



Phylogenetic networks

Summer 2013

Assignment 5

Send solutions to: `cuong.van-than at uni-tuebingen.de`

1. Majority splits are compatible (3 points)

Let $\mathcal{T} = \{T_1, T_2, \dots, T_k\}$ be a set of unrooted phylogenetic trees on a taxon set X . Prove that the set of all such splits that occur in more than half the trees (that is, the set of majority splits) can always be represented by a phylogenetic tree.

2. Paper that uses a consensus network or super network (4 points)

Do a literature search to find a paper that uses a consensus network or super network to help clarify the evolutionary relationships (hint: do an image search, e.g. looking for “consensus networks”). Briefly describe the aim of the paper, show the network and describe what point the authors make with the help of the network.

3. Computation of a super network (3 points)

Download and install the program SplitsTree4 from <http://www.splitstree.org>.

Download the file `funga1.nex` from the course website and open it using SplitsTree4. Describe how to obtain a super network for the full collection of five trees. How many taxa do each of the trees contain and how many are contained in the final network? Produce five different figures, in each figure please highlight a different input tree (using SplitsTree “Select Trees” feature).

Due date: June 13, 2013