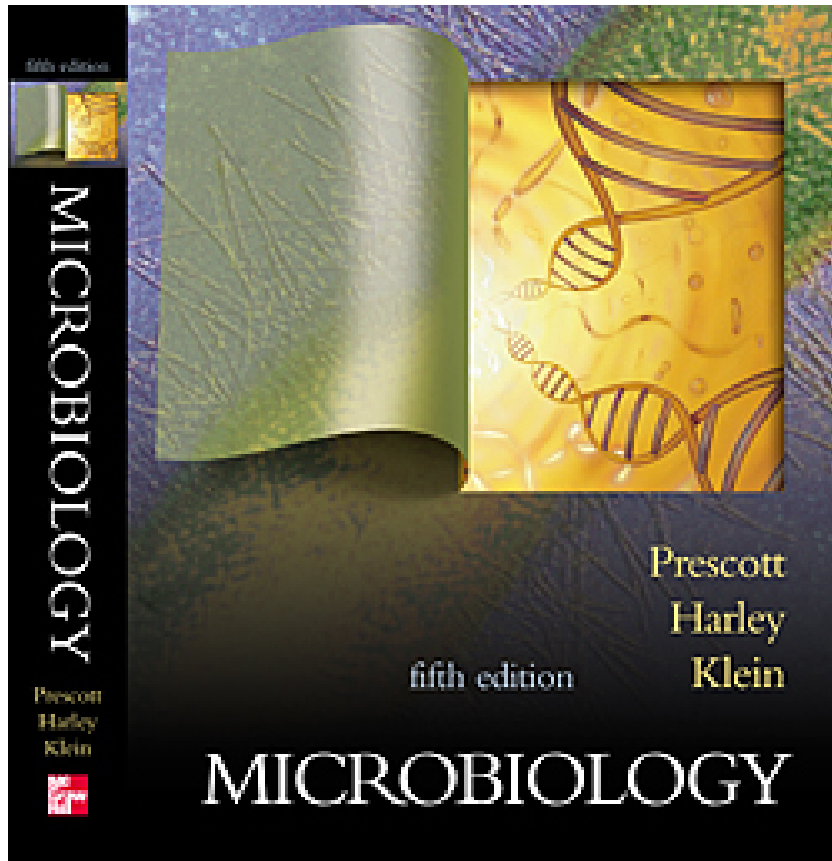


# Biology Ebook: Laboratory Exercise In Microbiology By Prescott Harley 5th Edition



Prescott, Harley and Klein's 5th edition provides a balanced, comprehensive introduction to all major areas of microbiology. Because of this balance, Microbiology, 5/e is appropriate for students preparing for careers in medicine, dentistry, nursing, and allied health, as well as research, teaching, and industry. Biology and chemistry are prerequisites.

Brief content of Laboratory Exercise in Microbiology:

## Laboratory Skills

A student successfully completing basic microbiology will demonstrate the ability to

**1. Use a bright-field light microscope to view and interpret slides,**

**including**

- a. correctly setting up and focusing the microscope
- b. proper handling, cleaning and storage of the microscope
- c. correct use of all lenses
- d. recording microscopic observations

**2. Properly prepare slides for microbiological examination, including**

- a. cleaning and disposal of slides
- b. preparing smears from solid and liquid cultures
- c. performing wet-mount and/or hanging drop preparations
- d. performing Gram stains

**3. Properly use aseptic techniques for the transfer and handling of microorganisms and instruments, including**

- a. sterilizing and maintaining sterility of transfer instruments
- b. performing aseptic transfer
- c. obtaining microbial samples

**4. Use appropriate microbiological media and test systems, including**

- a. isolating colonies and/or plaques
- b. maintaining pure cultures
- c. using biochemical test media
- d. accurately recording macroscopic observations

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**5. Estimate the number of microorganisms in a sample using serial dilution techniques, including**

- a. correctly choosing and using pipettes and pipetting devices

- b. correctly spreading diluted samples for counting
  - c. estimating appropriate dilutions
  - d. extrapolating plate counts to obtain correct CFU or PFU in the starting sample
- 6. Use standard microbiology laboratory equipment correctly, including**
- a. using the standard metric system for weights, lengths, diameters, and volumes
  - b. lighting and adjusting a laboratory burner
  - c. using an incubator

### **Laboratory Thinking Skills**

A student successfully completing basic microbiology will demonstrate an increased skill level in

#### **1. Cognitive processes, including**

- a. formulating a clear, answerable question
- b. developing a testable hypothesis
- c. predicting expected results
- d. following an experimental protocol

#### **2. Analysis skills, including**

- a. collecting and organizing data in a systematic fashion
- b. presenting data in an appropriate form  
(graphs, tables, figures, or descriptive paragraphs)
- c. assessing the validity of the data (including integrity and significance)
- d. drawing appropriate conclusions based on the results

#### **3. Communications skills, including**

- a. discussing and presenting laboratory results or findings in the laboratory

#### **4. Interpersonal and citizenry skills, including**

- a. working effectively in groups or teams so that the task, results, and analysis are shared
- b. effectively managing time and tasks to be done simultaneously, by individuals and within a group
- c. integrating knowledge and making informed judgments about microbiology in everyday life

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