

Chapter 1 - Introduction: Ten Themes in the Study of Life

Introduction: Themes in the Study of Life

Briefly describe the unifying themes that pervade the biological sciences.

Exploring Life on its Many Levels

- Diagram the hierarchy of structural levels in biology.
- Explain how the properties of life emerge from complex organization.
- Describe the seven properties of life.
- Describe the dilemma of reductionism.
- Explain how technological breakthroughs contributed to the formulation of the cell theory and our current knowledge of the cell.
- Distinguish between prokaryotic and eukaryotic cells.
- Describe the structure and function of DNA.
- Explain what is meant by "form fits function."
- Explain how an organism is a type of open system.
- Describe the two major dynamic processes of any ecosystem
- Explain how regulatory mechanisms control reactions in organisms.

Evolution, Unity, and Diversity

- Distinguish among the three domains of life. List and distinguish among the kingdoms of eukaryotic life.
- Briefly describe how Charles Darwin's ideas contributed to the conceptual framework of biology.

Science as a Process

- Outline the scientific method.
- Distinguish between inductive and deductive reasoning.
- Distinguish between a scientific hypothesis and a scientific theory.
- Explain how science is influenced by social and cultural factors.
- Explain how science and technology are interdependent.