

# Examination of Living Microorganisms

## EXERCISE

# 2



MICROBIOLOGY

## 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



After demonstrating safety in properly preparing slides for microscopical examination including performing wet-mount slides or hanging-drop preparations and executing microscope 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 of fluid.

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**

## **Medgar Microbio Lab Manual:**

**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 anaerobic 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 asporogenous 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

Demers,2015-08-10 *American Men and Women of Science* ,1986

SPESHOCK,2024 *American Men & Women of Science* ,1992

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

*Fundamentals of Microbiology* Marlene

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**Microbiology lab manual** ,2011 *American Men &*

*Women of Science, 1992-93* ,1992 **Basic and Practical Microbiology Lab Manual (First Edition)** Mette

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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