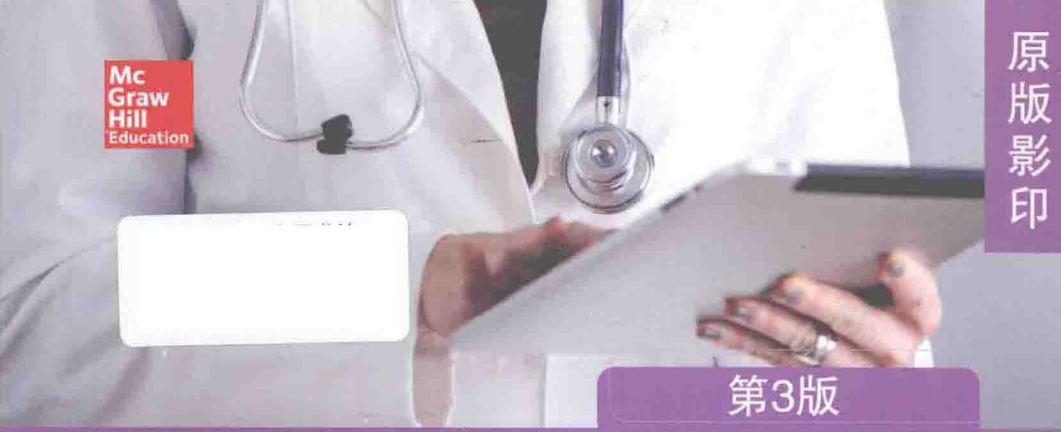

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Eugene C. Toy, MD
Vice Chair of Academic Affairs and
Residency Program Director
Department of Obstetrics and Gynecology
The Methodist Hospital-Houston
Houston, Texas
Clinical Professor and Clerkship Director
Department of Obstetrics/Gynecology
University of Texas Medical School at Houston
Houston, Texas
John S. Dunn Senior Academic Chair
Department of Obstetrics and Gynecology
St Joseph Medical Center
Houston, Texas

Cynthia R. Skinner Debord, PhD
Former Instructor and Course Director of
Medical
Microbiology
Department of Microbiology and Molecular
Genetics
University of Texas Medical School at Houston
Houston, Texas

Audrey Wanger, PhD
Associate Professor
Department of Pathology
University of Texas Medical School at Houston
Houston, Texas

Chris Mackenzie, PhD
Assistant Professor
Department of Microbiology and Molecular
Genetics
University of Texas Medical School at
Houston
Houston, Texas

Anush S. Pillai, DO, FAAFP
Attending Physician/Faculty
Clinical Associate Professor – Weill Medical
College of Cornell University
Academic Vice Chair
Family Medicine Residency
The Methodist Hospital-Houston
Denver Harbor Clinic
Houston, Texas

James D. Kettering, PhD
Emeritus Professor
Department of Biochemistry and Microbiology
Loma Linda University School of Medicine
Loma Linda, California

北京大学医学出版社

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出版说明

Case Files 是美国麦格劳 - 希尔教育出版公司医学图书中的著名品牌系列图书，被世界多所著名医学院校选定为教学用书。北京大学医学出版社与麦格劳 - 希尔教育出版公司合作，全套影印出版了该丛书。包括：

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二、内容上，每个分册包含几十个经典案例。基础学科强调与临床的结合，临床学科强调临床思维的培养。

三、以案例和问题导入，互动式学习，尤其适合 PBL（问题为中心的学习）和 CBL（案例为中心的学习）。

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DEDICATION

To my parents, Darrell and Ruth, for their ongoing support;
to my loving husband, Wes, and children Emily, Elliot, and Evan.

—CD

To my patient wife, Betty, and children, Brian, Pamela, and David.

—JK

To my wife and kids who offer me love, support, and perspective.
To my parents who inspired aspirations and then
gave me work ethic to achieve them.
To my boss, colleagues, and residents who help me to grow
on a daily basis.

—AP

To my dear wife Yi for all her love and kindness and my children
Jennifer and Miles for continuing to amaze.
To my parents who have given me more than I can
ever thank them for.

—CM

Karen D. Malinowski
Research Associate
Dept of Microbiology
University of Texas Medical School at Houston
Houston, Texas
Brucellosis
Rickettsial Infections

Violeta Chavez, PhD
Clinical Fellow
Dept of Microbiology
University of Texas Medical School at Houston
Houston, Texas
Brucellosis
Rickettsial Infections

Andrew M. Hawrylak
Class of 2015
University of Texas Medical School at Houston
Houston, Texas
Giardiasis

Bryan F. Darger
Class of 2015
University of Texas Medical School at Houston
Houston, Texas
Giardiasis

Allison L. Toy
Senior Nursing Student
Scott & White Nursing School
Temple, Texas
Primary Manuscript Reviewer

We appreciate all the kind remarks and suggestions from the many medical students over the past 5 years. Your positive reception has been an incredible encouragement, especially in light of the short life of the *Case Files* series. In this third edition of *Case Files: Microbiology*, the basic format of the book has been retained. Improvements were made in updating many of the chapters. New cases include rickettsial diseases, brucellosis, West Nile Virus, and *Giardia*. We reviewed the clinical scenarios with the intent of improving them; however, their "real-life" presentations patterned after actual clinical experience were accurate and instructive. The multiple-choice questions have been carefully reviewed and rewritten to ensure that they comply with the National Board and USMLE format. Through this third edition, we hope that the reader will continue to enjoy learn diagnosis and management through the simulated clinical cases. It certainly is a privilege to be teachers for so many students, and it is with humility that we present this edition.

The Authors

ACKNOWLEDGMENTS

The inspiration for this basic science series occurred at an educational retreat led by Dr. Maximilian Buja, who, at the time, was the Dean of the University of Texas Medical School at Houston. It has been such a joy to work together with Drs. DeBord, Wanger, and Mackenzie, all of whom are accomplished scientists and teachers, as well as the other excellent authors and contributors. It has been rewarding to collaborate with Dr. Anush Pillai, a brilliant faculty member. I would like to thank McGraw-Hill for believing in the concept of teaching by clinical cases. I owe a great debt to Catherine Johnson, who has been a fantastically encouraging and enthusiastic editor. It has been amazing to work together with my daughter Allison, who is a senior nursing student at the Scott and White School of Nursing; she is an astute manuscript reviewer and already in her early career she has a good clinical acumen and a clear writing style. At the University of Texas Medical School at Houston, I would like to recognize Dr. Samuel Kaplan, Professor and former Chair of the Department of Microbiology and Molecular Genetics, for his support. At Methodist Hospital, I appreciate Drs. Mark Boom, Alan Kaplan, and Judy Paukert. At St. Joseph Medical Center, I would like to recognize our outstanding administrators: Pat Mathews and Paula Efird. I appreciate Linda Bergstrom's advice and assistance. Without the help from my colleagues, this book could not have been written. Most important, I am humbled by the love, affection, and encouragement from my lovely wife Terri and our four children, Andy and his wife Anna, Michael, Allison, and Christina.

Eugene C. Toy

Often, the medical student will cringe at the "drudgery" of the basic science courses and see little connection between a field such as microbiology and clinical problems. However, clinicians, often wish they knew more about the basic sciences, because it is through the science that we can begin to understand the complexities of the human body and, thus, have rational methods of diagnosis and treatment.

Mastering the knowledge in a discipline such as microbiology is a formidable task. It is even more difficult to retain this information and to recall it when the clinical setting is encountered. To accomplish this synthesis, microbiology is optimally taught in the context of medical situations, and this is reinforced later during the clinical rotations. The gulf between the basic sciences and the patient arena is wide. Perhaps one way to bridge this gulf is with carefully constructed clinical cases that ask basic science-oriented questions. In an attempt to achieve this goal, we have designed a collection of patient cases to teach microbiological related points. More important, the explanations for these cases emphasize the underlying mechanisms and relate the clinical setting to the basic science data. We explore the principles rather than emphasize rote memorization.

This book is organized for versatility: to allow the student "in a rush" to go quickly through the scenarios and check the corresponding answers and to provide more detailed information for the student who wants thought-provoking explanations. The answers are arranged from simple to complex: a summary of the pertinent points, the bare answers, a clinical correlation, an approach to the microbiology topic, a comprehension test at the end for reinforcement or emphasis, and a list of references for further reading. The clinical cases are arranged by system to better reflect the organization within the basic science. Finally, to encourage thinking about mechanisms and relationships, we intentionally used open-ended questions with the clinical cases. Nevertheless, several multiple-choice questions are included at the end of each scenario to reinforce concepts or introduce related topics.

HOW TO GET THE MOST OUT OF THIS BOOK

Each case is designed to introduce a clinically related issue and includes open-ended questions usually asking a basic science question, but at times, to break up the monotony, there will be a clinical question. The answers are organized into 4 different parts:

PART I

1. **Summary**
2. A **straightforward answer** is given for each open-ended question.
3. **Clinical Correlation**—A discussion of the relevant points relating the basic science to the clinical manifestations, perhaps introducing the student to issues such as diagnosis and treatment.

PART II

An **approach to the basic science concept** consisting of 3 parts:

1. **Objectives**—A listing of the 2 to 4 main principles critical for understanding the underlying microbiology to answer the question and relate to the clinical situation
2. **Definitions of basic terminology**
3. **Discussion of topic**

PART III

Comprehension Questions—Each case includes several multiple-choice questions that reinforce the material or introduces new and related concepts. Questions about the material not found in the text are explained in the answers.

PART IV

Microbiology Pearls—A listing of several important points, many clinically relevant reiterated as a summation of the text and to allow for easy review, such as before an examination.

CONTENTS

SECTION I

Applying the Basic Sciences to Clinical Medicine

Part 1. Approach to Learning Microbiology

The student of microbiology should be aware of the scientific characteristics of each microbe, with a particular interest in the relevance to clinical manifestations. The following is a systematic 3-pronged approach:

1. *How does one know that a person is infected?*
2. *Where and how is a person infected?*
3. *What can be done if a person is infected?*

1. **How does one know that a person is infected?** The clinician may have a suspicion of a certain etiologic agent based on clinical clues, but this educated guess must be corroborated by laboratory confirmation. This necessitates an understanding of the basis for presumptive and definitive diagnosis. Possible laboratory tests include culture, polymerase chain reaction of DNA or RNA, antigen tests, or antibody tests.

2. **Where and how is a person infected?** This question translates to understanding about the mechanisms of disease transmission. For example, if a patient is infected with the hepatitis B virus, then the student should be aware that the most common methods of disease acquisition are intravenous drug use, sexual transmission, and vertical transmission. Blood transfusion at one time was a common modality, but now with screening of banked blood, the incidence is very low.

3. **What can be done if a person is infected?** This translates to knowing the best treatment and method of prevention of infection. In other words, once a patient is known to be infected with a certain microbe, what is the best treatment? The student is best served by learning more than 1 antimicrobial therapy and some of the advantages and disadvantages of each therapeutic choice. For example, urinary tract infection caused by *Escherichia coli* may be treated empirically with a variety of antibiotics; however, a quinolone antibiotic, such as ciprofloxacin, is contraindicated in pediatric patients, and gentamicin is relatively contraindicated in those with renal insufficiency.

Likewise, the student should have a systematic approach to classifying microorganisms: viruses, bacteria, protozoa, and fungi.

Virus: A noncellular organism having genetic nucleic acid that requires a host to replicate. They are usually 15 to 450 nanometers in diameter. Viruses do not have a cell membrane or cell wall, but they have a rigid protein coat called the "capsid." The inner cavity contains DNA or RNA. Viruses come in various shapes, including spherical, tetrahedral, polygonal, rod shaped, and polyhedral. One end is usually broader (head), and one end narrower (tail). The tail often has antigenic proteins for attachment to the host. Because viruses do not reproduce without a host, they are considered obligate parasites and not living. See Table I-1 for a schematic of viruses.