

How to MiST

Introduction

Minimum Spanning Tree (MST) diagrams are an intuitive way to visualize population hierarchies and complex relationships from clustering.

The MiST plugin for FlowJo and SeqGeq gives researchers an interactive, exportable, and easy to run visualization technique for generating MST diagrams through a Shiny App using R.

Installation

Please review FlowJo documentation for installing plugins <http://docs.flowjo.com/d2/plugins/installing-plugins/>.

1. Place the plugin .jar file in your Plugins folder, and direct FlowJo to that folder using the Diagnostics section of the Preferences.
2. Make sure you have R installed and the R path is specified in the R Path field of the Diagnostics section of FlowJo and/or SeqGeq's Preferences.
3. When the plugin is run for the first time, it will attempt to auto-install the packages required in R.
4. Restart the FlowJo application to pick up the new plugin.

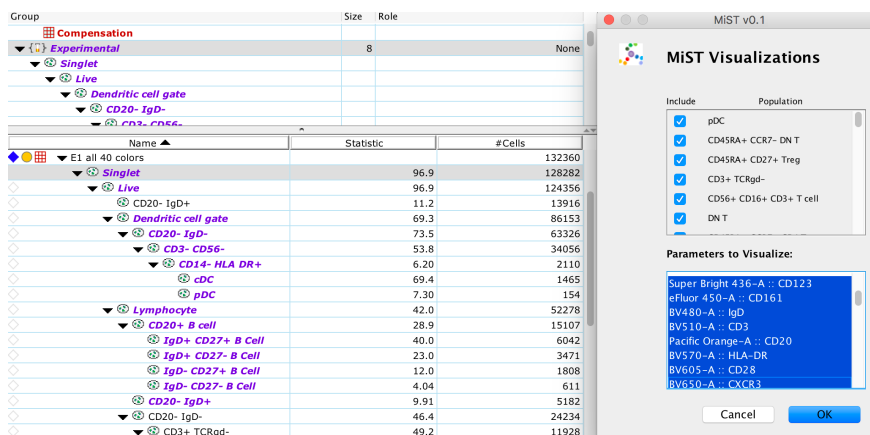
Usage

To run the MiST plugin on your population hierarchy:

1. Select the parent subpopulation of interest and launch the plugin from the Plugin section of FlowJo, typically found in the Workspace tab of the Workspace.

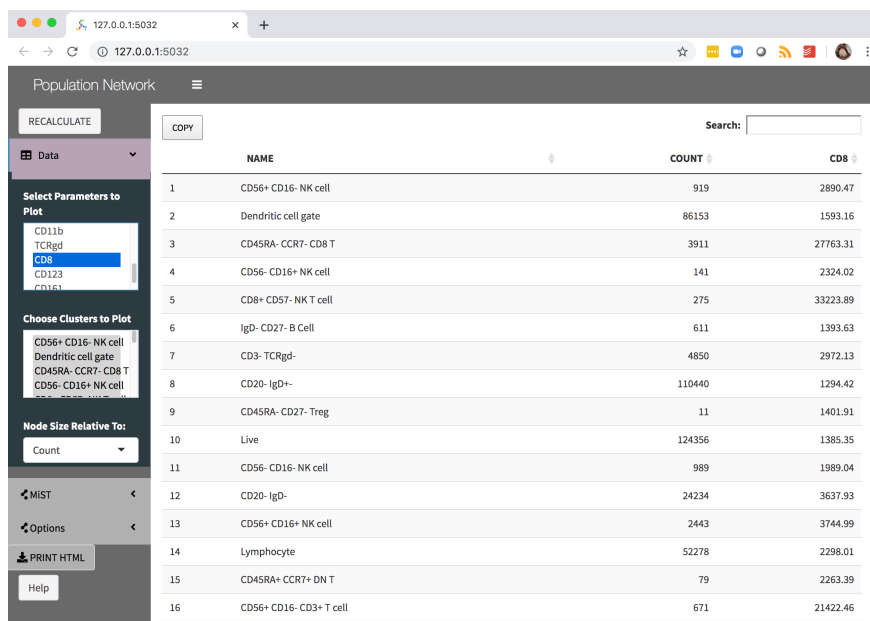
Note: The tool will not run on a root sample population.

2. In the following dialog, select the exact initial subpopulations of interest, and parameters to visualize within those populations:



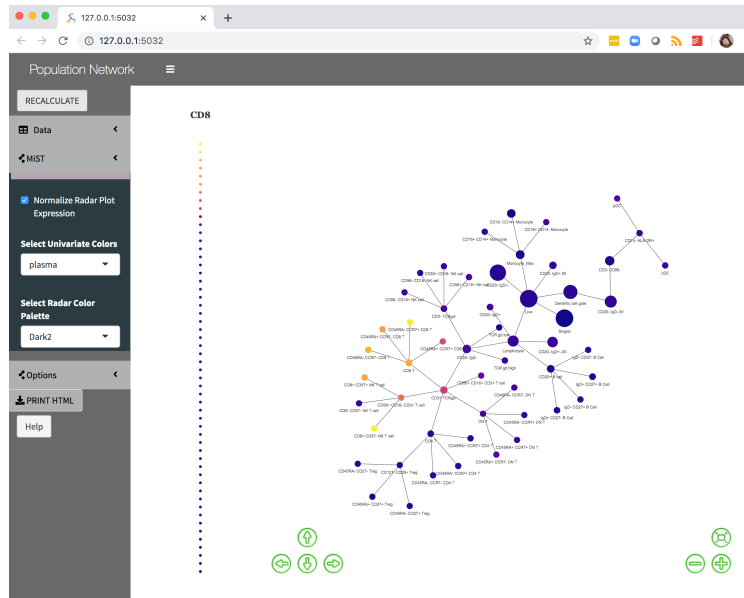
Note: This selection can be adjusted downstream as well.

3. This plugin will open a Shiny App in a new tab of the last Chrome browser selected. In this browser researchers can choose which populations and parameter(s) to visualize, from the Data sidebar option:



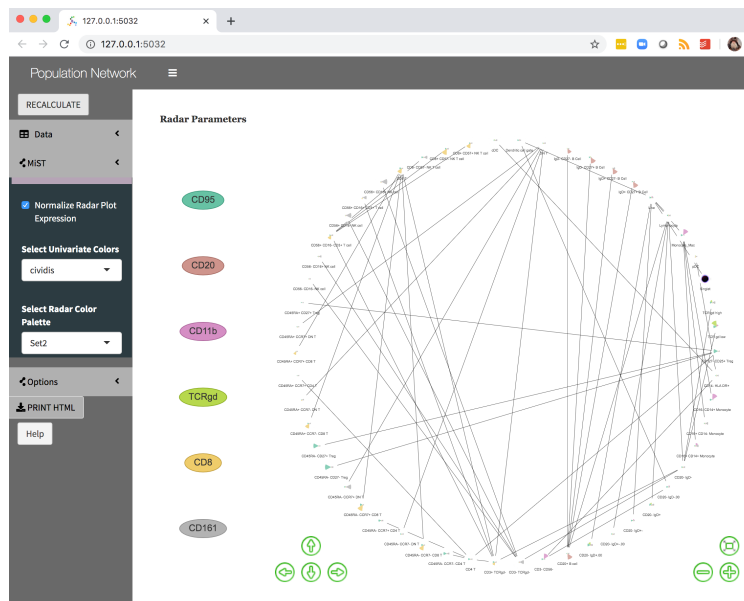
Note: These selected options can be adjusted going forward if some populations are not of interest within the network visualization, or if another parameter set should be shown in the color map across populations.

- To run the visualization of population networks, click on the MiST tab, choose the desired color palette, and click the “Recalculate” button:

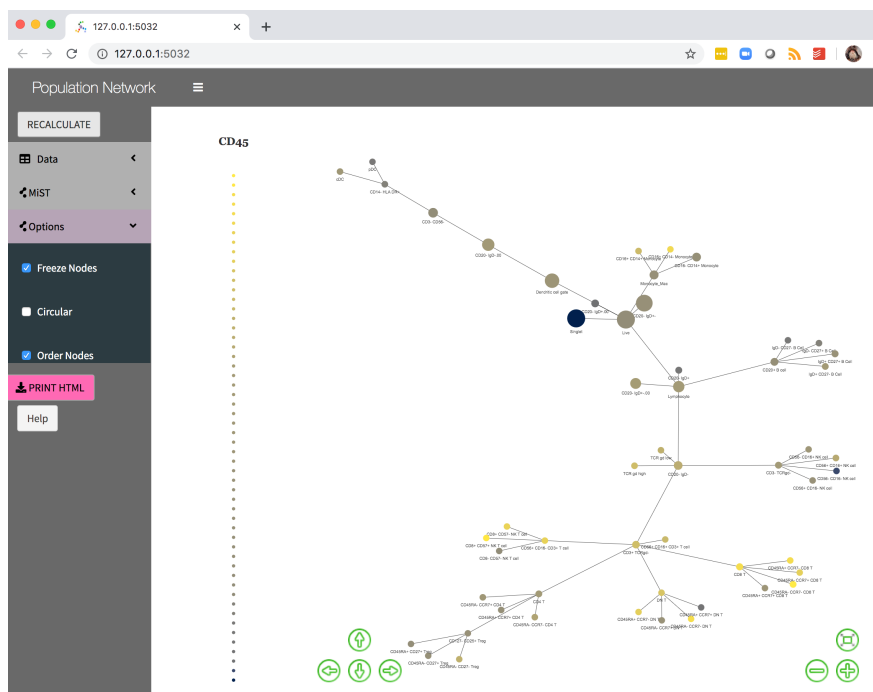


Note: One continuous color palette is used for populations when a single parameter (univariate) is selected for visualization. With multiple parameters selected, a radar plot is used to illustrate the relative (mode normalized) fluorescence intensity of each parameter is illustrated for each population, on a diverging color palette.

- Other options within the “Options” sidebar menu will allow researchers to place populations into a circular structure, or to freeze the position of population nodes.



6. Researchers can click the Print option to create an interactive HTML file corresponding to the current network visualized within the application:



Note: The freely available [Pandoc](#) universal document converter software will need to be installed in order to export a self contained HTML file.

References

1. This plugin makes use of the beautiful R package *visNetwork*, heavily. For more information on this tool check out their documentation, available here: datastorm-open.github.io/visNetwork/

Leave us your feedback

Please write to flowjo@bd.com with any questions or concerns.