

Chapter 1 Introduction to Microbiology

What is microbiology?

Microbiology is the study of *microorganisms* or *microbes*, which are often invisible to the naked eye.



The term **microbe** encompasses:

- Cellular, living microorganisms such as *bacteria, archaea, fungi, protists, and helminths*.
- Nonliving/noncellular entities such as *viruses and prions (infectious proteins)*
- Microorganisms that are not microscopic such as some *fungi, helminths, and protists* (however, part of their life cycle is microscopic)

Table 1.1 Living and Nonliving Agents Studied in Microbiology

Microbe	Cell Type	Notes
Bacteria	Prokaryotic	Unicellular; pathogenic and nonpathogenic
Archaea	Prokaryotic	Unicellular; nonpathogenic; live in extreme environments
Protists	Eukaryotic	Unicellular and multicellular; pathogenic and nonpathogenic (unicellular example: amoebas; multicellular example: algae)
Fungi	Eukaryotic	Unicellular and multicellular; pathogenic and nonpathogenic (unicellular example: yeast; multicellular example: mushrooms)
Helminths	Eukaryotic	Multicellular; parasitic roundworms and flatworms
Viruses	Not cells; nonliving	Infect animal, plant, or bacterial cells; can have a DNA or RNA genome
Prions	Not cells; nonliving; infectious proteins	Not discovered until the 1980s; transmitted by transplant or ingestion; some prion diseases are inherited

***Unicellular = one-celled organism;**
multicellular = organism made of many cells

- At least half of Earth's life is microbial.
- Microbes inhabit almost every region of our planet.
- Deep-sea trenches to glaciers.

<i>Prokaryotic cells</i>	<i>Eukaryotic cells</i>
<ul style="list-style-type: none"> • Evolved about <u>3.5 billion years ago</u> 	<ul style="list-style-type: none"> • <u>All multicellular organisms and a number of unicellular</u>

Microbiology An Introduction Chapter 1

L Darling-Hammond



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