

Phylogenetic Tree

□ What is it:

□ What does it show:

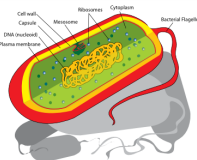
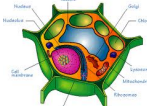
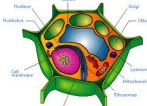
- A diagram that shows evolutionary relationships
 - Shows how they are related
 - What they have in common
- Like a family tree

Phylogenetic Tree

□ How does it show that

- How long ago it happened
- Groups of organisms
- Branches tell you who came from who, and who was there first
- Changes, that all future ones have

Ancestral Vs Derived

- Ancestral:**
 - Trait of the ancestor
 - “Older model”
 - Often less
 - Like the 
- Derived:**
 - Trait that is present in the organism, but not in the common ancestor (of the group being considered).
 - “New and Improved Model”
 - Not always  but usually
 - Like 

Which is plant is Ancestral Vs Derived

- Ancestral:**
 - Not true plants
 - Don't have all the plant characteristics
- Derived:**
 - Fancy New and improved model
 - Have all plant characteristics

Phylogenetic:

Why?

- Because it tells us:
 - Who evolved when
 - Who is related to who
- Example:

What do you use to build a phylogenetic tree?

- Tools: (WHAT DO YOU USE TO BUILD ONE?)
 - Characters/ Morphology
 - Physical form
 - Embryology
 - How they develop
 - Genetics (molecular tools)
 - DNA

Traditional Phylogeny

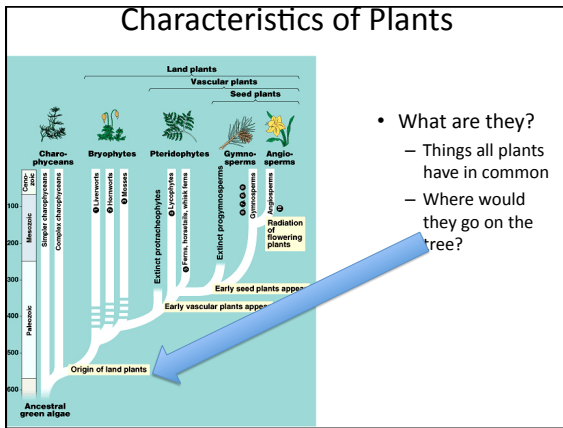
```

    graph TD
      Root --- Archosauria
      Root --- Lepidosauria
      Archosauria --- Birds
      Archosauria --- Crocodilians
      Lepidosauria --- Tuataras
      Lepidosauria --- Squamates
      Root --- Anapsida
      Root --- Synapsida
      Anapsida --- Turtles
      Synapsida --- Mammals
    
```

Molecular Phylogeny

```

    graph TD
      Root --- Turtles
      Root --- Crocodilians
      Root --- Squamates
      Root --- Mammals
    
```



- What are they?
 - Things all plants have in common
 - Where would they go on the tree?

