

Homework 3: Phylogeny Inference

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November 13, 2022

5. Why are tips of similar color mostly clustered together?

Tips with similar colors represent a relation with each other. They are clustered together because they share a more recent common ancestor. Tips with different colors diverged from a common ancestor long ago.

6. Name two distinct reasons why the clustering by color is not perfect.

Clustering by color does not fully represent the data being studied and only gives a slight visualization of the grouping. Sometimes the data could become split where a similar color group is on one side of the tree and another is on the other side of the tree. Clustered groups could also be more distinct from each other in terms of species but the color grouping does not show that distinction. clustering by colored also does not show the mutations of a species, only that it diverged from another species.

8. Based on the bootstrap tree, why is bootstrap support generally higher for the internal nodes closest to the tips, and lower for the internal nodes closest to the root?

There is a higher degree of confidence when connecting tips because the data for them is known, whereas the internal nodes are less known. The internal nodes could be assigned multiple ways in a bootstrap tree, but the tips have very little variance when it comes to connecting them.