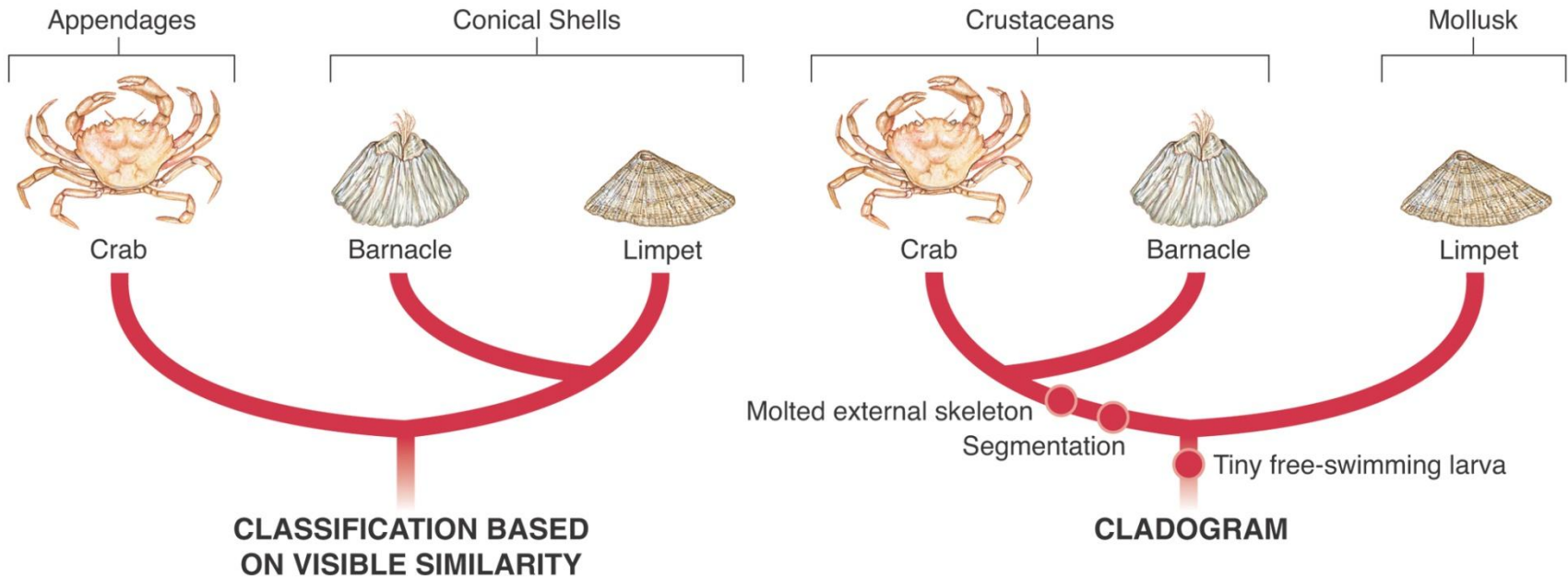


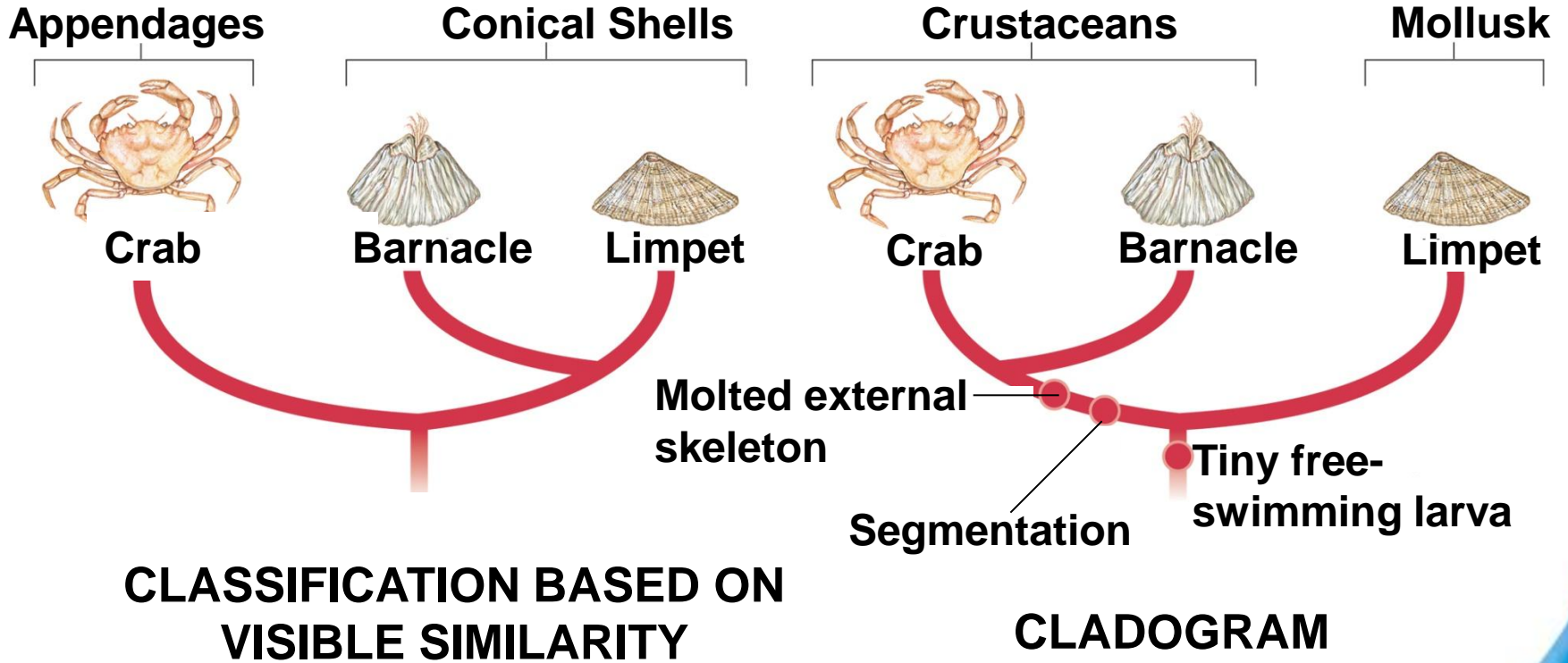
18-2 Modern Evolutionary Classification



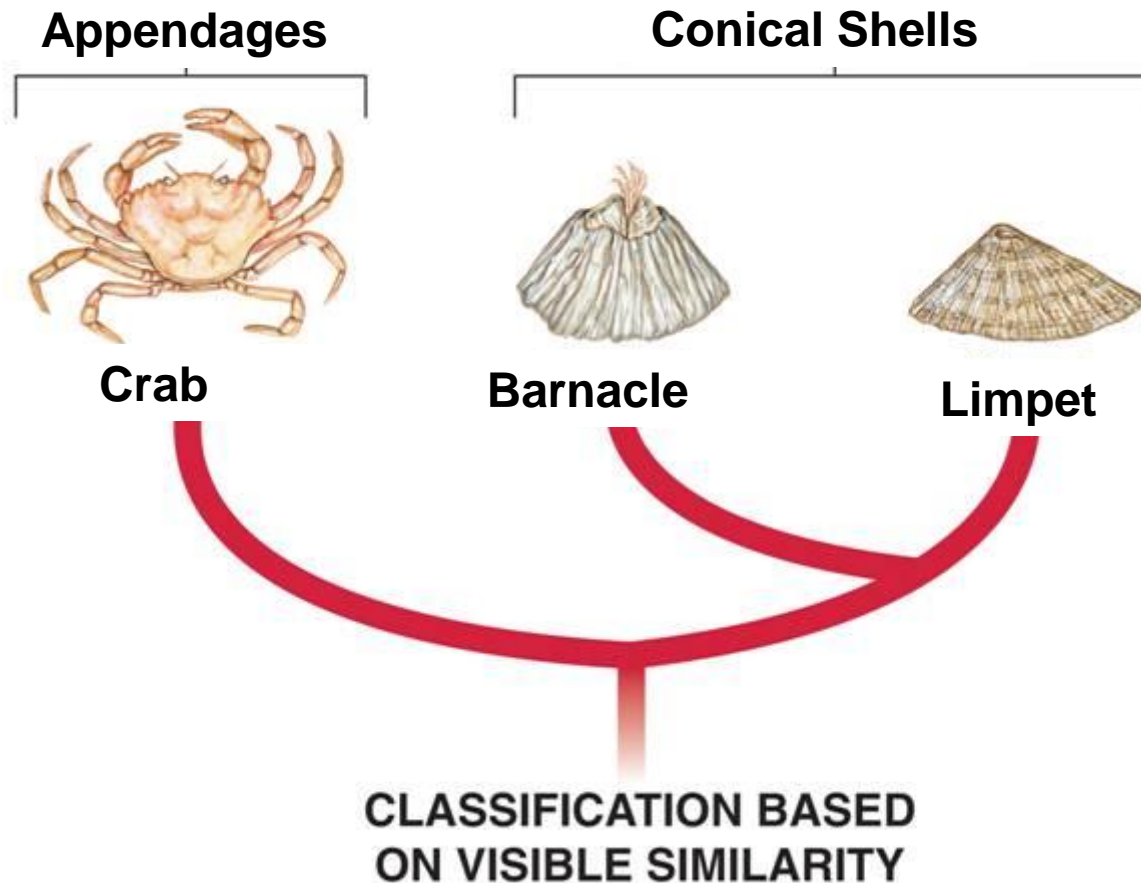


Biologists currently group organisms into categories that represent lines of evolutionary descent, or phylogeny, not just physical similarities.

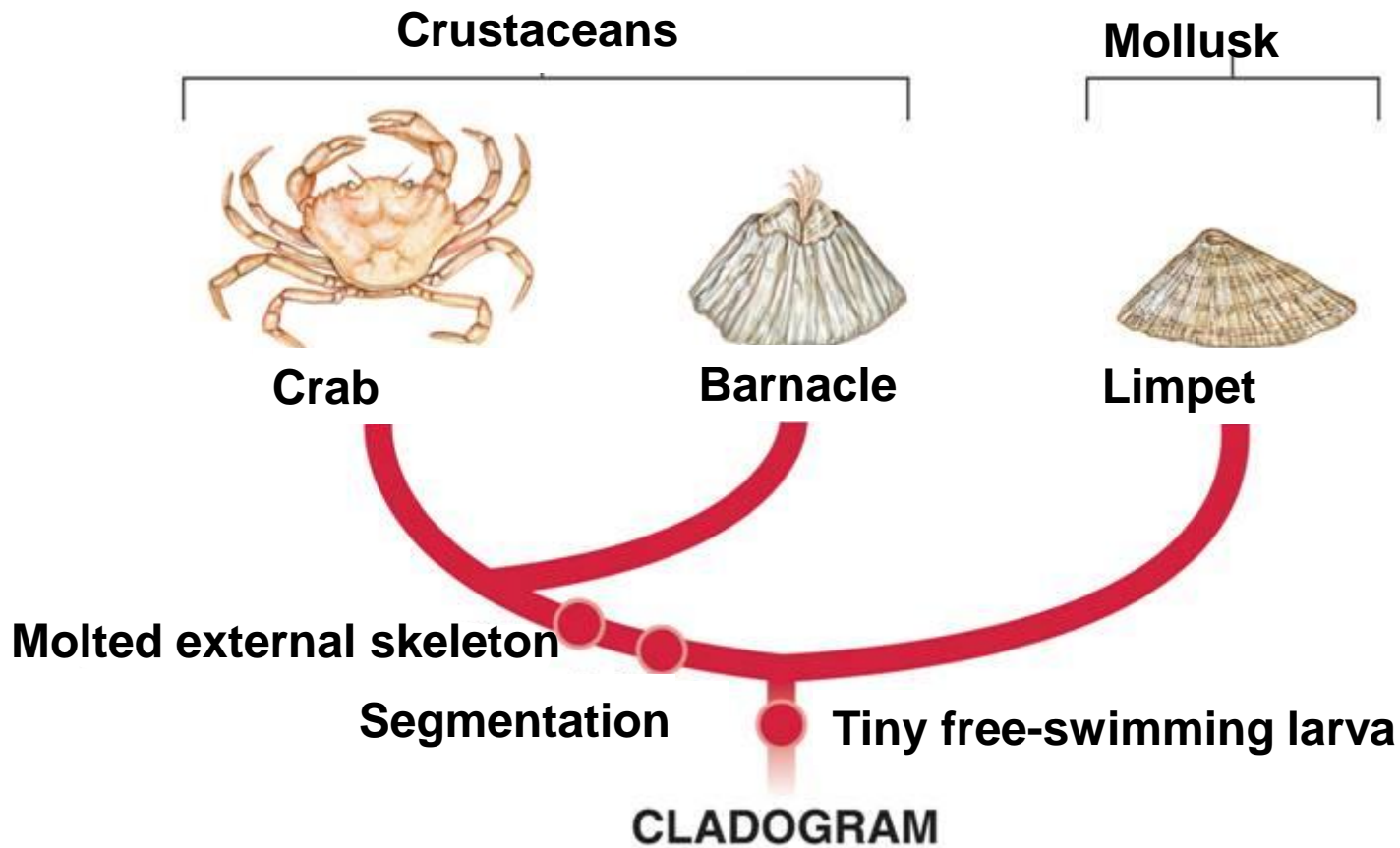
Different Methods of Classification



Superficial similarities once led barnacles and limpets to be grouped together.



A cladogram shows the evolutionary relationships between crabs, barnacles, and limpets.



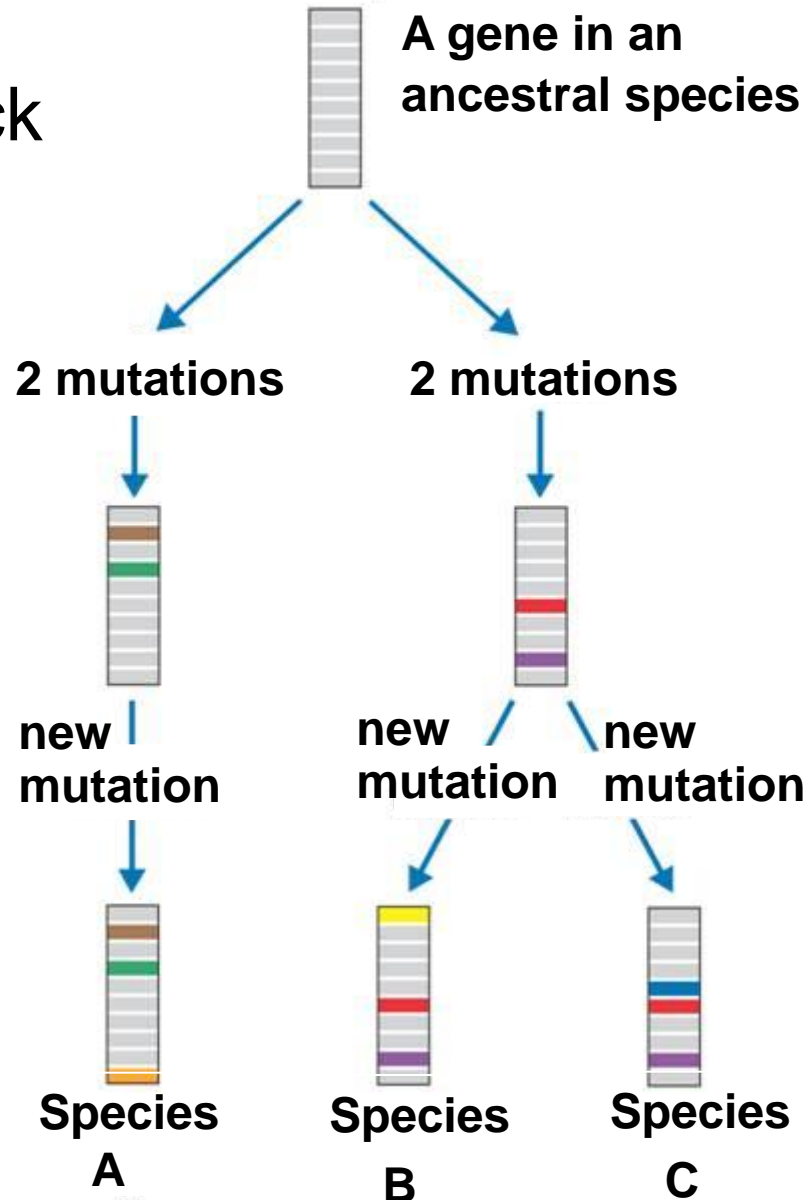
Similarities in DNA and RNA



The genes of many organisms show important similarities at the molecular level.

Similarities in DNA can be used to help determine classification and evolutionary relationships.

Molecular Clock



18-3 Kingdoms and Domains



Five Kingdoms

Scientists realized there were enough differences among organisms to make 5 kingdoms:

- Monera
- Protista
- Fungi
- Plantae
- Animalia



The six-kingdom system of classification includes:

- **Eubacteria**
- **Archaeobacteria**
- **Protista**
- **Fungi**
- **Plantae**
- **Animalia**

Changing Number of Kingdoms

Introduced	Names of Kingdoms					
1700's	Plantae					Animalia
Late 1800's	Protista			Plantae		Animalia
1950's	Monera		Protista	Fungi	Plantae	Animalia
1990's	Eubacteria	Archaeobacteria	Protista	Fungi	Plantae	Animalia



The three domains are:

- **Eukarya, which is composed of protists, fungi, plants, and animals.**
- **Bacteria, which corresponds to the kingdom Eubacteria.**
- **Archaea, which corresponds to the kingdom Archaeobacteria.**

The domain Bacteria corresponds to the kingdom **Eubacteria**.

Classification of Living Things	
DOMAIN	Bacteria
KINGDOM	Eubacteria
CELL TYPE	Prokaryote
CELL STRUCTURES	Cell walls with peptidoglycan
NUMBER OF CELLS	Unicellular
MODE OF NUTRITION	Autotroph or heterotroph
EXAMPLES	<i>Streptococcus</i> , <i>Escherichia coli</i>

The domain Archaea corresponds to the kingdom **Archaeobacteria.**

Classification of Living Things	
DOMAIN	Archaea
KINGDOM	Archaeobacteria
CELL TYPE	Prokaryote
CELL STRUCTURES	Cell walls without peptidoglycan
NUMBER OF CELLS	Unicellular
MODE OF NUTRITION	Autotroph or heterotroph
EXAMPLES	Methanogens, halophiles

Domain Eukarya

The domain **Eukarya** consists of organisms that have a nucleus.

This domain is organized into four kingdoms:

- Protista
- Fungi
- Plantae
- Animalia

Classification of Living Things				
DOMAIN	Eukarya			
KINGDOM	Protista	Fungi	Plantae	Animalia
CELL TYPE	Eukaryote	Eukaryote	Eukaryote	Eukaryote
CELL STRUCTURES	Cell walls of cellulose in some; some have chloroplasts	Cell walls of chitin	Cell walls of cellulose; chloroplasts	No cell walls or chloroplasts
NUMBER OF CELLS	Most unicellular; some colonial; some multicellular	Most multicellular; some unicellular	Multicellular	Multicellular
MODE OF NUTRITION	Autotroph or heterotroph	Heterotroph	Autotroph	Heterotroph
EXAMPLES	<i>Amoeba</i> , <i>Paramecium</i> , slime molds, giant kelp	Mushrooms, yeasts	Mosses, ferns, flowering plants	Sponges, worms, insects, fishes, mammals

END OF SECTION