Cladistic Concepts: Definitions (Jargon)

Apomorphy: a derived character state (cf. plesiomorphy).

Autapomorphy: a derived character state (apomorphy) that is restricted to a *single terminal taxon* in a data set. An autapomorphy at a given hierarchical level may be a synapomorphy at a less-inclusive level. One type of **uninformative** character.

Clade: A monophyletic group, made up of an ancestor and all of its descendents.

Cladogram: A branching diagram that shows hypothesized phylogenetic (sister-group) relationships of a group of organisms. Do not show the degree of divergence, only the hierarchical pattern.

Homology, homologue: similarity due to inheritance of a feature from a common ancestor. A synapomorphies are homologs.

Homoplasy (adj. homoplasious, homoplastic): similarity due to parallelism or reversal of character states.

Ingroup: the group under investigation in cladistic analysis to determine its phylogenetic pattern.

Monophyly (monophyletic group): a group (clade) that includes a most recent common ancestor plus all and only all of its descendents, and is diagnosed by synapomorphies (shared derived characters).

Outgroup: a taxon used in cladistic analysis for comparative purposes, usually with to enable character *polarity*.

Outgroup comparison: an indirect method of character polarization that uses the information on character states in outgroup taxa to determine the relative apomorphy and plesiomorphy of character states found in the ingroup taxa.

Paraphyly (paraphyletic group): a group that includes a common ancestor and some, but not all, of its descendents. Diagnosed by symplesiomorphies.

Plesiomorphy: an ancestral (primitive) character state

Polyphyly (polyphyletic group): a group with two or more (i.e., **multiple**) ancestors, but not including the true common ancestor of its members. Based on convergent (homoplastic) characters.

Symplesiomorphy: shared ancestral character state. Paraphyletic groups may result from mistaking symplesiomorphies for synapomorphies. Can also be a type of uninformative character (if shared by all members of the study-group).

Synapomorphy: shared derived character state. Used to define monophyletic groups.

Uninformative character: one that is not useful in constructing hypotheses of phylogenetic relationships (e.g., autapomorphy, symplesiomorphy).

A   **B**   **C**   **D**   **E**   **F**   **G**   **H**

Autapomorphy

Monophyletic group

} *Synapomorphies*

} *Symplesiomorphies*

A   **B**   **C**   **D**   **E**   **F**   **G**   **H**

Reversal

Paraphyletic group

Paraphyletic group

Synapomorphy for
paraphyletic group
(actually a
plesiomorphic
character that was
either lost then
regained (reversal), or
changed to another
state in C.

A   **B**   **C**   **D**   **E**   **F**   **G**   **H**

B+G+H = *polyphyletic group*

Homoplastic character