# Chapter 20 – Phylogeny

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| Learning Objectives: **Students should be able to;**   * Explain how phylogenetic trees and cladograms can represent traits that are either derived or lost due to evolution. * Describe how phylogenetic trees show relatedness, common ancestry, and speciation. * Explain how phylogenetic trees and cladograms can be constructed from morphological similarities and DNA and protein sequences. * Explain how phylogenetic trees are dynamic models based on data used and current knowledge. * Evaluate evidence provided by a data set and phylogenetic tree or cladogram to determine evolutionary history and speciation. * Create a phylogenetic tree or simple cladogram that represents evolutionary history and speciation from a provided data set. |

**Academic Vocabulary**

Phylogeny Analogy Shared ancestral character Horizontal gene transfer   
Taxonomy Cladistics Shared derived character   
Phylogenetic Tree Clades Outgroup

Branch Points Monophyletic Ingroup

Sister Taxa Paraphyletic Maximum parsimony

Basal Taxon Polyphyletic Molecular clock