

♦ *Chapter 1: Introduction - Themes in the Study of Life*

Outline

- I. Life is organized on many structural levels
- II. Each level of biological organization has emergent properties
- III. Cells are an organism's basic units of structure and function
- IV. The continuity of life is based on heritable information in the form of DNA
- V. A feeling for organisms enriches the study of life
- VI. Structure and function are correlated at all levels of biological organization
- VII. Organisms are open systems that interact continuously with their environments
- VIII. Diversity and unity are the dual faces of life on Earth
- IX. Evolution is the core theme of biology
- X. Science as a process of inquiry often involves hypothetico-deductive thinking
- XI. Science and technology are functions of society
- XII. Biology is a multidisciplinary adventure

Key Terms

emergent property	holism	evolution	control group
reductionism	natural selection	variable	prokaryotic
scientific method	experimental group	eukaryotic	hypothesis
deductive reasoning	taxonomy	scientific theory	biogenesis
inductive reasoning			

Objectives

After reading this chapter, the student should be able to:

- 1 Briefly describe unifying themes that pervade the science of biology.
- 2 Describe seven emergent properties associated with life.
- 3 Explain how technological breakthroughs contributed to the formulation of the cell theory and our current knowledge of the cell.
- 4 Distinguish between prokaryotic and eukaryotic cells.
- 5 Explain, in your own words, what is meant by "form fits function".
- 6 Outline the scientific method.
- 7 Distinguish between inductive and deductive reasoning.
- 8 Explain how science and technology are interdependent.