

# TABLE OF CONTENTS – Practical Handbook of Microbiology, 4th Edition

*Preface*

*About the Editors*

*Contributors*

## **PART I. PRACTICAL INFORMATION AND PROCEDURES**

### **1. Sterilization, Disinfection, and Antisepsis**

Michael G. Schmidt

### **2. Quantitation of Microorganisms**

Brad A. Slominski and Peter S. Lee

### **3. Culturing and Preserving Microorganisms**

Lorrence H. Green

### **4. Stains for Light Microscopy**

Stuart Chaskes and Rita Austin

### **5. Identification of Gram-Positive Organisms**

Peter M. Colaninno

### **6. Identification of Aerobic Gram-Negative Bacteria**

Donna J. Kohlerschmidt, Lisa A. Mingle, Nellie B. Dumas, and Geetha Nattanmai

### **7. Plaque Assay for Bacteriophage**

Emanuel Goldman

### **8. Phage Identification of Bacteria**

Catherine E.D. Rees and Martin J. Loessner

### **9. Phage Display and Selection of Protein Ligands**

Geir Åge Løset, Wlodek Mandecki, and Inger Sandlie

## **10. Diagnostic Medical Microbiology**

Lorrence H. Green

## **11. Modern Diagnostic Methods in the 21st Century**

Lorrence H. Green and Alan Ward

## **12. Antibiotic Susceptibility Testing**

Audrey Wanger and Violeta Chávez

## **13. Bacterial Cell Breakage or Lysis**

Matthew E. Bahamonde

## **14. Major Culture Collections and Sources**

Lorrence H. Green

## **15. Epidemiological Methods in Microbiology**

Tyler S. Brown, Barun Mathema, and D. Ashley Robinson

## **16. CRISPR**

Tao Xu, Megan L. Kempher, Xuanyu Tao, Aifen Zhou, and Jizhong Zhou

## **PART II. SURVEY OF MICROORGANISMS**

### **17. Taxonomic Classification of Bacteria**

J. Michael Janda

### **18. Bacterial Cell Wall: Morphology and Biochemistry**

Stefania De Benedetti, Jed F. Fisher, and Shahriar Mobashery

### **19. The Human Microbiome in Health and Disease**

Sandra B. Andersen, Menghan Liu, and Martin J. Blaser

### **20. The Phylum Actinobacteria**

Alan C Ward, Nagamani Bora, Jenileima Devi, Alexander Escasinas, and Nicholas Allenby

## **21. Archaea**

Nina Dombrowski, Tara Mahendrarajah, Sarah T. Gross, Laura Eme, and Anja Spang

## **22. The Genus Bacillus**

Daniel R. Zeigler and John B. Perkins

## **23. The Genus Bordetella**

Rita Austin and Tonya Shearin-Patterson

## **24. The Genus Campylobacter**

Collette Fitzgerald, Janet Pruckler, Maria Karlsson, and Patrick Kwan

Updated 2021: Janet Pruckler, Lavin Joseph, Hayat Caidi,

Mark Laughlin, Rachael D. Aubert

## **25. Chlamydiae**

Lourdes G. Bahamonde

## **26. The Genus Clostridium**

Peter Dürre

## **27. The Genus Corynebacterium**

Lothar Eggeling and Michael Bott

## **28. The Family Enterobacteriaceae**

J. Michael Janda and Denise L. Lopez

## **29. *Haemophilus* Species**

Elisabeth Adderson

## **30. The Genus Helicobacter**

Ernestine M. Vellozzi and Edmund R. Giugliano

## **31. The Genus *Legionella***

Ashley M. Joseph and Stephanie R. Shames

### **32. The Genus *Listeria***

Sukhadeo Barbuddhe, Torsten Hain, Swapnil P. Doijad, and Trinad Chakraborty

### **33. The Genus *Mycobacterium***

Leen Rigouts and Sari Cogneau

### **34. *Mycoplasma* and Related Organisms**

Bahman Rostama and Meghan May

### **35. The Family *Neisseriaceae***

Yvonne A. Lue

### **36. The Genus *Pseudomonas***

Layla Ramos-Hegazy, Shubham Chakravarty, and Gregory G. Anderson

### **37. The Family *Rickettsiaceae***

Timothy P. Driscoll, Victoria I. Verhoeve, Magda Beier-Sexton, Abdu F. Azad, and Joseph J. Gillespie

### **38. Microbiological and Clinical Aspects of the Pathogenic Spirochetes**

Charles S. Pavia

### **39. *Staphylococcus aureus* and Related Staphylococci**

Volker Winstel, Olaf Schneewind, and Dominique Missiakas

### **40. *Streptococcus***

Vincent A. Fischetti and Patricia Ryan

### **41. The Genus *Vibrio* and Related Genera**

Seon Young Choi, Anwar Huq, and Rita R. Colwell

### **42. *Yersinia***

Ryan F. Relich and Meghan A. May

### **43. Other Anaerobic Bacteria: *Bacteroides*, *Porphyromonas*, *Prevotella*, *Tannerella*, *Fusobacterium*, and Gram-positive Anaerobic Cocci**

Joseph J. Zambon and Violet I. Haraszthy

**44. Other Gram-Negative Bacteria: *Acinetobacter*, *Burkholderia*, and *Moraxella***

Rebecca E. Colman and Jason W. Sahl

**45. Selected Zoonotic Pathogens**

Sanjay K. Shukla and Steven Foley

**46. Fungi**

Charles Adair

**47. Introduction to Parasites**

Purnima Bhanot

**48. Introduction to *Bacteriophages***

Elizabeth Kutter and Emanuel Goldman

**49. Introduction to Virology**

Ken S. Rosenthal

**50. Emerging Viruses**

Meghan A. May and Ryan F. Relich

**PART III. APPLIED PRACTICAL MICROBIOLOGY**

**51. Mechanisms of Action of Antibacterial Agents**

Ammara Mushtaq, Joseph Adrian L. Buensalido, Carmen E. DeMarco, Rimsha Sohail, and Stephen A. Lerner

**52. Mechanisms of Action of Antifungal Agents**

Jeffrey M. Rybak and P. David Rogers

**53. Mechanisms of Action of Antiviral Agents**

Guido Antonelli, Francesca Falasca, and Ombretta Turriziani

**54. Phage Therapy: Bacteriophages as Natural, Self-Replicating Antimicrobials**

Naomi Hoyle and Elizabeth Martin Kutter

**55. Emergence of Antimicrobial Resistance in Hospitals**

Paramita Basu, Joshua Garcia, and Priyank Kumar

**56. Emerging Antimicrobial-Resistant Microorganisms in the Community**

Negin Alidazeh Shaygh, Divya Sarvaiya, and Paramita Basu

**57. Overview of Biofilms and Some Key Methods for Their Study**

Paramita Basu, Michael Boadu, and Irvin N. Hirshfield

**58. Biofilms in Healthcare**

Rebecca K. Kavanagh, Arindam Mitra, and Paramita Basu

**59. The Business of Microbiology**

Michael C. Nugent and Lorrence H. Green

**60. Launching a Microbiology-Based Company**

Leonard Osser

**61. Microbiology for Dental Hygienists**

Victoria Benvenuto and Donna L. Catapano

**62. Microbiology for Pre-College Teachers**

Madge Nanney and Scott Sowell

**63. Microbiology for Home Inspectors**

William E. Herrmann

**Survey of Selected Clinical, Commercial, and Research-Model Eubacterial Species**

*Index.*