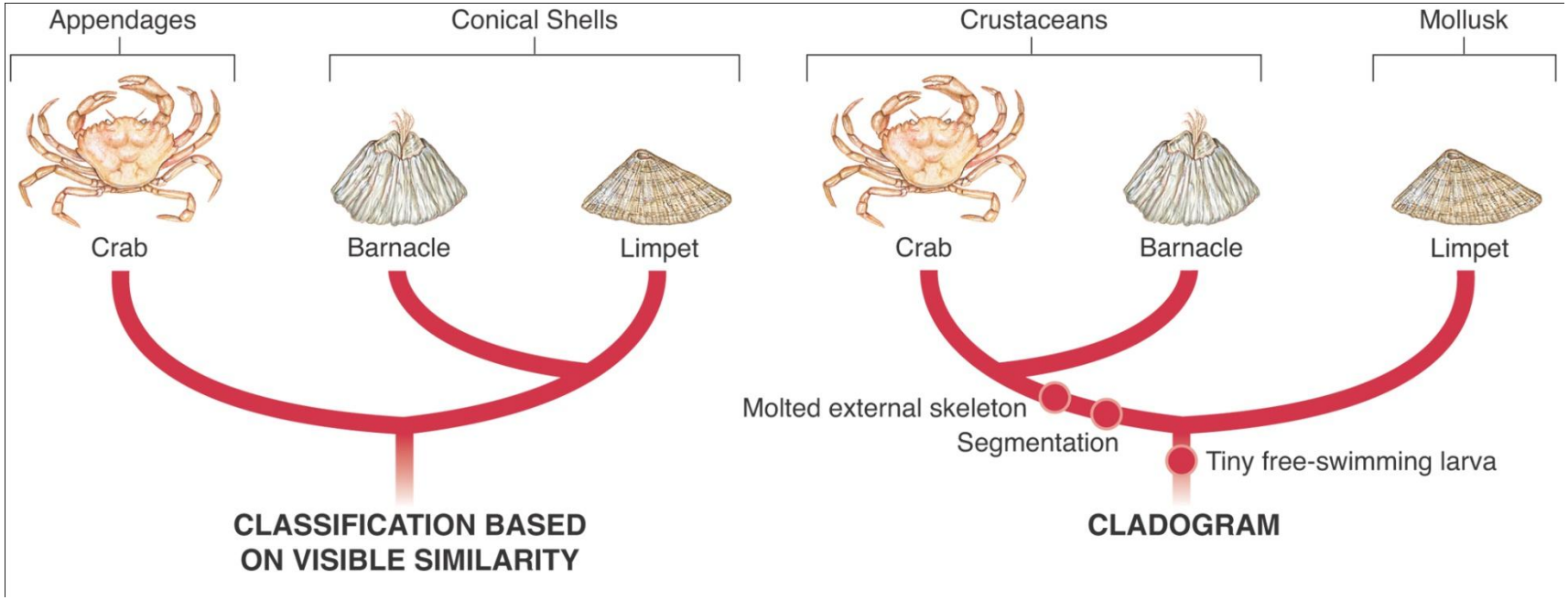
18-2 Modern Evolutionary Classification



Which Similarities Are Most Important?

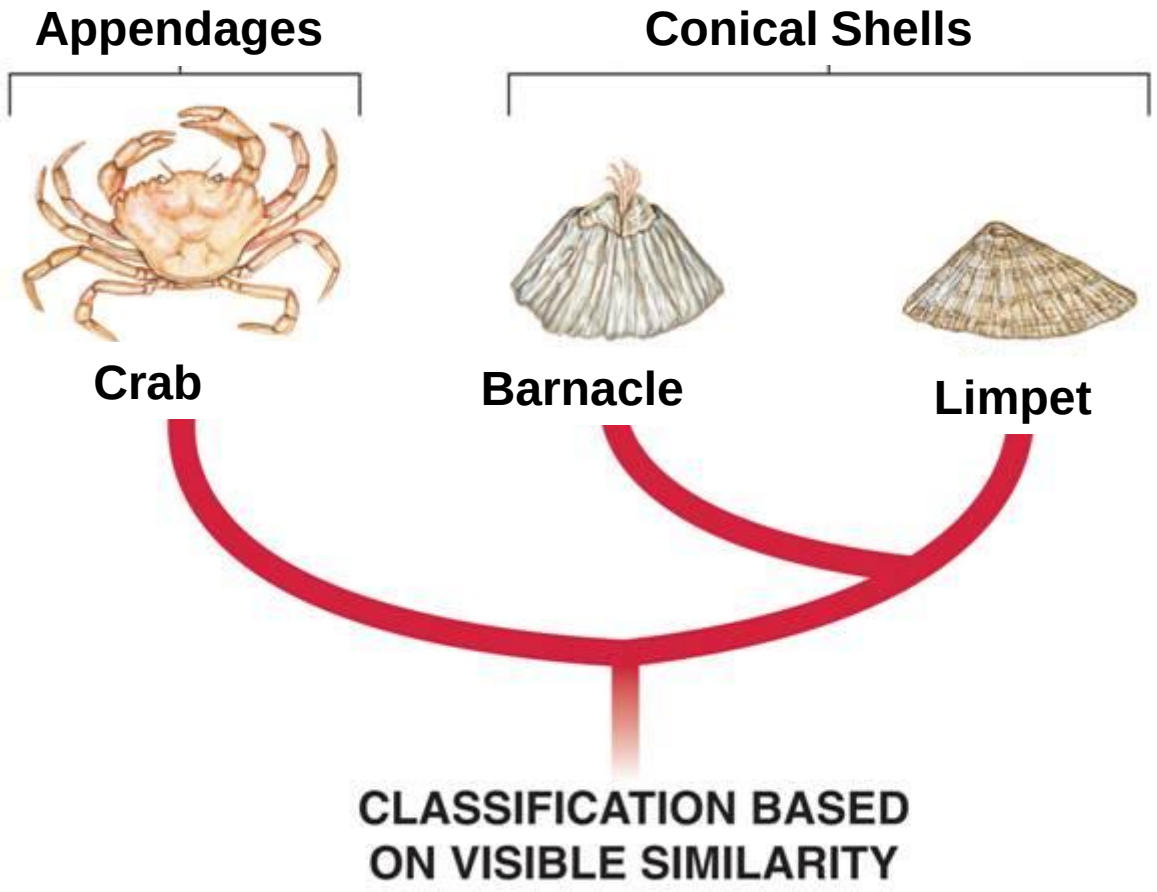
Linnaeus grouped species into larger taxa mainly according to visible similarities and differences.

How are evolutionary relationships important in classification?

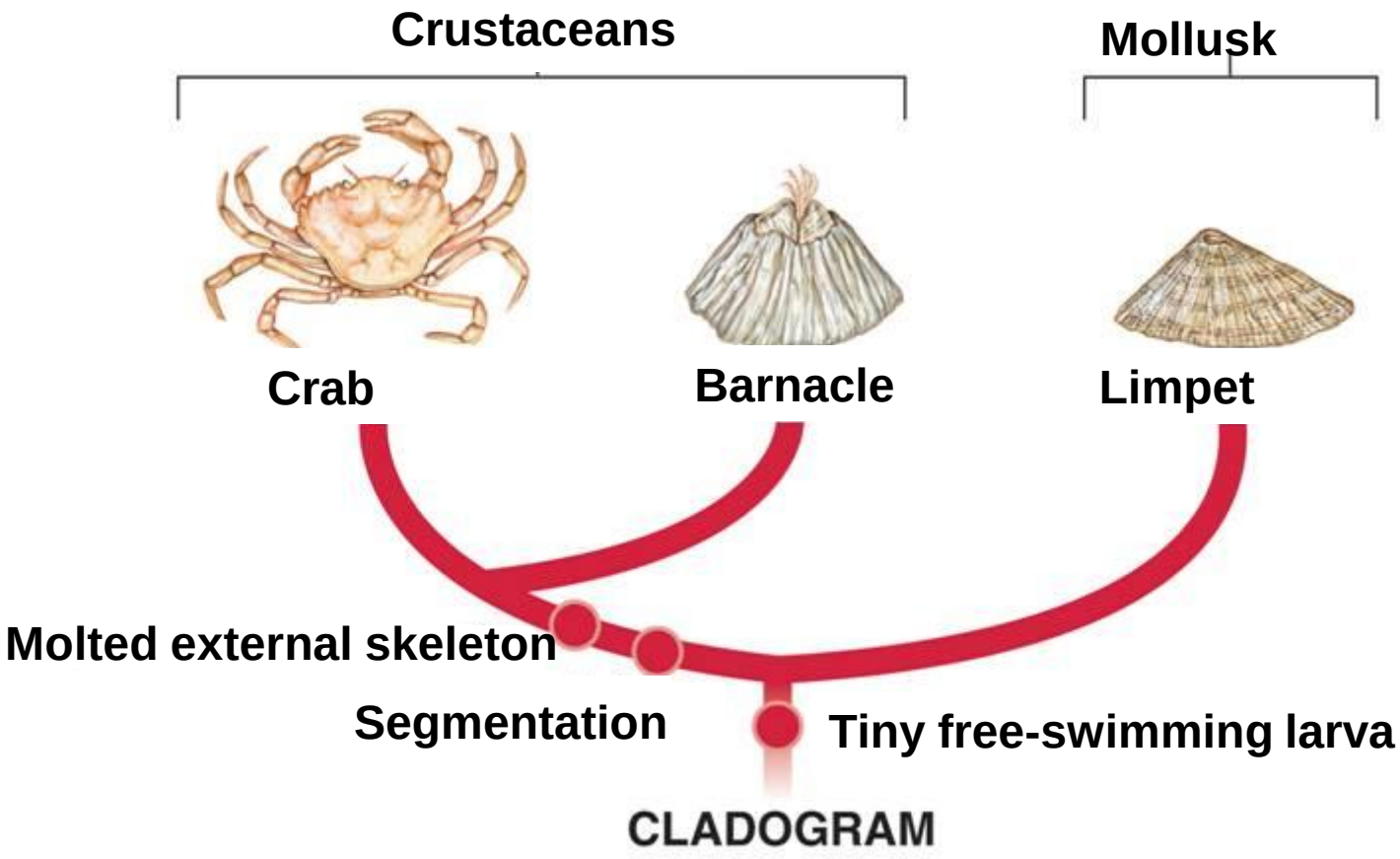
Biologists currently group organisms into categories that represent lines of evolutionary descent, not just physical similarities.

-called **evolutionary classification.**

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



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



DNA Evidence

DNA evidence shows evolutionary relationships of species.

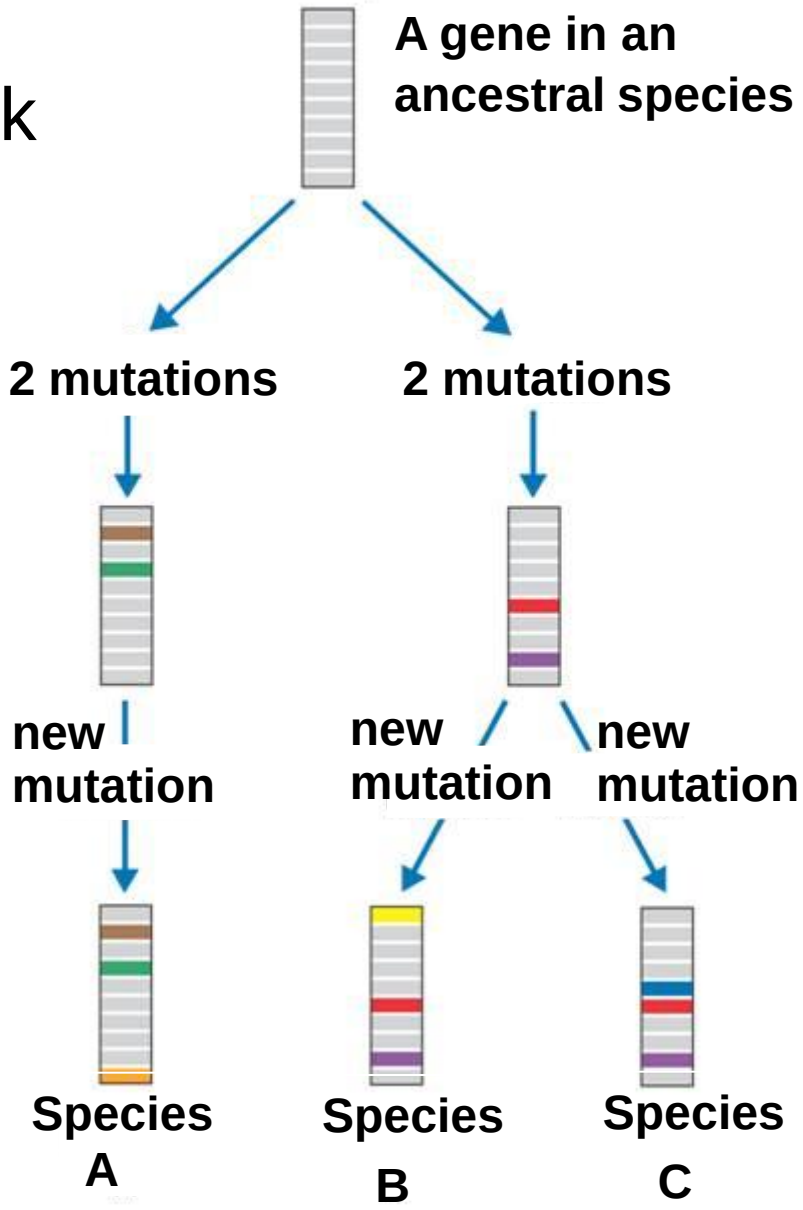
The more similar the DNA→the more recently they shared a common ancestor→more closely they are related.

The more two species have diverged from each other, the less similar their DNA will be.

Molecular Clocks

→uses DNA comparisons to estimate the length of time that two species have been evolving independently.

Molecular Clock



A molecular clock relies on mutations to mark time.

Simple mutations in DNA structure occur often.

Neutral mutations accumulate in different species at about the same rate.

Comparing sequences in two species shows how dissimilar the genes are, and shows when they shared a common ancestor.

END OF SECTION