

Examination of Living Microorganisms

EXERCISE

2



MICROBOME

OBJECTIVES

After completing this exercise, you should be able to:

1. Prepare and observe wet-mount slides and hanging-drop slides.
2. Distinguish motility from Brownian movement.

BACKGROUND



ADAPT: Demonstrate ability in properly preparing slides for microbiological examination including performing wet-mount and/or hanging-drop preparations and recording microscopic observations.

In **brightfield microscopy**, objects are dark and the field is light. Brightfield microscopy can be used to observe unstained microorganisms in wet mounts and hanging drop slides.

Observing Living Microbes

In this exercise, you will examine, using wet-mount techniques, different environments to help you become aware of the numbers and varieties of microbes found in nature. The microbes will exhibit either Brownian movement or true motility. **Brownian movement is not true motility but rather movement caused by the molecules in the liquid striking an object and causing the object to bounce.** In Brownian movement, the particles and microorganisms all vibrate at about the same rate and maintain their relative positions. Motile microorganisms move from one position to another. Their movement appears more directed than Brownian movement, and occasionally the cells may spin or roll.

Many kinds of microbes, such as protozoa, algae, fungi, and bacteria, can be found in pond water and in infusions of organic matter. The microbial communities in environments are called **microbiomes**.

Van Leeuwenhoek made some of his discoveries using a peppercorn infusion similar to the one you will see in this exercise. Direct examination of living microorganisms is very useful in determining size, shape, and movement. **Using a wet mount is a fast way to**

observe bacteria, but motility is difficult to determine because of the movement of the water. Motility and larger microbes are more easily observed in the greater depth provided by a hanging drop. Using a petroleum jelly seal reduces evaporation of the suspended drop offluid.

In this exercise, you will examine living microorganisms by brightfield microscopy.

Materials

Slides

Coverslips

Hanging-drop (depression) slide

Petroleum jelly

Toothpick

Pasteur pipettes

Alcohol

Gram's iodine

Inoculating loop

Cultures

Hay infusion, incubated 1 week in light

Hay infusion, incubated 1 week in dark

Peppercorn infusion

18- to 24-hour-old broth culture of *Bacillus*

Techniques Required

Compound light microscopy (Exercise 1)

PROCEDURE

Wet-Mount Technique

1. Suspend the infusions by stirring or shaking them carefully. Using a Pasteur pipette, transfer a very small drop of one hay infusion to a slide, or transfer a loopful using the inoculating loop, as demonstrated by your instructor.
2. Handle the coverslip carefully by its edges, and place it on the drop.

Medgar Microbio Lab Manual

Huangqi Zhang



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Bergey's Manual of Determinative Bacteriology David Hendricks Bergey, 1974 Phototrophic bacteria The gilding bacteria The sheathed bacteria Budding and or appendaged bacteria The spirochetes Spiral and curved bacteria Gram negative aerobic rods and cocci Gram negative facultatively anerobic rods Gram negative anaerobic bacteria Gram negative cocci and coccobacilli Gram negative anaerobic cocci Gram negative chemolithotrophic bacteria Methane producing bacteria Gram positive cocci Endospore forming rods and cocci Gram positive asporoge nous rod shaped bacteria Actinomycetes and related organisms The rickettsias The mycoplasmas *StarBriefs Plus* Andre Heck, 2004-03-31 With about 200 000 entries StarBriefs Plus represents the most comprehensive and accurately validated collection of abbreviations acronyms contractions and symbols within astronomy related space sciences and other related fields As such this invaluable reference source and its companion volume StarGuides Plus should be on the reference shelf of every library organization or individual with any interest in these areas Besides astronomy and associated space sciences related fields such as aeronautics aeronomy astronautics atmospheric sciences chemistry communications computer sciences data processing education electronics engineering energetics environment geodesy geophysics information handling management mathematics meteorology optics physics remote sensing and so on are also covered when justified Terms in common use and or of general interest have also been included where appropriate **Forthcoming Books** Rose Arny, 2002 **The British National Bibliography** Arthur James Wells, 2007 *World Guide to Libraries 20* K G Saur Books, K. G. Saur Verlag GmbH & Company, Walter de Gruyter GmbH, 2006 World Guide to Libraries lists more than 45 000 institutions in 181 countries This directory is arranged by continent and country Then subdivided by type of library national federal regional university school public special governmental parliamentary religious or business and city Included are Name listed in English and native national language Addresses Telephone fax and telex numbers E mail addresses Main and special collections Statistical holdings CD ROM holdings Networks and interlibrary loan programs *Fundamentals of Microbiology* Marlene Demers, 2015-08-10 *American Men and Women of Science* , 1986 MICROBIOLOGY LAB MANUAL. JANICE. SPESHOCK, 2024 **American Men & Women of Science** , 1992 Microbiology lab manual , 2011 *American Men & Women of Science, 1992-93* , 1992 **Basic and Practical Microbiology Lab Manual (First Edition)** Mette Ibba, Katherine Elasky, 2017-01-27 Basic and Practical Microbiology Lab Manual uses clear concise text and outstanding visuals to guide students through exercises that enhance their understanding of microbes Students learn about the role these diverse amazing organisms play in our lives and environment and gain a deeper understanding of the concepts of cultivation identification and control of microbial growth Organized into seven modules each featuring several laboratory exercises the manual provides up to date exercises on microbial diversity and ubiquity cultivating and staining cells for microscopy bacterial metabolism identifying unknown bacteria controlling bacterial growth symbiosis immunology and epidemiology The

written text engages students through real world examples and practices while easy to follow diagrams and figures help students complete the laboratory exercises with confidence Basic and Practical Microbiology Lab Manual includes a supplementary online component which offers videos of basic techniques flashcards games and quizzes that prepare students for in class tests Designed for introductory courses at the college level the book is ideal for the laboratory component of lecture courses in microbiology for both majors and non majors

Microbiology Lab Manual Roger Lightner, Joshua Burns, 2020-06-10 **Microbiology** Roger Lightner, 2017-12-20 American Men and Women of Science R. R. Bowker LLC, 1977 Who's who in Technology Today , 1982 **Microbiology Laboratory Manual** Robert W. Bauman, Nichol Dolby, 2010-08-10 **Microbiology Lab Manual** Werner Williams, 2017-07-31 *Microbiology Laboratory Manual* Joe Maciaszek, Maura Driscoll, Monica Strzempko, 2008-01-22 **General Microbiology** Cynthia Littlejohn, 2018-11-09

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Table of Contents Medgar Microbio Lab Manual

1. Understanding the eBook Medgar Microbio Lab Manual
 - The Rise of Digital Reading Medgar Microbio Lab Manual
 - Advantages of eBooks Over Traditional Books
2. Identifying Medgar Microbio Lab Manual
 - Exploring Different Genres
 - Considering Fiction vs. Non-Fiction
 - Determining Your Reading Goals
3. Choosing the Right eBook Platform
 - Popular eBook Platforms
 - Features to Look for in an Medgar Microbio Lab Manual
 - User-Friendly Interface
4. Exploring eBook Recommendations from Medgar Microbio Lab Manual
 - Personalized Recommendations
 - Medgar Microbio Lab Manual User Reviews and Ratings
 - Medgar Microbio Lab Manual and Bestseller Lists
5. Accessing Medgar Microbio Lab Manual Free and Paid eBooks
 - Medgar Microbio Lab Manual Public Domain eBooks
 - Medgar Microbio Lab Manual eBook Subscription Services
 - Medgar Microbio Lab Manual Budget-Friendly Options
6. Navigating Medgar Microbio Lab Manual eBook Formats

- ePub, PDF, MOBI, and More
- Medgar Microbio Lab Manual Compatibility with Devices
- Medgar Microbio Lab Manual Enhanced eBook Features
- 7. Enhancing Your Reading Experience
 - Adjustable Fonts and Text Sizes of Medgar Microbio Lab Manual
 - Highlighting and Note-Taking Medgar Microbio Lab Manual
 - Interactive Elements Medgar Microbio Lab Manual
- 8. Staying Engaged with Medgar Microbio Lab Manual
 - Joining Online Reading Communities
 - Participating in Virtual Book Clubs
 - Following Authors and Publishers Medgar Microbio Lab Manual
- 9. Balancing eBooks and Physical Books Medgar Microbio Lab Manual
 - Benefits of a Digital Library
 - Creating a Diverse Reading Collection Medgar Microbio Lab Manual
- 10. Overcoming Reading Challenges
 - Dealing with Digital Eye Strain
 - Minimizing Distractions
 - Managing Screen Time
- 11. Cultivating a Reading Routine Medgar Microbio Lab Manual
 - Setting Reading Goals Medgar Microbio Lab Manual
 - Carving Out Dedicated Reading Time
- 12. Sourcing Reliable Information of Medgar Microbio Lab Manual
 - Fact-Checking eBook Content of Medgar Microbio Lab Manual
 - Distinguishing Credible Sources
- 13. Promoting Lifelong Learning
 - Utilizing eBooks for Skill Development
 - Exploring Educational eBooks
- 14. Embracing eBook Trends
 - Integration of Multimedia Elements
 - Interactive and Gamified eBooks

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