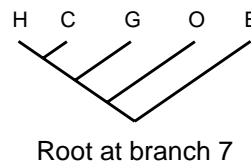
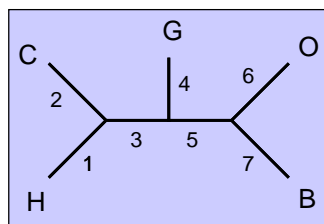
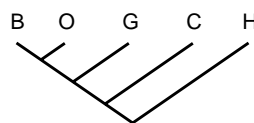
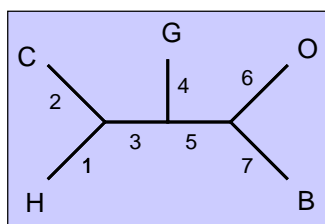


Unrooted and rooted trees

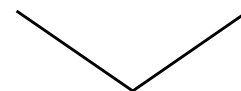
- A rooted tree has a node identified as the root from which all others descend, a rooted tree has direction, corresponding to evolutionary time.
- A unrooted tree lacks evolutionary direction and adjacent sequences may not be closely related.
- Trees can be rooted by including an outgroup, a taxa known to have originated before the species in the study.



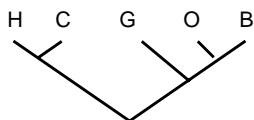
Unrooted and rooted trees



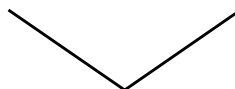
Root at branch 1



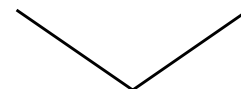
Root at branch 2



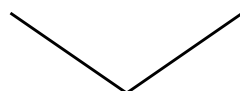
Root at branch 3



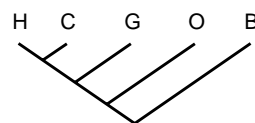
Root at branch 4



Root at branch 5



Root at branch 6



Root at branch 7