

**Chapter 01: Scope of Microbiology and Infection Control**  
**Miller: Infection Control and Management of Hazardous Materials for the Dental Team, 7th Edition**

---

**MULTIPLE CHOICE**

1. Who is reported to have first observed microbes?
  - a. Pasteur
  - b. Oliver Wendell Holmes
  - c. Lister
  - d. Leeuwenhoek

ANS: D

Pasteur, Oliver Wendell Holmes, and Lister made other important contributions to microbiology. Leeuwenhoek first observed microbes and called them “animalcules.”

PTS: 1                      DIF: Recall                      REF: p. 2                      OBJ: 2  
TOP: CDA, Infection Control, Does not apply

2. What year were microbes first observed?
  - a. 1667
  - b. 1880
  - c. 1956
  - d. 1975

ANS: A

Leeuwenhoek first observed microbes and called them “animalcules” in 1667, 1880, 1956, and 1975 are all too recent.

PTS: 1                      DIF: Recall                      REF: p. 2                      OBJ: 2  
TOP: CDA, Infection Control, Does not apply

3. Choose the microbial killing method referred to as pasteurization.
  - a. 121°C for 20 minutes
  - b. 212°F for 5 minutes
  - c. 63°C for 30 minutes
  - d. 37°C for 10 minutes

ANS: C

121°C for 20 minutes achieves sterilization. 212°F for 5 minutes is the temperature of boiling water. 63°C for 30 minutes achieves pasteurization which kills harmful microbes in liquids such as milk. 37°C for 10 minutes is body temperature.

PTS: 1                      DIF: Application                      REF: p. 2                      OBJ: 2  
TOP: CDA, Infection Control, III.A. Instrument/device processing

4. When was the “Golden Age of Microbiology”?
  - a. Mid to late 1600s
  - b. Mid to late 1700s
  - c. Mid to late 1800s

d. Mid to late 1900s

ANS: C

Mid to late 1600s and mid to late 1700s were too early. Mid to late 1800s was the time when many new discoveries in microbiology were made. Mid to late 1900s was too late.

PTS: 1                      DIF: Recall                      REF: p. 2                      OBJ: 2  
TOP: CDA, Infection Control, Does not apply

5. What microbes are used to make vinegar, vitamins, drain cleaners, enzymes, and other products?
- Fungi
  - Viruses
  - Protozoa
  - Bacteria

ANS: D

Fungi can make antibiotics but not these products. Viruses grow inside living cells and do not make such products. Protozoa are not very efficient in making such products. Bacteria make these and other products when they are grown in large vats.

PTS: 1                      DIF: Recall                      REF: p. 3                      OBJ: 3  
TOP: CDA, Infection Control, Does not apply

6. Which microbes are used to make pickles out of cucumbers?
- Bacteria or fungi
  - Fungi or viruses
  - Viruses or yeasts
  - Bacteria of viruses

ANS: A

Bacteria or fungi make certain extracellular products that change cucumbers into pickles. Viruses do not produce products that affect cucumbers.

PTS: 1                      DIF: Recall                      REF: p. 3                      OBJ: 3  
TOP: CDA, Infection Control, Does not apply

7. What microbe is used to make bread dough rise?
- Bacteria
  - Yeasts
  - Viruses
  - Protozoa

ANS: B

Bacteria do not produce enough carbon dioxide (CO<sub>2</sub>) to make the dough rise. Yeasts metabolize carbohydrates to produce the gas bubbles of CO<sub>2</sub> which causes the dough to rise. Viruses only grow inside of living cells and do not have a regular metabolism. Protozoa do not produce enough carbon dioxide (CO<sub>2</sub>) to make the dough rise.

PTS: 1                      DIF: Recall                      REF: p. 3                      OBJ: 3  
TOP: CDA, Infection Control, Does not apply

## COMPLETION

1. Louie Pasteur and John Tyndall first recognized the use of \_\_\_\_\_ to destroy bacteria and resistant spores.

ANS:  
heat

Other physical procedures were found not to be as efficient as heat for killing microbes.

PTS: 1                      DIF: Recall                      REF: p. 2                      OBJ: 2  
TOP: CDA, Infection Control, III.A. Instrument/device processing

2. In 1915 it was discovered that bacteria can be infected with viruses called \_\_\_\_\_.

ANS:  
bacteriophages

Animal viruses had been previously discovered, so they gave bacterial viruses a different name – bacteriophages – phage means “to eat.”

PTS: 1                      DIF: Recall                      REF: p. 3                      OBJ: 1  
TOP: CDA, Infection Control, Does not apply

3. Microbiology is the study of bacteria, molds, yeasts, protozoa, certain algae, viruses and \_\_\_\_\_.

ANS:  
archaea

Archaea are single cell microbes morphologically similar to bacteria, but their genes and metabolic pathways are more closely related to eukaryotes. While they may be present in the human body, there have been no clear examples of archaeal human pathogens.

PTS: 1                      DIF: Recall                      REF: p. 2                      OBJ: 2  
TOP: CDA, Infection Control, Does not apply

## TRUE/FALSE

1. The disease of smallpox was involved in the discovery of immunizations in the 1790s by Edward Jenner.

ANS: T  
Edward Jenner is credited with recognizing the concept of immunization when he realized in the 1790s that milkmaids who caught cowpox, a mild disease, were protected from the more serious disease of smallpox.

PTS: 1                      DIF: Recall                      REF: p. 2                      OBJ: 2  
TOP: CDA, Infection Control, I.A. Standard precautions and the prevention of disease transmission