Introduction to Botany: BIOL 154
Lab 11. Methods of taxonomy

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READ Lecture 32 notes

1. Planet Aqua is entirely covered with water. The ocean is inhabited with various flat organisms (see Figure 1). These creatures (I call them "kubricks") can photosynthesize and/or feed on other organisms or their parts (matching with their mouths) and move (only if they have no stalks).

   (a) Produce the cladistic classification of kubrick species A–G using kubrick H as outgroup:
      i. Find as many characters as possible (ideally, 6–8)
      ii. Determine primitive (plesiomorphic) and advanced (apomorphic) characters states (do not forget to use outgroup)
      iii. Make character table
      iv. Make phylogenetic tree(s), try to find the shortest (most parsimonous) one
      v. Using the shortest tree, make classification: unite kubrick species in genera and (possibly) families.

   (b) Produce the phenetic classification of kubrick species A–H
      i. Use character table from cladistic part
      ii. Make similarity matrix (calculate $K = \frac{\text{number of matching characters}}{\text{number of all characters}}$)
      iii. Make dendrogram
      iv. Using the dendrogram, make classification: unite kubrick species in genera and (possibly) families

2. There are 6 flower diagrams (see Figure 2) representing different angiosperm families. Make cladistic OR phenetic classification of these families (make phylogenetic tree OR dendrogram, then unite diagrams in orders). For cladistic approach, use diagram E as outgroup.

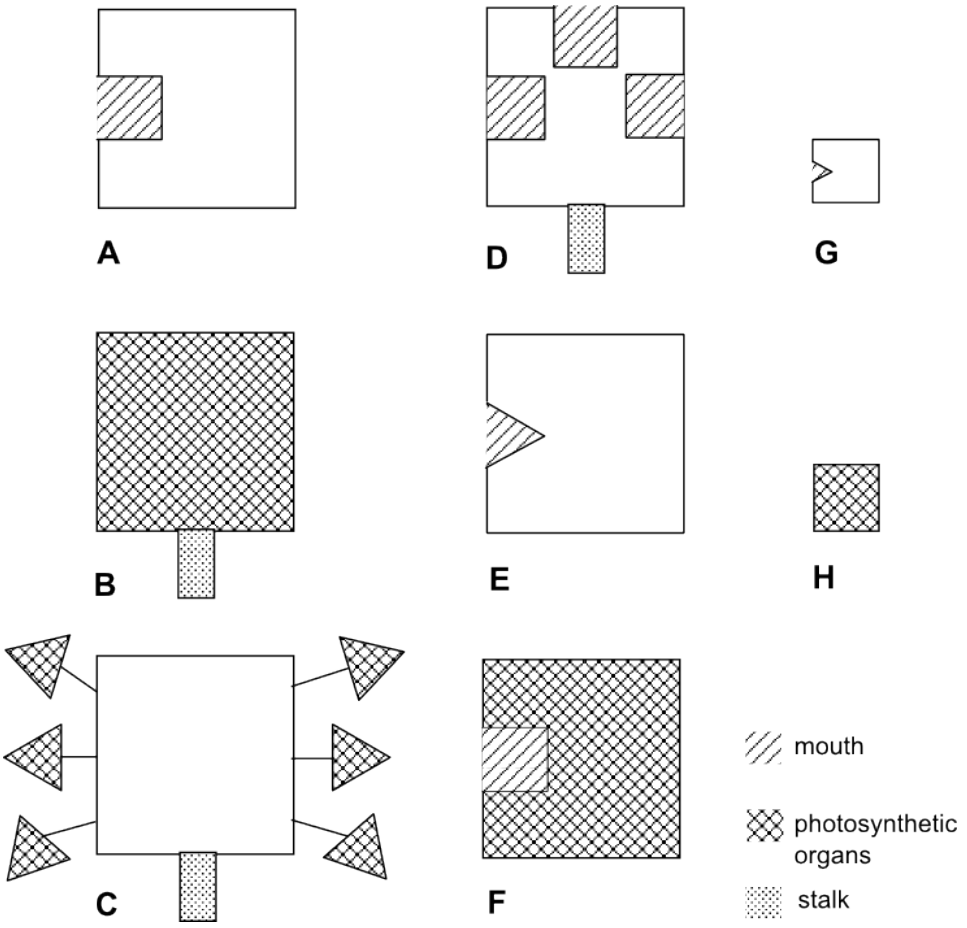

Figure 1. Kubricks.

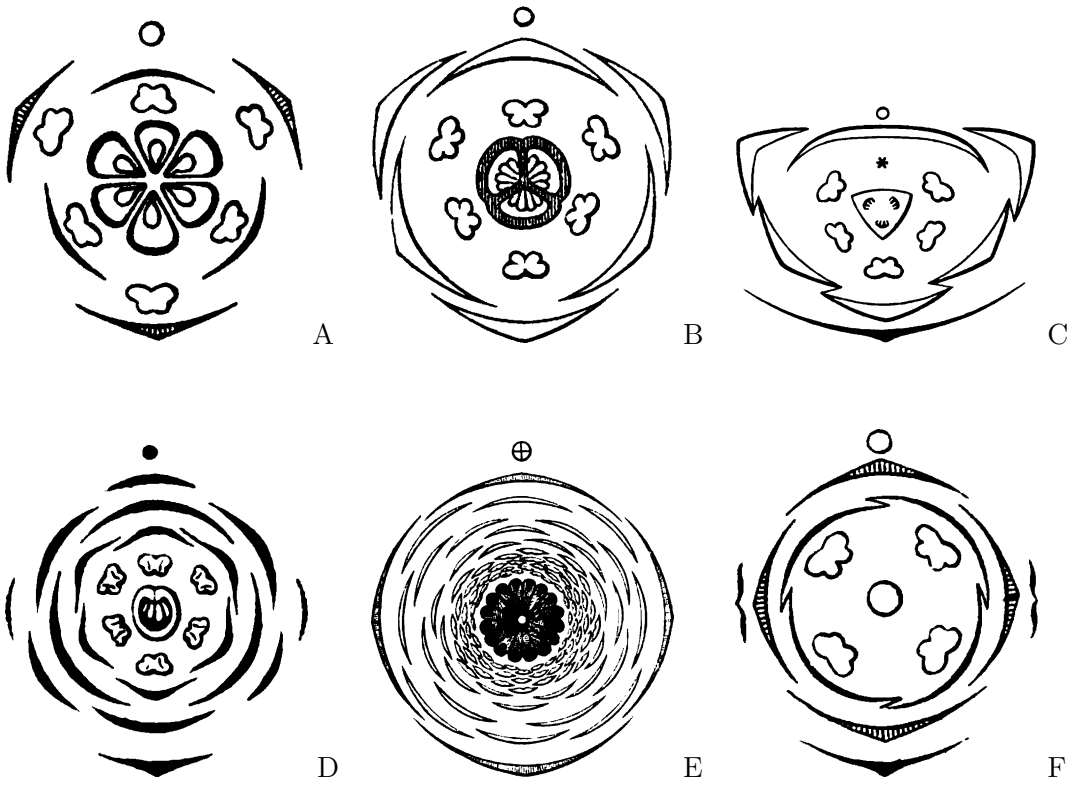

Figure 2. Flower diagrams of different families.