

## *Introduction: biodiversity*

- ❖ Studying biodiversity
- ❖ What is life?
- ❖ Evolution, unity and diversity



## *Biodiversity*

- ❖ The diversity of life

## *Studying biodiversity*

- ❖ Scientists use discovery science *and* the scientific method to investigate diversity
- ❖ Is a sponge a plant or animal?
- ❖ Describe the organism
- ❖ Compare it to plants and animals: comparative anatomy

Sponge  
Phylum: porifera



photo: David Read

## *Life is...*

## *What is life?*

- ❖ Living things are made up of cells
- ❖ All have DNA
- ❖ Reproduce
- ❖ Grow and develop
- ❖ Obtain and use energy
- ❖ Respond to environment

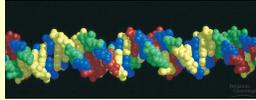
## *Unity in life's vast diversity*

- ❖ All forms of life have common features
  - ♦ All are made of cells
  - ♦ All have DNA as their genetic blueprint
- ❖ These orchids show the variety possible within one species



Presentation adapted from: Campbell, N., Reece, J., Mitchell, L., Taylor, M., 2003. *Biology: Concepts and Connections*. Powerpoint lectures: Pearson Education, Inc. publishing as Benjamin Cummings

- ❖ DNA is made of chemical units called nucleotides



- ❖ Each species has its own nucleotide sequence
- ❖ There is variation among individuals of a species
- ❖ Individuals pass their DNA to their offspring

- ❖ The genetic information in DNA underlies all of the features that distinguish life from non-life

- ♦ Growth and development
- ♦ Use of energy from the environment
- ♦ Response to environmental stimuli
- ♦ Ability to reproduce
- ♦ Evolutionary change

## *EVOLUTION, UNITY, AND DIVERSITY*

*The diversity of life is catalogued*

- ❖ Taxonomy: grouping organisms by fundamental features
- ❖ Scientists classify organisms into a hierarchy of broader and broader groups

*Evolution explains the unity and diversity of life*

- ❖ Charles Darwin synthesized the theory of evolution by natural selection
- ❖ Evolution is the core theme of biology

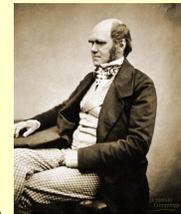
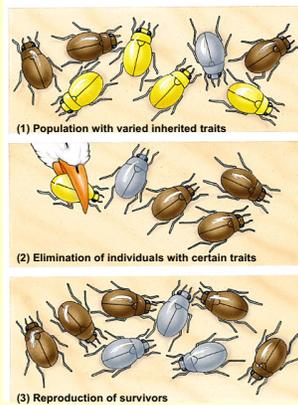


Figure 1.6A

- ❖ Natural selection is the main mechanism whereby all species change, or evolve



- ❖ Evolution happens when populations of organisms with inherited variations are exposed to environmental factors that favor the success of some individuals over others

- ♦ Natural selection is the editing mechanism
- ♦ Evolution is based on adaptations

