

## CONCEPT: INTRODUCTION TO MICROBIOLOGY

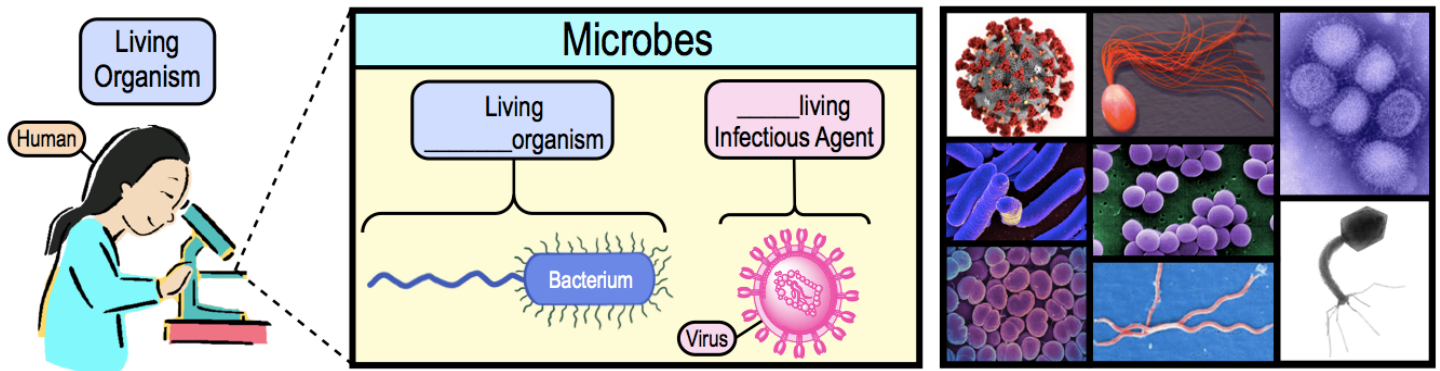
● **Microbiology:** the study of **microbes** (organisms & infectious agents too \_\_\_\_\_ to be seen by the naked eye).

- Prefix “\_\_\_\_\_” means *small*. □ **Biology:** the scientific study of \_\_\_\_\_.

● \_\_\_\_\_: the *smallest, most basic/fundamental* unit of life.

- \_\_\_\_\_: any individual form of life (can be *unicellular* or *multicellular*).
- **Microorganism:** living organism too *small* to see with the naked eye.
- **Microbes:** includes *microorganisms* AND \_\_\_\_\_-living *infectious agents* too small to be seen by the naked eye.

**EXAMPLE:** Microbiology: Microorganism vs. Microbes.



**PRACTICE:** Which of these is considered a microbe but NOT a microorganism?

- a) SARS-CoV-2 (Covid-19 virus).
- b) *Escherichia coli* bacterium.
- c) *Necator americanus* (a hookworm).
- d) *Dinobryon divergens* (Golden Algae).
- e) None of the above, all are microorganisms.

**PRACTICE:** Which of these are characteristics of microorganisms?

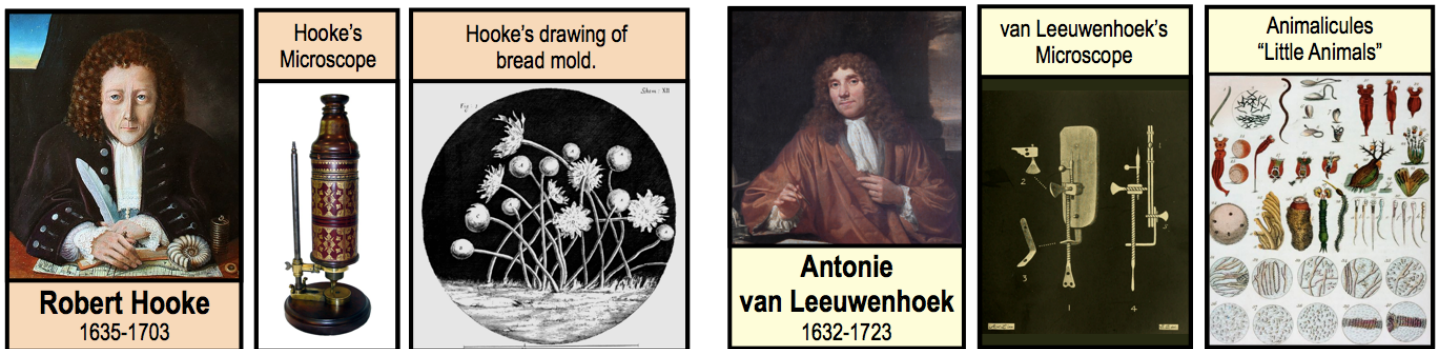
- a) Microorganisms are so small they cannot be seen with the naked eye.
- b) Microorganisms can be multicellular or unicellular.
- c) Microorganisms include the smallest units of life and non-living infectious agents.
- d) Microorganisms can have DNA or RNA as their genetic material.
- e) A and B are correct.
- f) C and D are correct.
- g) All of the above are characteristics of microorganisms.

## CONCEPT: INTRODUCTION TO MICROBIOLOGY

### Discovering Microorganisms

- The existence of microorganisms was discovered during the time period between 1665 - 1674.
- In 1665, *Robert \_\_\_\_\_*, an English microscopist, was the first to visualize & depict a microorganism.
  - He described a common bread *mold* (*Mucor*) as a “microscopical mushroom.”
- In 1674, *Antonie van Leeuwenhoek*, a Dutch merchant, analyzed a drop of lake water with a microscope & saw microbes!
  - He described & depicted *protozoa* & *bacteria*, calling them “animalcules.”
- Hooke & Leeuwenhoek both deserve \_\_\_\_\_ credit for revealing the microbial world!

**EXAMPLE:** Discovering the Microbial World.



**PRACTICE:** Antonie van Leeuwenhoek observed microorganisms under his microscope and called them “animalcules” (little animals). Which microorganisms did he observe?

- a) Algae and bacteria.
- b) Bacteria and protozoa.
- c) Bacteria and viruses.
- d) Protozoa and viruses.
- e) He observed all of the above.

**PRACTICE:** Robert Hook’s and Antonie van Leeuwenhoek’s microscopes were not powerful enough to observe:

- a) Roundworms.
- b) *Escherichia coli* bacteria.
- c) Yeast cells.
- d) Viruses.