# Leave one out at a time (LOO) (Written by: Timothy Lim; Version 17/03/2024)

#LOO is done through the use of python scripts. Three scripts were written to do this:

* Create\_metadata.py
* ST\_sinkswitch\_16S.py
* Code\_OAT\_each\_animal.py

#First, from the metadata file, remove all the sink sample entries and save it as *MappingData\_LOO.txt.*

*#*After that, open *create\_meatadata.py* file (using *Spyder* or any other IDE, this is consistent in opening other *.py* files), and do the following before running the script:

* Update *os.chdir* to be the place you want the modified metadata (source switch to sink)
* Update *original\_metadata* to be the place you contain your original metadata file

#Open *ST\_sinkswitch\_16S.py*, and do the following before running the script:

* Update *files* and *namefile* to be the *modified\_metadata* folder
* Update *script* to be *'sourcetracker2 gibbs -i ~/Phylo/core-metrics-results/feature-table.tsv -m ~/LOO/Diversity/%s -o ~/LOO/SourceTracker/Exports/%s\_r%s --burnin 100 --source\_rarefaction\_depth 10000 --sink\_rarefaction\_depth 10000 \n'*

#This will lead to script generation for SourceTracker, and is saved in the *python script* folder. After file has been written, upload the txt file to <https://www.fileformat.info/convert/text/dos2unix.tr> (Dos2Unix) and convert (settings default) to solve \n issue. After downloading the converted *txt* file (i.e., *ST\_sinkswitch\_16S\_Dos2Unix.txt*), duplicate the file, and change the file type from .*txt to* .*sh* (i.e., *ST\_sinkswitch\_16S\_Dos2Unix.sh*). Edit the *.sh* file (I usually do it in WinSCP after uploading to WinSCP), and insert the bash interpreter at the top most row (*#!/bin/bash*), then leave a row between the bash interpreter and the SourceTracker commands.

#Once the above is done, request a session in PUTTY. Once I got into a session (see *QIIME2 pipeline* section for more information), I then run the following command. Note that to speed things up, I went to request 3 additional sessions, and run the same command:

module load sourcetracker/2.0.1 (note: it is also fine to put module load sourcetracker, as it will load the latest available version)

source /fs03/hj18/Tim\_duplicate/LOO/ST\_sinkswitch\_16S\_Dos2Unix.sh

#Upon completion of run, download the *Exports* folder. Under *Python scripts* folder, open *Code\_OAT\_each\_animal.py*, and do the following before running the script:

* Edit *files\_path*, set it to where you have downloaded the *Exports* folder.
* Edit *env\_file\_path*, set it as the path of original metadata file.
* Edit *save\_path*, set it as the path where you want to save the compilation results (will be saved as *.csv*).

#Duplicate the results, and save as .xlsx to allow better editing.