

Homework3

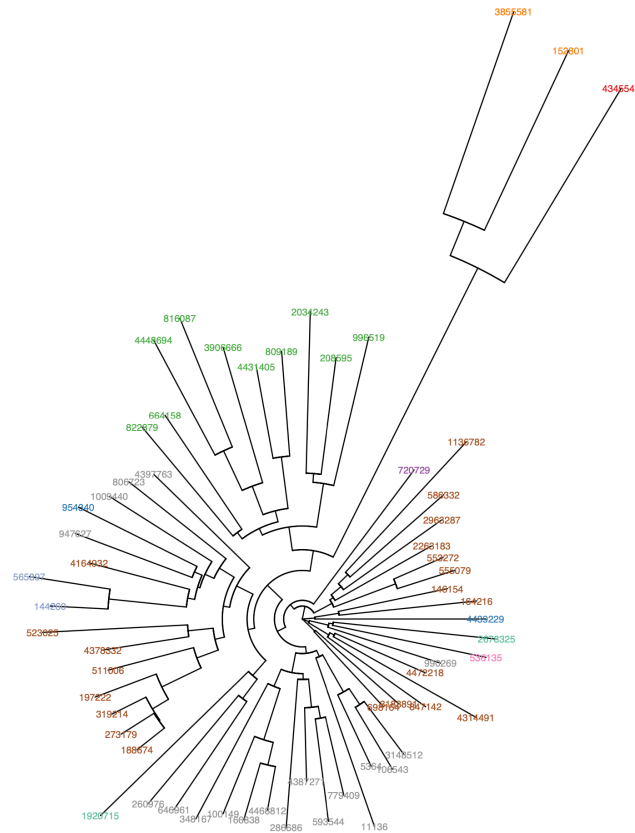
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All the answers and codes are provided by myself.

1. Coded.

2. Coded

3. Rscript hw3-plot-edges.r edges.txt hw3-tip-labels.txt tree.pdf



4. Because tips with similar color basically have similar sequence structure, which means they will perform closer in genetic distance, so they will clustered together in the figure.

5. (1) Different objects or materials may share similar colors, leading to ambiguity in the clustering process. (2) Human perception of color can vary, and what appears as a distinct color to one person may be perceived differently by another.

6. Coded.

7. Coded.

8. Because when randomly generated the pseudo-replicates, the internal nodes linked 2 tips are still having a high possibility to be linking the same 2 tips, but the different edges' lengths gradually affect the generation of the tree, so the mistakes are kind of "cumulating" along the nodes close to the root. In this case, bootstrap support generally higher for the internal nodes closest to the tips, and lower for the internal nodes closest to the root.