

Exercises – Phylogenetics

Universität Bielefeld, SS 2018

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<https://gi.cebitec.uni-bielefeld.de/Teaching/2018summer/Phylogenetik>

Exercise Sheet 11 — 12.07.2018

Due: 19.07.2018

Task 1 Jackknifing.

(3 Points)

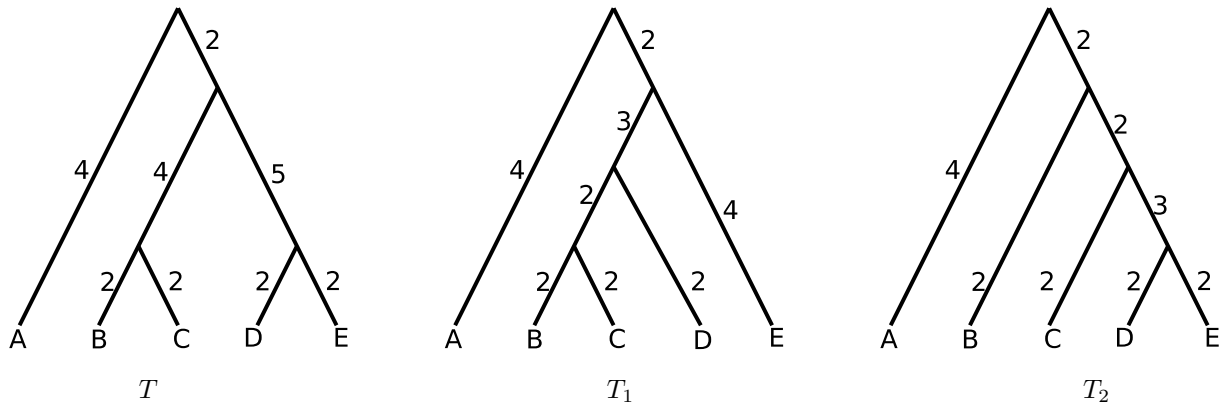
Write the proceeding of the *delete-half jackknifing* as pseudo code (5–10 lines).

Let M be the method that reconstructs the tree T for a given multiple alignment A with length N : $T \leftarrow M(A)$. You can use the terms *edge* and *split* synonymously.

- Input: Method M , Alignment A , Tree T , number of replicates R .
- Output: Bootstrap-Support of every edge u in tree T .

Task 2 Comparison of trees.

(3 Points)



Calculate the following distances between T and T_1 and between T and T_2 :

- Symmetric distance
- Robinson-Foulds distance
- Quartets distance

Task 3 Consensus trees.

(4 Points)

Consider the given trees above. Determine the *strict consensus* of the trees T and T_1 and determine the M_{50} *consensus* of all three trees. Proceed as follows:

- Write down all splits that have to be contained in the resulting tree. You do not have to consider trivial splits explicitly.
- Draw the tree.

Do not forget the review exercises on the previous sheet to earn bonus points.