passerine Birds as Reservoirs of Lyme Borrelia in Europe," by Pär Comstedt et al., an error occurred in the second sentence of the first paragraph of Acknowledgments, page 1094. The sentence should read "This is report no. 214 from the Ottenby Bird Observatory."

The corrected text appears in the online article at <http://www.cdc.gov/ncidod/EID/vol12no07/06-0127.htm>

In "Human West Nile Virus Infection, Catalonia, Spain" by Domingo Bofill et al., an error occurred on page 1164. The final paragraph of the article incorrectly states that 20% of cases of West Nile virus infection are asymptomatic. The sentence should read "The probable WNV infection described was asymptomatic, as occurs in 80% of cases."

The corrected text appears in the online article at <http://www.cdc.gov/ncidod/EID/vol12no07/06-0164.htm>

We regret any confusion these errors may have caused.