

SCIENCE (Ch. 1)

1. INTRODUCTION

science - analytical thinking or reasoning

goals - (1) explain why things happen

(2) predict what would happen if...

2. SCIENTIFIC METHOD

observation

develop hypothesis - initial explanation

test hypothesis

- gather data thru observations or experiments
- experimental vs control groups

analyze hypothesis - compare data with explanation

- revise hypothesis
- retest hypothesis
- reanalyze hypothesis

communication

3. SCIENTIFIC EXPLANATIONS

hypothesis - tentative guess

theory - well-accepted, high degree authority

law or axiom - absolutely true without exceptions

4. LIMITATIONS OF SCIENCE

unique phenomenon - happens once

experimental artifacts - conditions modified during study

social-political values - opinions

religious-philosophical belief -faith

5. CHARACTERISTICS OF LIFE

highly organized

converts energy

homeostasis - maintain stable internal environment

responds to external stimulus

adapted to environment

grows & develops

reproduces

evolves

6. LEVELS OF ORGANIZATION

1. atoms
2. molecules
3. organelles
4. cells
5. tissues
6. organs
7. organ systems
8. organism
9. population

7. KINGDOMS OF LIFE

traditional system - plant vs animal

modern system - no. of cells & nutrition

- Monera - unicell, bacteria
- Protista - unicell, protozoa etc.
- Plantae - multicell, photosynthetic
- Fungi - multicell, absorptive
- Animalia - multicell, ingestive

Kingdom Animalia - over 30 groups of invertebrates
- 1 group vertebrates (bony skeleton)

humans - little hair, reduced jaw

- bipedal, year-round sexuality
- large brain, culture & learning

8. STUDY OF LIFE

biology - study of all forms of life

microbiology - Monera & Protista

botany - Plantae & Fungi

zoology - Animalia

anatomy - body structures

physiology - body functions (esp. chemistry)

9. PHILOSOPHY OF LIFE

mechanistic - merely sum of parts

vitalistic - an unspecified vital force

modern view - combination of both
- not machine nor metaphysical force

anthropomorphism- attribute human motives to animals

animal rights

- reductionistic - equal to humans
- pluralistic - increase with proximity

stewardship - humans dominate to protect planet
- responsible for organisms & habitats