

Lab NO. 1

Diagnostic Microbiology Lab

Introduction and Safety in the laboratory

INTRODUCTION

Microbiological techniques are different in many ways when compared with other laboratory disciplines. Although results are not obtained in a short time, the time required to perform the test is very short. Most of the techniques are simple, yet requires a great deal of theoretical background to be correctly interpreted.

Before performing any of the exercises in this manual, one should read the safety precaution and measures as well as the exercise (the materials needed, the procedures, and the expected results). This will ensure the safety of the student and also will ensure good results.

General View on the Parameters Used in the Process of Microorganism Identification

Before one can proceed to identify a microorganism, the characteristics of that organism have to be determined in details. The major characteristics which are observed include the following:

A. Cultural Characteristics

In clinical terms, it is the shape, size, color, elevation and other characteristics of the colony formed on the culture plate. In taxonomy, it includes the nutrient requirements for the growth of the organism and the physical factors such as temperature, pH and the incubation period. These factors are used to identify certain pathogenic species but less commonly used in routine procedures. The cultural characteristics of a microorganism usually vary depending on the media used and many other factors. Some experienced microbiologists could have a good guess about the identity of a microorganism just by its cultural characteristics, but this was proven to be a bad technique. Students as well as microbiologists are advised to follow strict procedures for the identification of isolates from clinical specimens.

B. Morphology and Staining

This includes the microscopic appearance of a stained preparation of the organism. Useful information to be taken into account, are the size of the individual cells, cell shape and arrangement and staining reaction if differential staining procedures is used.

EXAMPLE: A gram stained film prepared from a pure culture of certain microorganism shows the following:

- Small spherical cells "Cocci"
- Arranged in clusters
- Gram-positive = violet in color

Some laboratories which have a little facility could give the report of a microbiological examination of a clinical specimen just by stating their morphological characteristics and the sensitivity testing results.

C. BIOCHEMICAL CHARACTERISTICS

Frequently, the identity of a species requires detailed knowledge of its

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Frances W. Ingersoll



Diagnostic Microbiology Lab Manual:

Textbook of Diagnostic Microbiology - E-Book Connie R. Mahon, Donald C. Lehman, George Manuselis, 2014-03-03
Providing a reader friendly building block approach to the essentials of diagnostic microbiology this accessible full color text helps you develop the problem solving skills necessary for success in the clinical setting This updated edition has new content on nanomedicine and HIV AIDS and the immunocompromised patient including the latest information on prevention treatment modalities and CDC guidelines Updated photos offer new examples of automated lab instruments while case studies review questions and learning objectives present information in an easy to learn way A building block approach encourages you to use previously learned information to sharpen your critical thinking and problem solving skills Full color design with many full color photomicrographs prepares you for the reality of diagnostic microbiology Learning objectives at the beginning of each chapter supply you with a measurable outcome to achieve by completing the material A case study at the beginning of each chapter provides you with the opportunity to form your own questions and answers through discussion points Issues to Consider boxes encourage you to analyze important points Bolded key terms at the beginning of each chapter equip you with a list of the most important and relevant terms in each chapter Points to Remember sections at the end of each chapter identify key concepts in a quick reference bulleted format Hands on procedures describe exactly what takes place in the micro lab making content more interesting and relevant Learning assessment questions at the conclusion of each chapter allow you to evaluate how well you have mastered material Agents of bioterrorism chapter furnishes you with the most current information about this hot topic Glossary of key terms at the end of the book supplies you with a quick reference for looking up definitions NEW Nanomedicine and HIV AIDS and the immunocompromised patient content supplies you with the latest information on prevention treatment modalities and CDC guidelines NEW Updated photos familiarize you with the equipment you ll use in the lab NEW Case Checks throughout each chapter tie content to case studies for improved understanding NEW An editable and printable lab manual provides additional opportunities to learn course content using real life scenarios with questions to reinforce concepts Review questions for each learning objective help you learn to think critically about the information in each chapter enhancing your comprehension and retention of material *Microbiology Practical Manual, 1st Edition-E-book* Amita Jain, Jyotsna Agarwal, Vimala Venkatesh, 2018-09-15 This book is a practical manual in Microbiology for 2nd year MBBS students There is no standard book for practical exams in the market This book will be a student s companion in their Microbiology practical class where they can read it do their experiments as per directions given in book and do their assignments It would be a complete practical book with tutorials at the beginning of each chapter helping the students understand the concepts Integrates practical important theoretical concepts of Microbiology Every chapter divided in a tutorial practical exercise spotters and assignments Contains easy to reproduce diagrams during the practical exams Important case wise Viva questions at the end of each chapter Sample cases at the end

of each chapter for understanding the correlation It would be a complete practical book with tutorials at the beginning of each chapter helping the students understand the concepts **Microbiology Lab Manual** Janice Speshock,2015-12-10

Diagnostic Microbiology Beverly Price Gobat,1998 This workbook provides objectives review questions case studies organized laboratory exercises and guidance on supplemental reading Designed to maximize retention of material this workbook is indispensable to all students learning the principles of diagnostic microbiology Can be used in conjunction with Forbes BAILEY AND SCOTT S DIAGNOSTIC MICROBIOLOGY 10th Edition or any other diagnostic microbiology text

Laboratory Manual and Workbook in Microbiology Josephine A. Morello,Paul A. Granato,Helen Eckel Mizer,2005 Places emphasis on the basic principles of diagnostic microbiology for students preparing to enter the allied health professions This laboratory manual and workbook is aimed at those who are involved in patient care and who wish to learn how microbiological principles should be applied in the practice of their professions *Study Guide and Laboratory Manual to Accompany Essentials of Diagnostic Microbiology* Frances W. Ingersoll,Jacquelyn Marshall,1998-11-12 This Study Guide and Laboratory Manual is designed to accompany Essentials of Diagnostic Microbiology It is subdivided into Part I Study Guide and Part II Laboratory Manual Together these parts will help you learn and reinforce your knowledge of diagnostic microbiology Introduction to Diagnostic Microbiology for the Laboratory Sciences Maria Dannessa Delost,2015 Introduction to Diagnostic Microbiology for the Laboratory Sciences provides a foundation in microbiology that is essential for a career as a medical laboratory technologist technician MLT A key text for students and a helpful reference for practitioners it reviews the microorganisms most commonly encountered in clinical settings and clearly explains basic laboratory procedures This text provides a concise overview of topics and facilitates comprehension with learning objectives key terms case studies and review questions In addition the text includes laboratory exercises eliminating the need for a separate laboratory manual Covering content required in the MLT curriculum and featured on the certification exam this accessible text will help prepare students for a career in laboratory science Key Features Reviews the microorganisms most important in clinical practice Explains basic laboratory procedures such as specimen collection and staining Includes laboratory exercises in the text no need for a separate manual Serves as a helpful on the job reference for laboratory practitioners Provides practice questions to help students prepare for the medical technology certification exam CHAPTER PEDAGOGY Chapter Outline Key Terms Learning Objectives Procedures Laboratory Exercises Case Studies Review Questions INSTRUCTOR RESOURCES Image Bank with 247 photos and illustrations PowerPoint Presentations per chapter Laboratory Exercise Worksheets and a Test Bank with 450 multiple choice questions and a 225 question exam Introduction to Diagnostic Microbiology for the Laboratory Sciences is on the recommended reading list to prepare for the ASCP MLT exam American Society for Clinical Pathology Medical Laboratory Technician exam **Essentials of Diagnostic Microbiology** Lisa Anne Shimeld,1999 This new book provides learners with a well organized source of entry level skills and knowledge of

diagnostic microbiology The concise chapters and easy to understand laboratory protocols allow learners to focus on what they really need to know in order to identify microorganisms and diagnose infectious diseases Specialized chapters were written by clinicians researchers and educators who are foremost in their fields More than 125 full color photos innovative comprehensive microbiology Allied Health science ALSO AVAILABLE INSTRUCTOR SUPPLEMENTS CALL CUSTOMER SUPPORT TO ORDER Study Guide and Laboratory Manual ISBN 0 8273 7390 2 Computerized Testbank ISBN 0 8273 7391 0 Instructor's Manual ISBN 0 8273 7389 9 Diagnostic Microbiology William Robert Bailey, Elvyn G. Scott, 1970

CLINICAL MICROBIOLOGY LABORATORY MANUAL, 2015-01-31 Fundamentals of Microbiology Marlene Demers, 2015-08-10 Microbiology James G. Cappuccino, Chad T. Welsh, 2016-01-12 This is the eBook of the printed book and may not include any media website access codes or print supplements that may come packaged with the bound book For courses in Microbiology Lab and Nursing and Allied Health Microbiology Lab A Flexible Approach to the Modern Microbiology Lab Easy to adapt for almost any microbiology lab course this versatile comprehensive and clearly written manual is competitively priced and can be paired with any undergraduate microbiology text Known for its thorough coverage straightforward procedures and minimal equipment requirements the Eleventh Edition incorporates current safety protocols from governing bodies such as the EPA ASM and AOAC The new edition also includes alternate organisms for experiments for easy customization in Biosafety Level 1 and 2 labs New lab exercises have been added on Food Safety and revised experiments and include options for alternate media making the experiments affordable and accessible to all lab programs Ample introductory material engaging clinical applications and laboratory safety instructions are provided for each experiment along with easy to follow procedures and flexible lab reports with review and critical thinking questions

Laboratory Manual for Microbiology Fundamentals: A Clinical Approach Susan Finazzo, Steven Obenauf, 2018-01-25 This laboratory manual for allied health or general microbiology has been written with the student in mind The authors have used their years of teaching microbiology and microbiology laboratory at all levels to identify and relate the fundamental concepts that are important to the understanding of the science and students success in their future field They have included case studies to exemplify the relevance of the science and extensive visual imagery to help students understand and learn the content Most importantly the authors hope this manual will help students experience the thrill of bench science and share some of the enthusiasm they have for microbiology a field of science that is dynamic exciting and touches every aspect of your life The third edition lab manual compliments content covered in Cowan's Microbiology Fundamentals A Clinical Approach 3 e *Microbiology Laboratory Manual* Adel M. Mahasneh, Salwa M. Bdour, 2006-01-01 This manual is designed to satisfy the needs of students enrolled in B Sc degree program in Biological Microbiological Agricultural and health professions It provides well balanced and chosen collection of relevant practical Microbiology Laboratory experiments Students will perform experiments and report on quantitative as well as descriptive data pertaining

to the concept they are tackling The experiments in this manual stresses the quantitative methods experimental controls data analysis as well as report writing The experiments were designed to provide maximum flexibility although each experiment represents well defined concept several experiments may be performed concurrently depending upon availability of tools and equipments as well as time constraints and students numbers in each laboratory session Several appendixes appear at the end of the manual which include staining techniques media composition and some bacterial diagnostic plates Descriptor s MICROBIOLOGY MICROSCOPIC ANALYSIS LABORATORIES TEACHING AIDS **Microbiology** James G.

Cappuccino,Natalie Sherman,2013-02-20 This is the eBook of the printed book and may not include any media website access codes or print supplements that may come packaged with the bound book Versatile comprehensive and clearly written this competitively priced laboratory manual can be used with any undergraduate microbiology text and now features brief clinical applications for each experiment and a new experiment on hand washing Microbiology A Laboratory Manual is known for its thorough coverage descriptive and straightforward procedures and minimal equipment requirements A broad range of experiments helps to convey basic principles and techniques Each experiment includes an overview an in depth discussion of the principle involved easy to follow procedures and lab reports with review and critical thinking questions Ample introductory material and laboratory safety instructions are provided **Microbiology, Laboratory Manual and**

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Lehman,2018-04-02 Learn to develop the problem solving skills necessary for success in the clinical setting The Textbook of Diagnostic Microbiology 6th Edition uses a reader friendly building block approach to the essentials of diagnostic microbiology This updated edition has new content on viruses like Zika an expanded molecular chapter and the latest information on prevention treatment modalities and CDC guidelines Updated photos offer clear examples of automated lab instruments while case studies review questions and learning objectives present information in an easy to understand accessible manner for students at every level A building block approach encourages you to use previously learned information to sharpen critical thinking and problem solving skills Full color design with many full color photomicrographs prepares you for the reality of diagnostic microbiology A case study at the beginning of each chapter provides you with the opportunity to form your own questions and answers through discussion points Hands on procedures describe exactly what takes place in the micro lab making content more practical and relevant Agents of bioterrorism chapter furnishes you with the most current information about this hot topic Issues to Consider boxes encourages you to analyze important points Case Checks throughout each chapter tie content to case studies for improved understanding Bolded key terms at the beginning of each chapter equip you with a list of the most important and relevant terms in each chapter Learning objectives at the beginning of each chapter supply you with a measurable outcome to achieve by completing the material Review questions for each learning objective help you think critically about the information in each chapter enhancing your comprehension and

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Microbiology: Applications to Patient Care Josephine Morello,Paul Granato,Helen Mizer,2010-08-20 The emphasis of this lab manual is on the basic principles of diagnostic microbiology for students preparing to enter an allied health field Students are led through a series of exercises that allow them to learn basic microbiology techniques and to practice safety in the laboratory and hospital environment It remains oriented primarily toward meeting the interests and needs of those who will be directly involved in patient care and who wish to learn how microbiological principles should be applied in the practice of their professions The authors have emphasized the purposes and function of the clinical microbiology laboratory in the diagnosis of infectious diseases The exercises illustrate as simply as possible the nature of laboratory procedures used for isolation and identification of infectious agents as well as the principles of asepsis disinfection and sterilization Attention is given to the role of the health professional in regard to appropriate collection of clinical specimens and the applications of aseptic and disinfectant techniques as they relate to patient care **Lab Manual and Workbook in Microbiology:**

Applications to Patient Care Paul A. Granato,Verna Morton, Microbiologist,Josephine A. Morello, Dr.,2013-09-30 The emphasis of this lab manual is on the basic principles of diagnostic microbiology for students preparing to enter an allied health field Students are led through a series of exercises that allow them to learn basic microbiology techniques and to practice safety in the laboratory and hospital environment It remains oriented primarily toward meeting the interests and needs of those who will be directly involved in patient care and who wish to learn how microbiological principles should be applied in the practice of their professions The authors have emphasized the purposes and function of the clinical microbiology laboratory in the diagnosis of infectious diseases The exercises illustrate as simply as possible the nature of laboratory procedures used for isolation and identification of infectious agents as well as the principles of asepsis disinfection and sterilization Attention is given to the role of the health professional in regard to appropriate collection of clinical specimens and the applications of aseptic and disinfectant techniques as they relate to patient care *Basic Laboratory Procedures in Clinical Bacteriology* Vandepitte J.,World Health Organization,2003-12-31 The 2nd edition of this publication

updates the various guidelines produced by the World Health Organization on the sampling of specimens for laboratory investigation identification of bacteria and the testing of antibiotic resistance focusing on quality control and assessment procedures to be followed rather than on basic techniques of microscopy and staining The publication is split into two parts part one deals with bacteriological investigations regarding blood cerebrospinal fluid urine stools upper and lower respiratory tract infections sexually transmitted diseases purulent exudates wounds and abscesses anaerobic bacteriology antimicrobial susceptibility testing and serological tests and part two considers key pathogens media and diagnostic reagents

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