



Objectives

- ✿ **Identify** three important themes that help explain the living world.
- ✿ **Explain** how life can be diverse, yet unified.
- ✿ **Describe** how living organisms are interdependent.
- ✿ **Summarize** why evolution is an important theme in biology.



Biological Themes

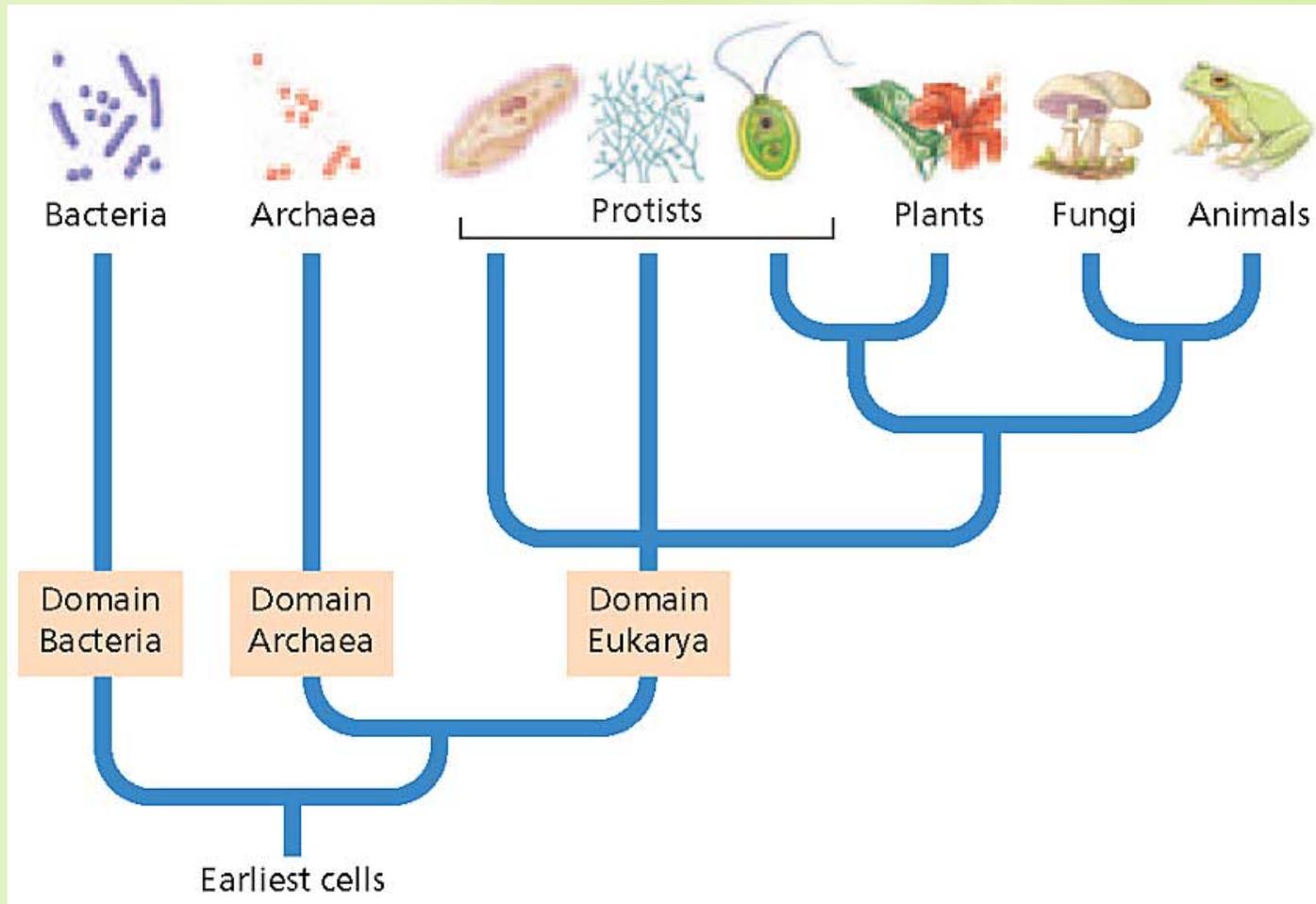
- ✿ There are three reoccurring themes that we will focus on through our study of biology.
- ✿ Despite the variety of subjects covered in biology, these themes can almost always be seen.
 - ✿ Unity and Diversity
 - ✿ Interdependence
 - ✿ Evolution of Life



Unity and Diversity

- ✿ There are millions of different species on the planet, each with its own unique characteristics. (Diversity)
- ✿ Despite the large number of different species, all living organisms have similarities. (Unity)
- ✿ Even though a tree and a human seem to have nothing in common on the outside, both need a source of energy to survive, both reproduce, contain DNA, respond to stimuli, and grow.

Phylogenetic Tree of Life





Biology meets Literature

✿ ***"All mankind is of one author, and is one volume; when one man dies, one chapter is not torn out of the book, but translated into a better language; and every chapter must be so translated...As therefore the bell that rings to a sermon, calls not upon the preacher only, but upon the congregation to come: so this bell calls us all...No man is an island, entire of itself...any man's death diminishes me, because I am involved in mankind; and therefore never send to know for whom the bell tolls; it tolls for thee."***

- John Donne



Interdependence of Organisms

- ✿ Organisms live in interdependent communities and interact with other organisms and the environment.
- ✿ This means that one type of organism may be dependent on a different type of organism to survive?
- ✿ Examples?
 - ✿ Fleas are dependent on other animals.
 - ✿ We are dependent of plants and animals for food.
 - ✿ Plants are dependent on “dead” organisms for nutrients.



Evolution of Life

- ✿ **Evolution**, or descent with modification, is the process in which the inherited characteristics within populations change over generations.
- ✿ Evolution helps to explain how species came to exist, have changed over time, and adapt to their environment.
- ✿ The characteristics of organisms make them more or less fit for certain circumstances, and therefore more or less likely to survive.



Evolution in Practice

- ✿ Pair up with your neighbor.
- ✿ Assume that the color of your clothes are genetic.
- ✿ How will your pair (and future generations) respond to the following environmental changes?
 - ✿ Excessive Snow (White-out)
 - ✿ Excessive Heat
 - ✿ Increase in Vegetation
 - ✿ Being at the NC/Carmel Football game



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