# MASTodon graphical application v0.3 user manual

There are tooltips inside the application to guide you!

1. Open Mastadon.
2. Do File>Import trees and select your tree data.
3. Follow instructions to set burn-in and rooting on an outgroup, if required.

*The data will be loaded with progress displayed on the bottom left corner.
*After the data is loaded, an info popup will appear with statistics about the data set.

4. Click the Run button below the top left table to run a pruning algorithm.

*You will presented with a range of options to set up an algorithm:

- Search method: how the number of taxa to prune is chosen.
  - Constant: only prune the specified number of taxa.
  - Linear: explore pruning between the min and max specified number.
  - Bisection: starting at the middle, move in half jumps to find a pruning number that reaches the desired MAP score.
  - Flip-Penalty: currently experimental. Looks for a balance between MAP score and number of pruned taxa by randomly pruning and un-pruning taxa.
- Algorithm: what optimizing algorithm is used at each step.
  - Simulated Annealing: specify initial and final temperature. Cooling schedule is exponential between the two temperatures.
  - Metropolis Hastings: a higher weighing power makes the algorithm less likely to accept MAP score decreasing moves.
- Overall options:
  - Total iterations: maximum number of pruning combinations to try.
  - Desired MAP score: minimum score the algorithms try to achieve.
  - Number of repeats: how many times to repeat the algorithm. After finishing, the pruning that produced at least the desired MAP score but with least pruned taxa is displayed.

*A progress bar is shown at the bottom left. Below it is a box displaying some information about the current pruning status.

And that's about it. Run some algorithms, adjust the proposed pruning manually (all manual pruning can be undone), adjust display options, have a look at clade probabilities from the “Nodes” menu on the bottom right.
The commit button allows you to removed pruned branches from the display. No data is lost by pressing “commit”.
You can save and load pruning runs although pruning frequency isn't being stored at the moment. Note that you must first import the same trees you used before in order to load the pruning runs!

You can export the tree view through File>Export Graphic to various formats.

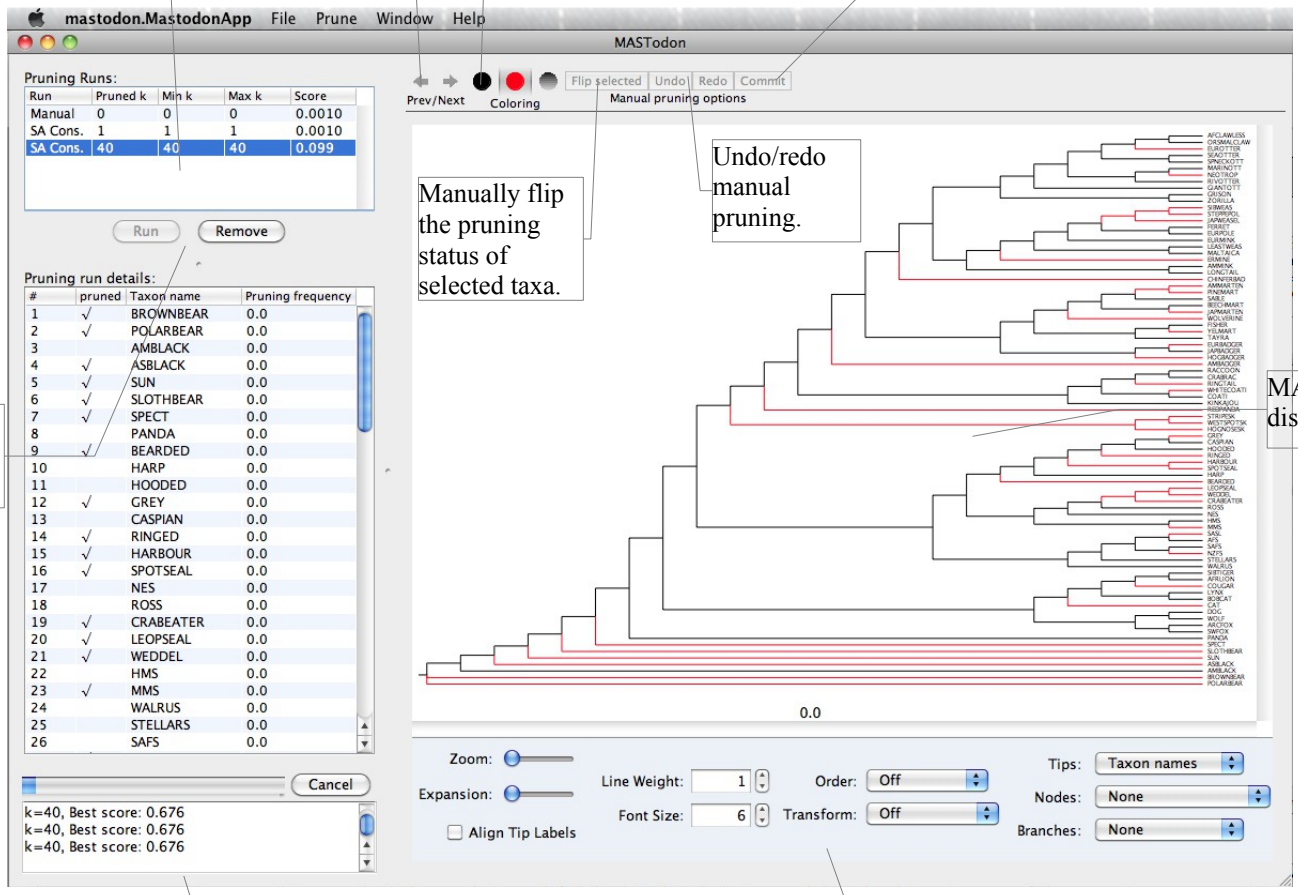
See next page for an overview of the GUI elements.

This table shows executed pruning runs. Many runs can be done and their results will be saved here. Hover the table to see tooltips.

Switch between different prunings with the same score, if there are more than 1.

Select how pruned branches are colored. The gradient option goes Black → white corresponding to Low → High pruning frequency.

Remove pruned taxa from the tree and open the resulting tree set in a new window.




Manually flip the pruning status of selected taxa.

Undo/redo manual pruning.

MAP tree display.

Add or remove a pruning run.

Current pruning status. Otherwise shows MAP score and the number of trees that contain this subtree for the current pruning.

Visual options. Some are not supported fully (like branch lengths).

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