

# **SIMPLEDREMI Usage Instructions**

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## **Install and Launch Simpledremi**

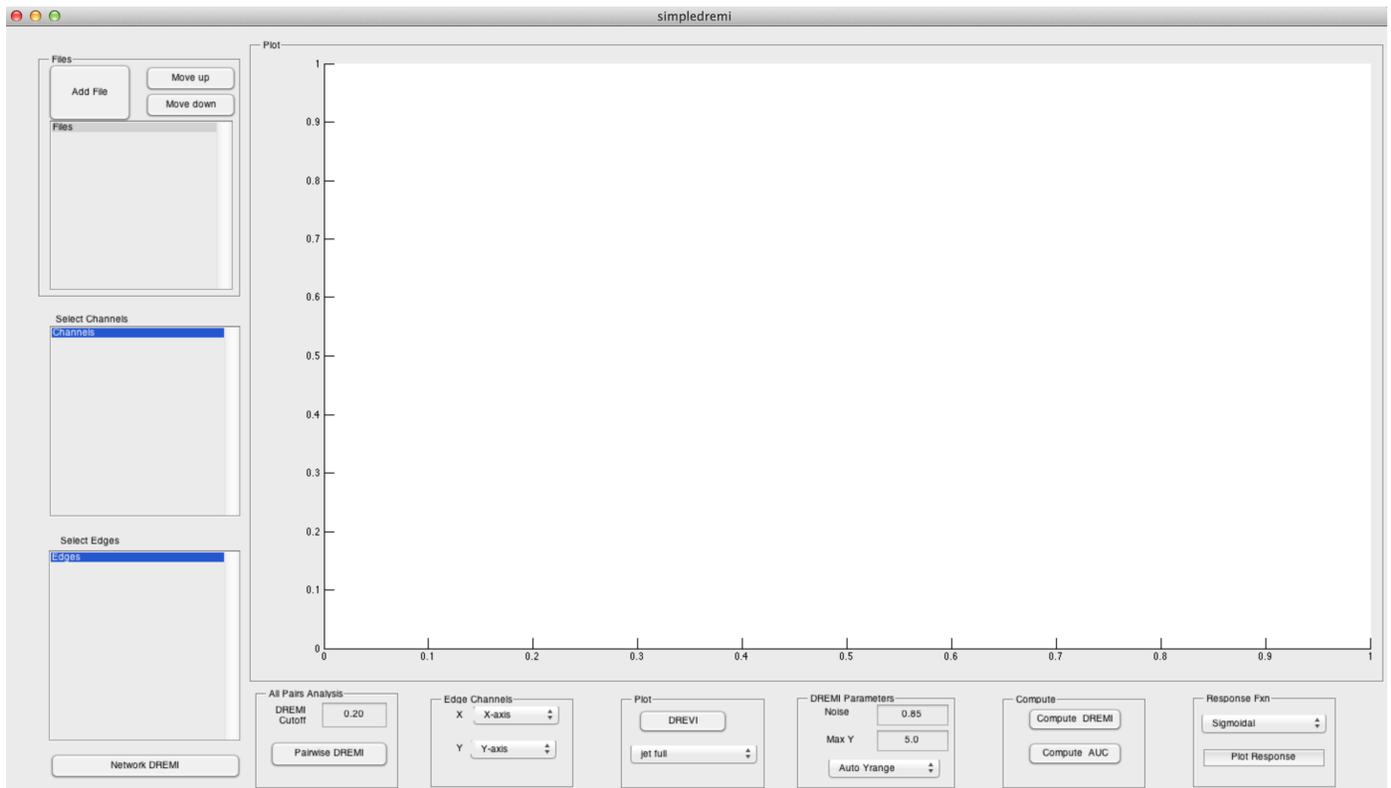
Unzip `dremigui.zip` to a folder of your choice.

The path should not contain spaces. For example:

```
/usr/myname/documents/MATLAB/dremigui
```

Launch Matlab, and navigate to `dremigui` folder.

Run the script `simplifiedremi`. You will be greeted by the following:

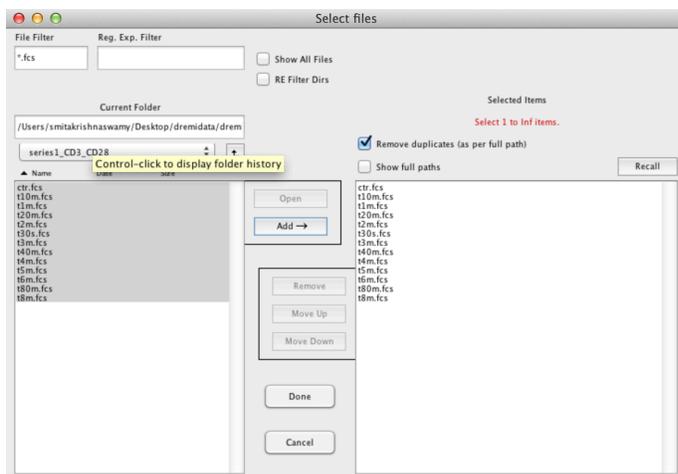


## Minimum requirements

MatLab 2010b or higher

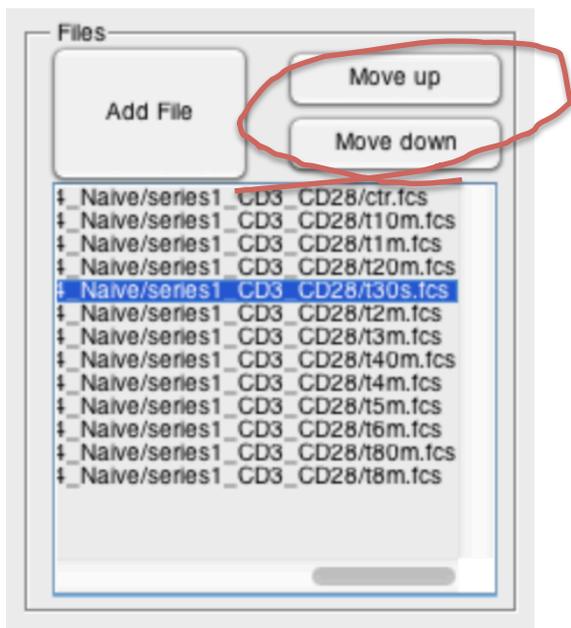
## Loading data

In the “**Files**” panel, you can load FCS files and rearrange the order of FCS.



Click on a file's name and click "Add" to add it to the selected items list. Click 'Done', and the file will be loaded in the order listed (which is also the order of DREVI plots and heatmaps).

In order to rearrange the order of files, select a file and click "Move up" or "Move down":

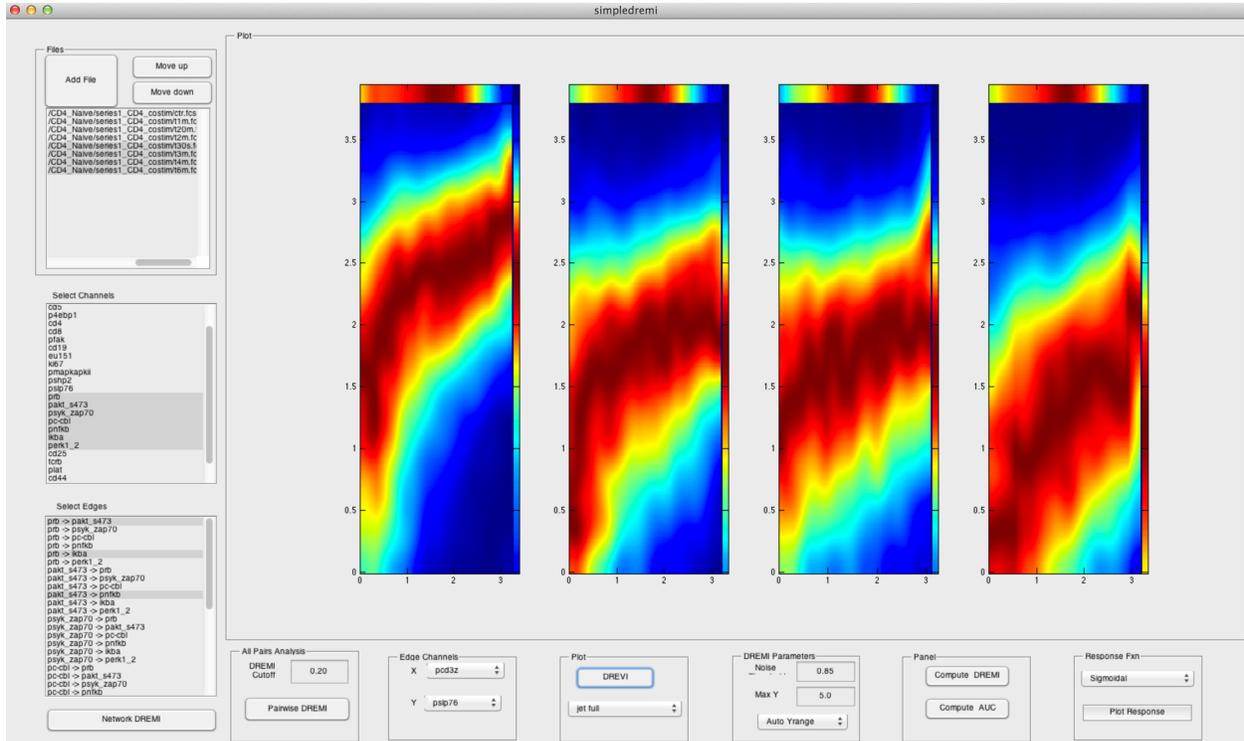


### **DREVI plot to visualize an edge**

You visualize a single edge along the selected files by selecting an X channel and a Y channel in the pull-down menus in the "Edge Channels" panel, and then click DREVI" in the "Plot" panel.



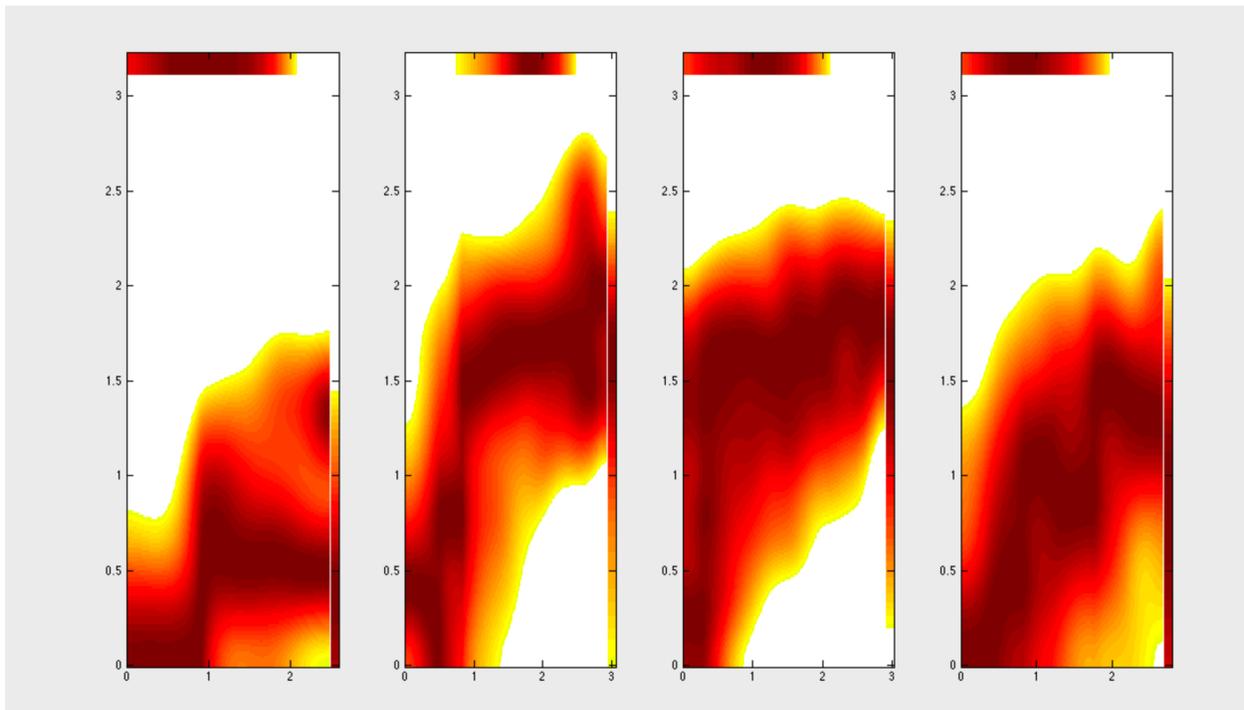
The DREVI plots will appear in the axes panel with the plots of different files (conditions) in the order listed in the “Files” panel.



You can change the colorscheme of the plot from “jet full” to “jet thresholded” in the pulldown menu of the “Plot” panel order to highlight the conditionally dense areas of the graph.

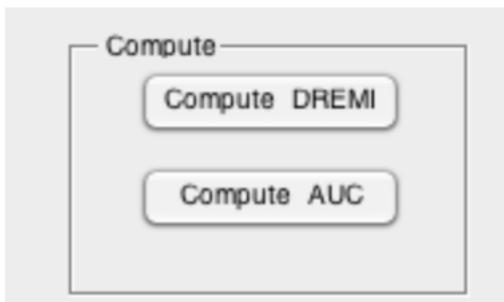


The resultant DREVI plot highlights the conditionally dense red and yellow regions as follows:



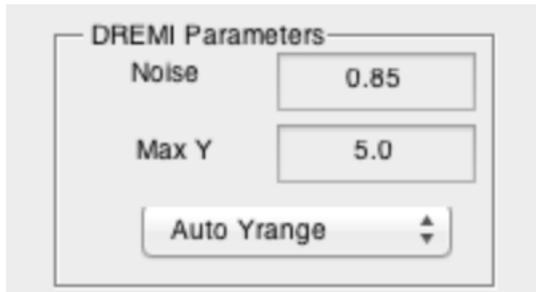
### **Edge DREMI and AUC scores**

You can compute DREMI or the Area-Under-the-Curve (AUC) for the visualized plots by clicking on the “Compute DREMI” or “Compute AUC” button in the “Compute” panel.



DREMI scores use the parameters in the “DREMI Parameters” panel. The noise threshold for DREMI is taken from the “Noise” edit box. The default value for this is 0.85. The maximum Y-value (for equipartitioning the range) is automatically determined by the ranges of the loaded files when “Auto Yrange” is selected in this panel. If you would like to specify another

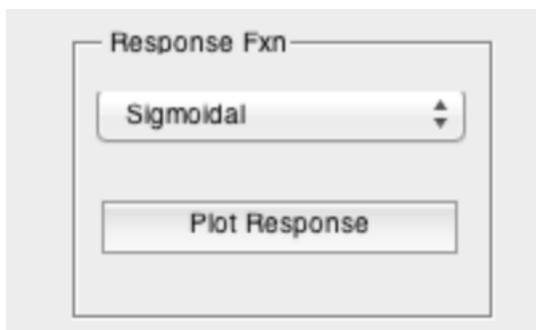
maximum Y-value, selected 'manual Yrange' from the pull-down menu in the "Parameters" panel and edit the 'maxy' edit box.



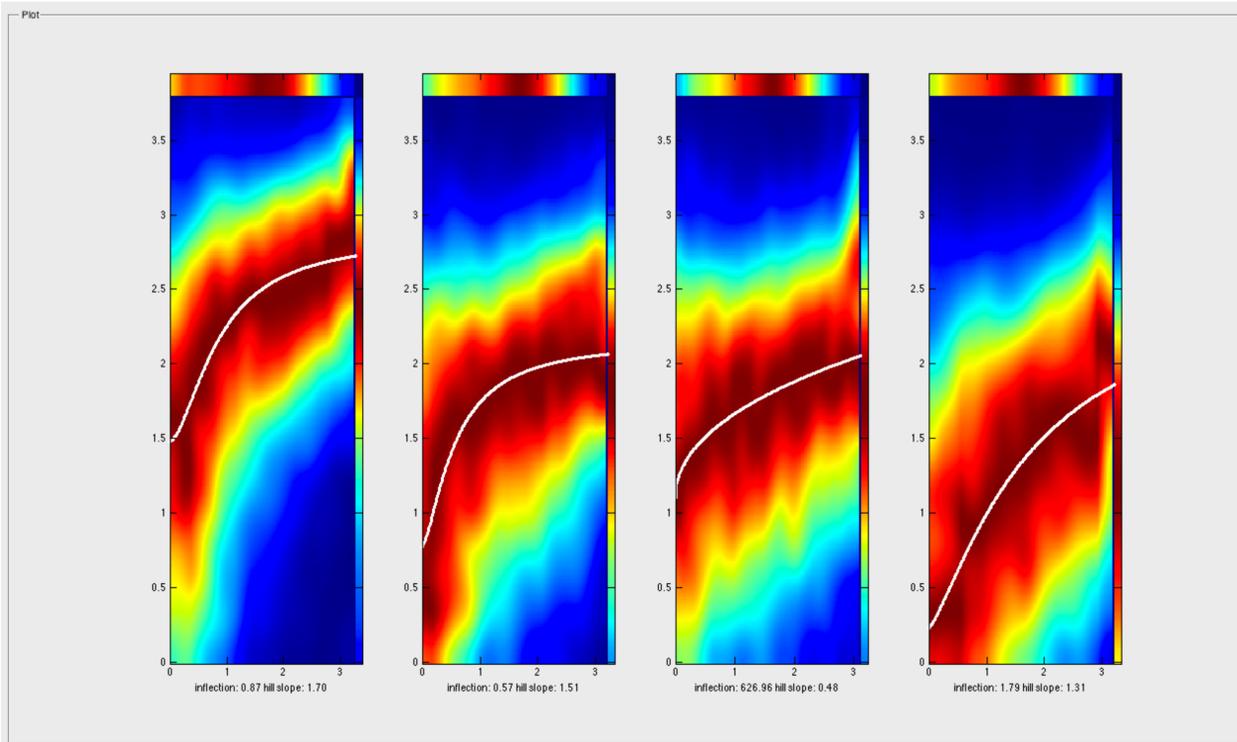
Computed DREMI or AUC scores appear above the DREVI plots.

### **Edge Response Functions**

You can perform sigmoidal or linear regression OR visualize the conditional mean by selecting on the appropriate choice and clicking "Plot Response" in the "Response Fxn" panel:



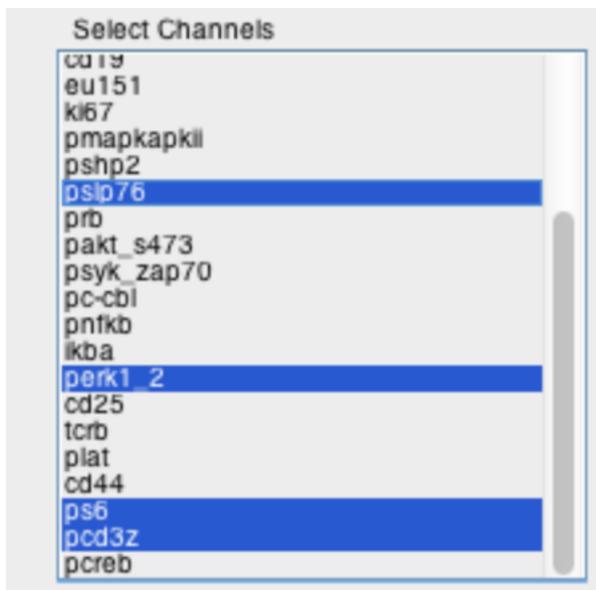
The selected response shape will appear on the DREVI plots, and relevant parameters of the fit will appear below the DREVI plots.



## Computing DREMI on a known network

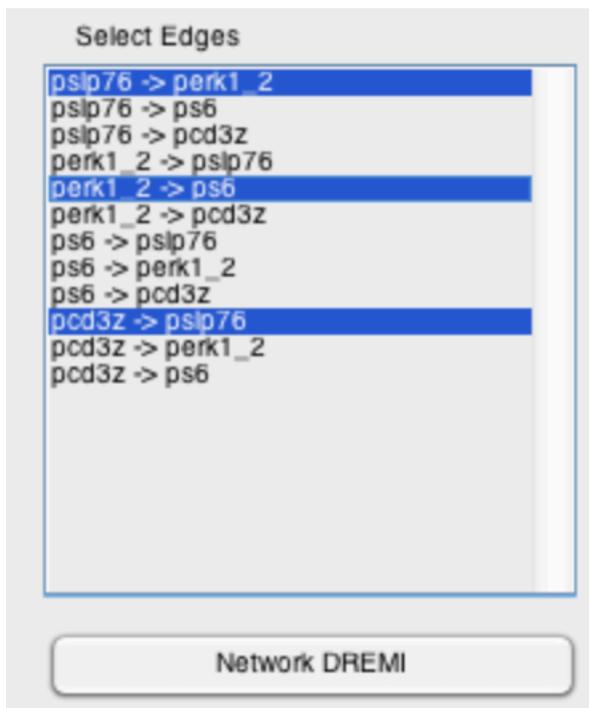
You can compute DREMI on a known network as follows:

- 1) select the channels to be included in the network in the “Select Channels” menu,

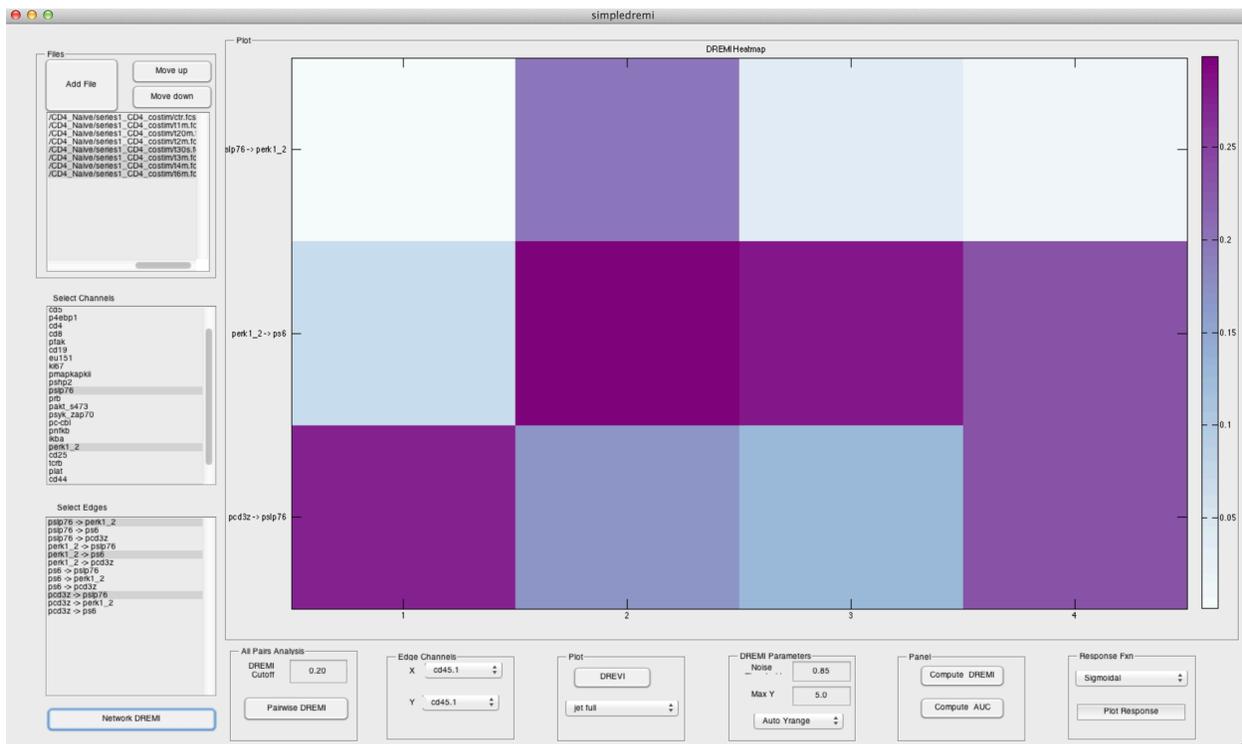


2) All possible pairs of edges that use those channels will appear in the “Select Edges” menu automatically

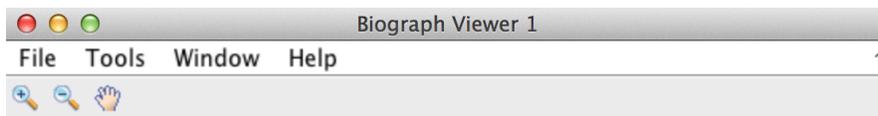
3) Select the edges in the known network



4) Click on the “Network DREMI” button. If multiple files are selected then a heatmap depicting the DREMI scores will appear where each row of the heatmap depicts scores for one edge and each column represents the score for a particular file (condition):

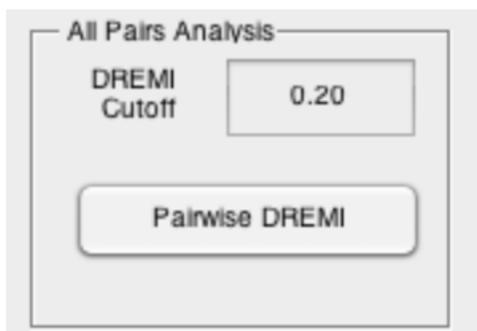


Otherwise, if only *one file* is selected then a heatmap as well as a biograph depiction of the network, annotated with DREMI scores will appear:

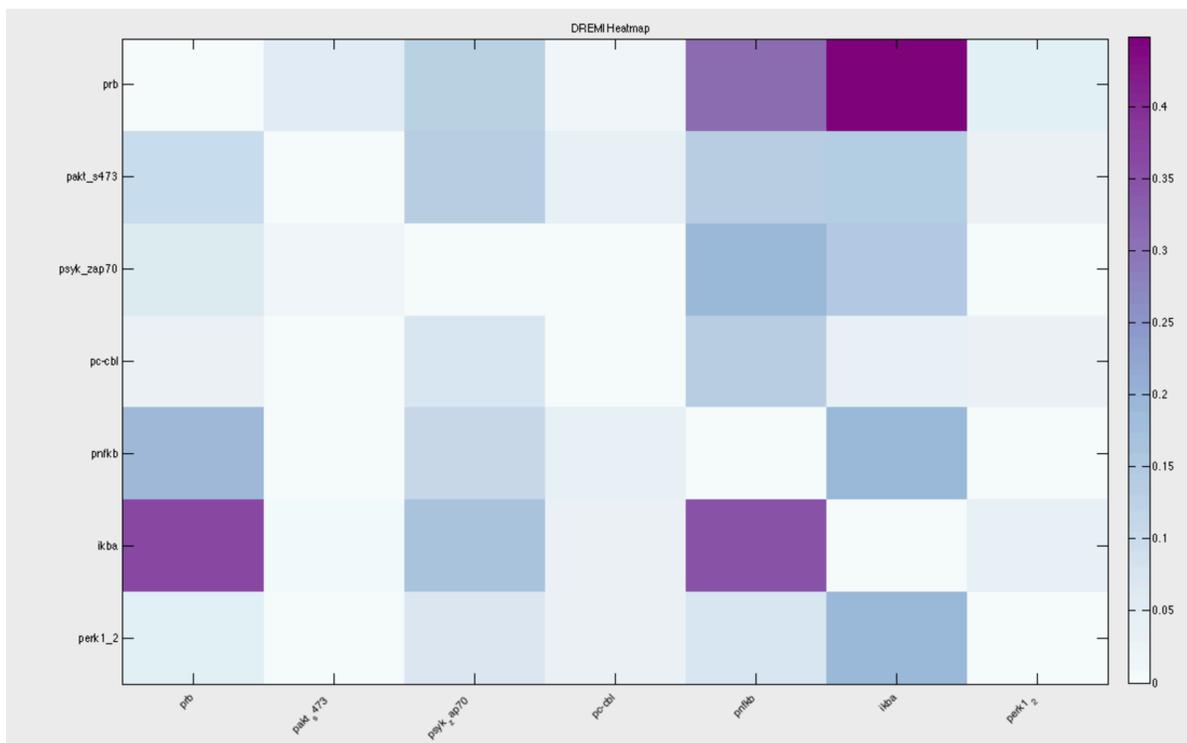


## Computing DREMI on an unknown network for exploration

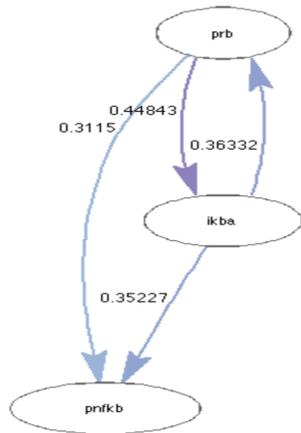
In order to compute DREMI on an unknown network, once again select the channels to be included in the network in the “Select Channels” menu, edit the DREMI cutoff value for significance in the “All pairs analysis” panel, the default is .20. Then click on “Pairwise DREMI” in the “All pairs analysis” panel. You can ONLY perform this type of analysis when a SINGLE FILE is selected.



A heatmap showing the DREMI value for each pair will appear in the Axes.



In addition, a graph containing ONLY the edges with DREMI scores above the cutoff value, with annotated scores will appear.



This type of analysis may take some time depending on how many channels are selected.

### **Help for Simpledremi**

Please email us with any questions, comments, and feedback at:

**[dremi.development@gmail.com](mailto:dremi.development@gmail.com)**.