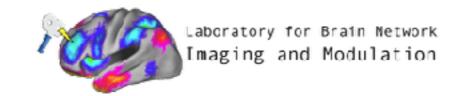# *Group Analyses*

Lead-DBS workshop 2016 Berlin
11/2016 | Andreas Horn

This file is auto generated:
- All info stored in here
- more or less portable project data, i.e. built to share with colleagues (restrictions apply)
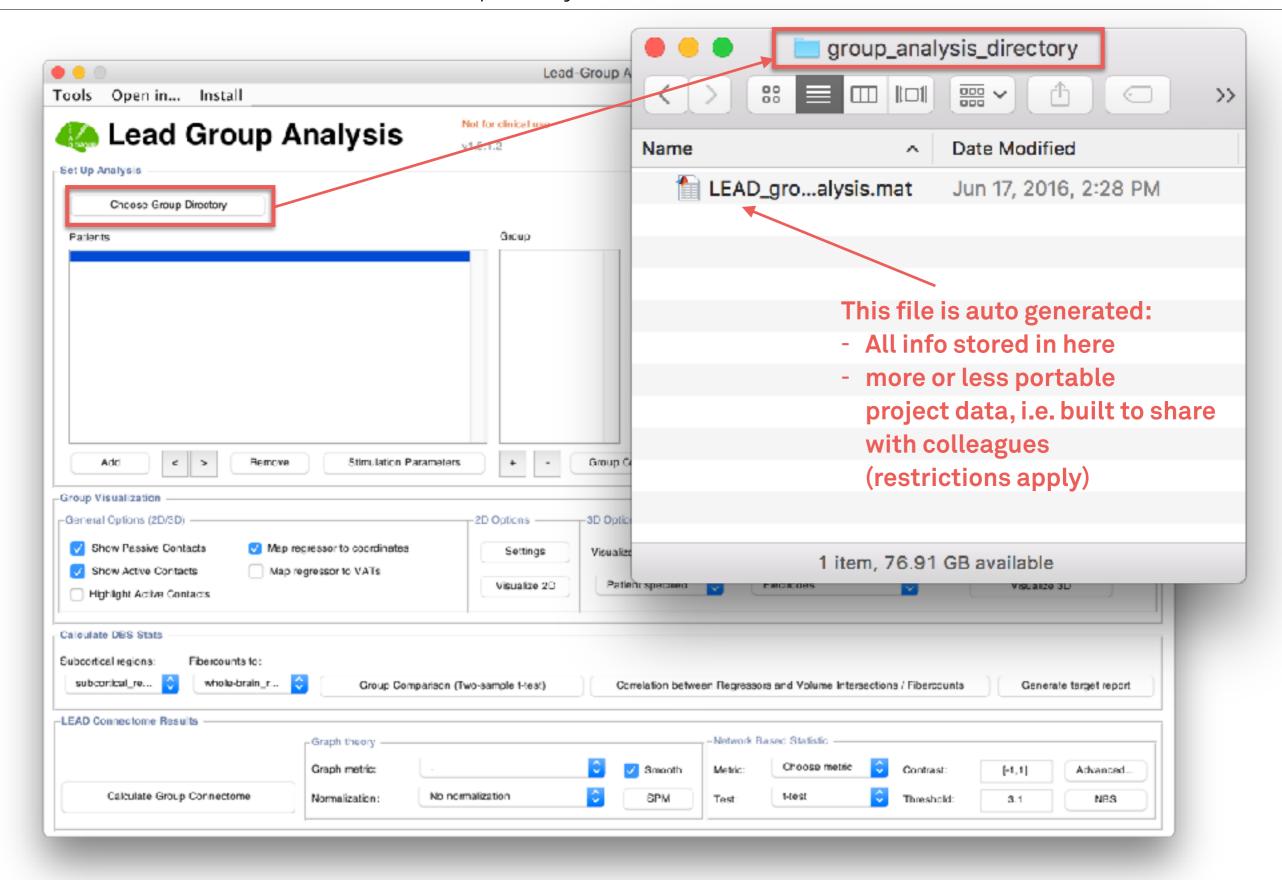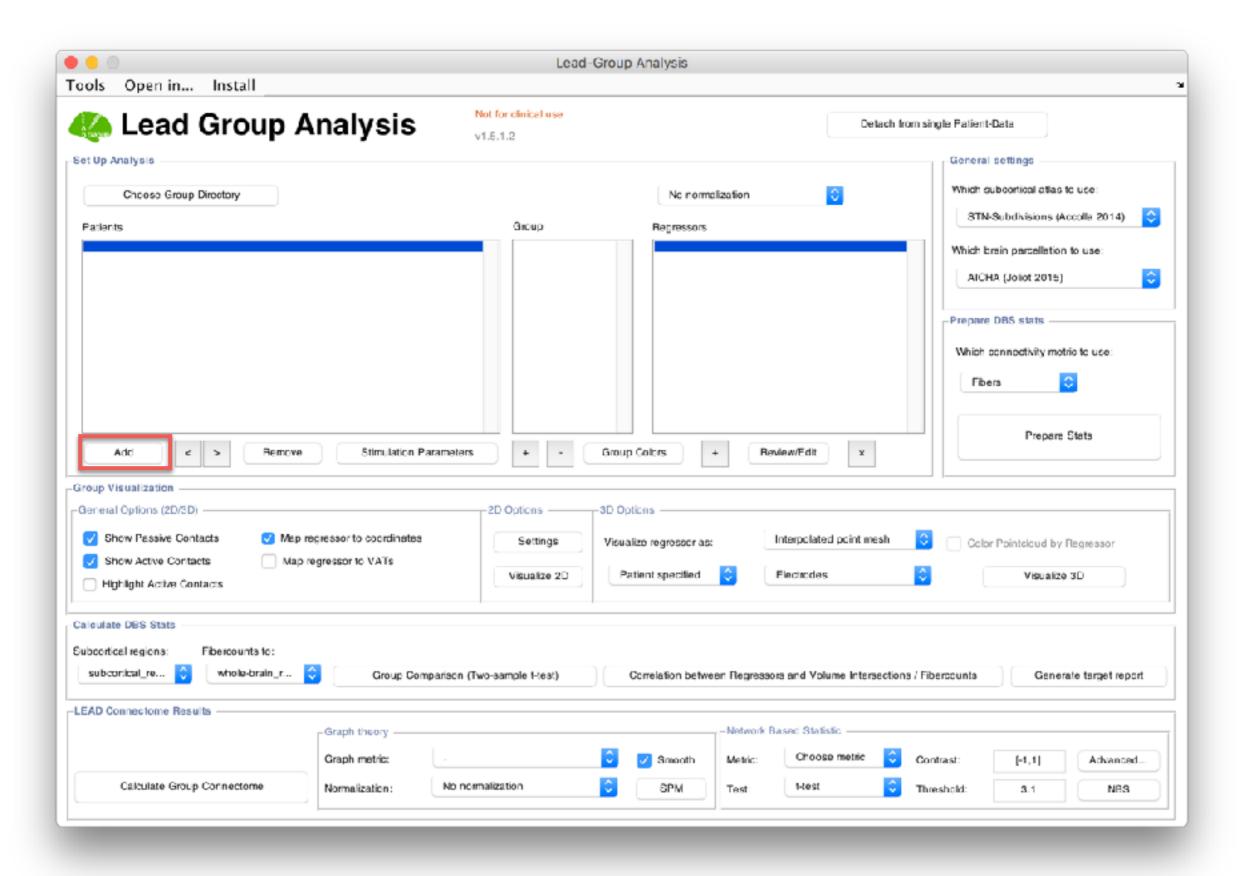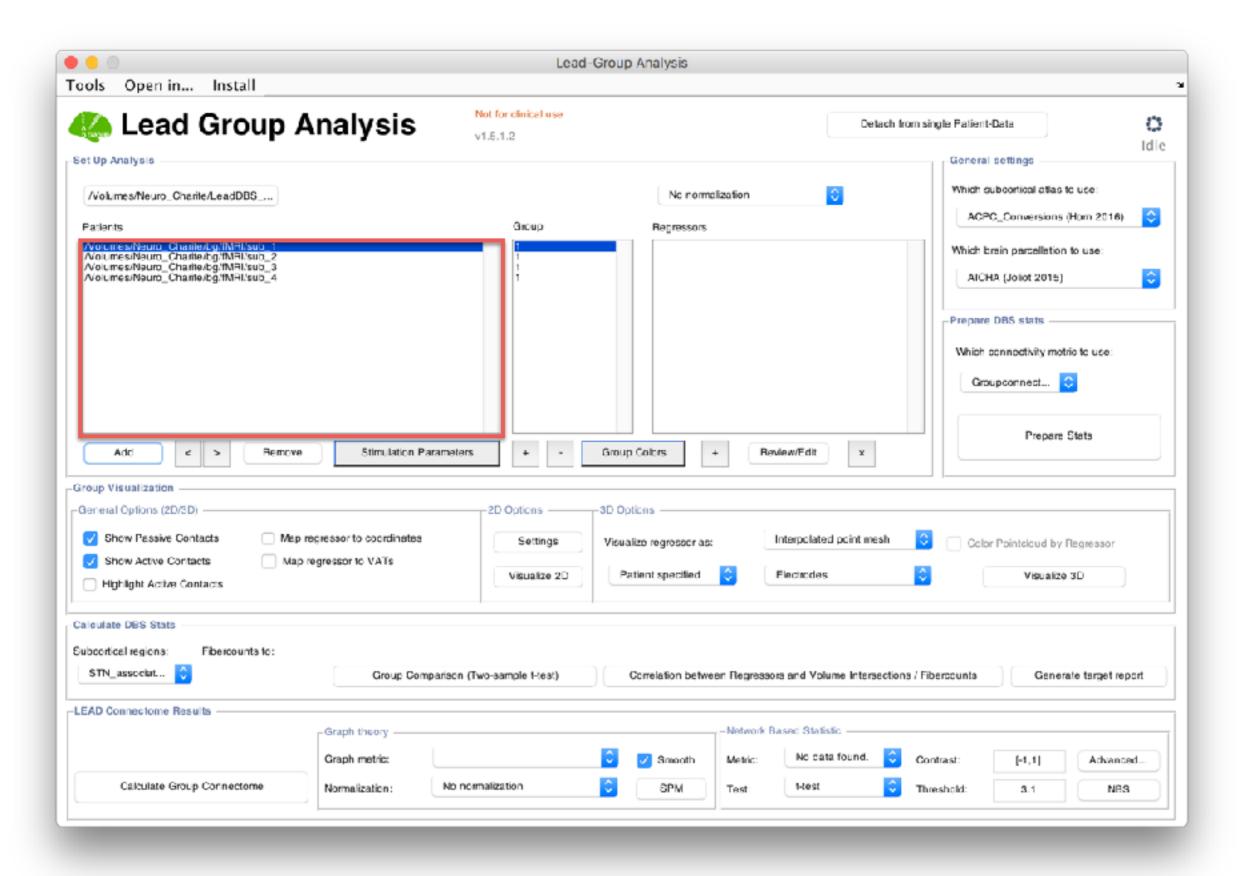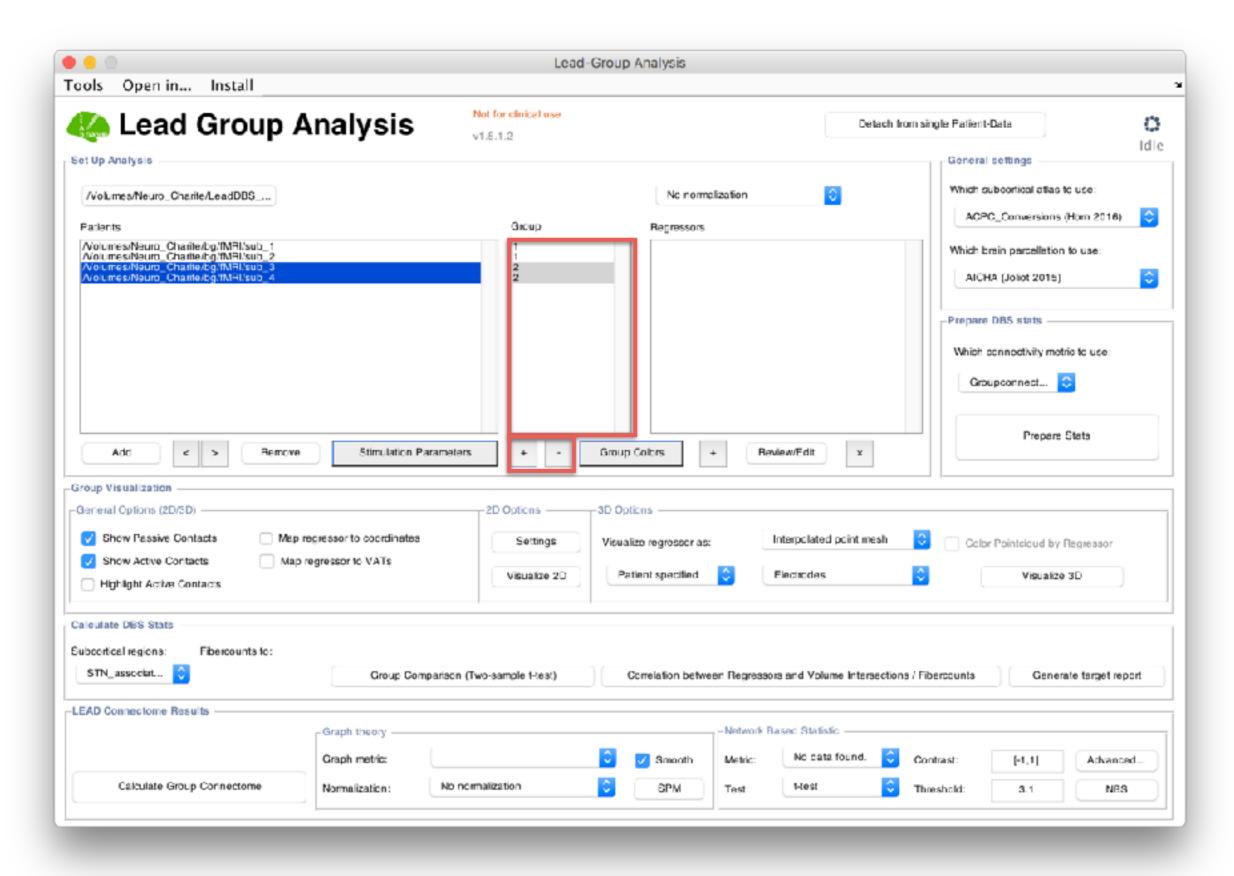
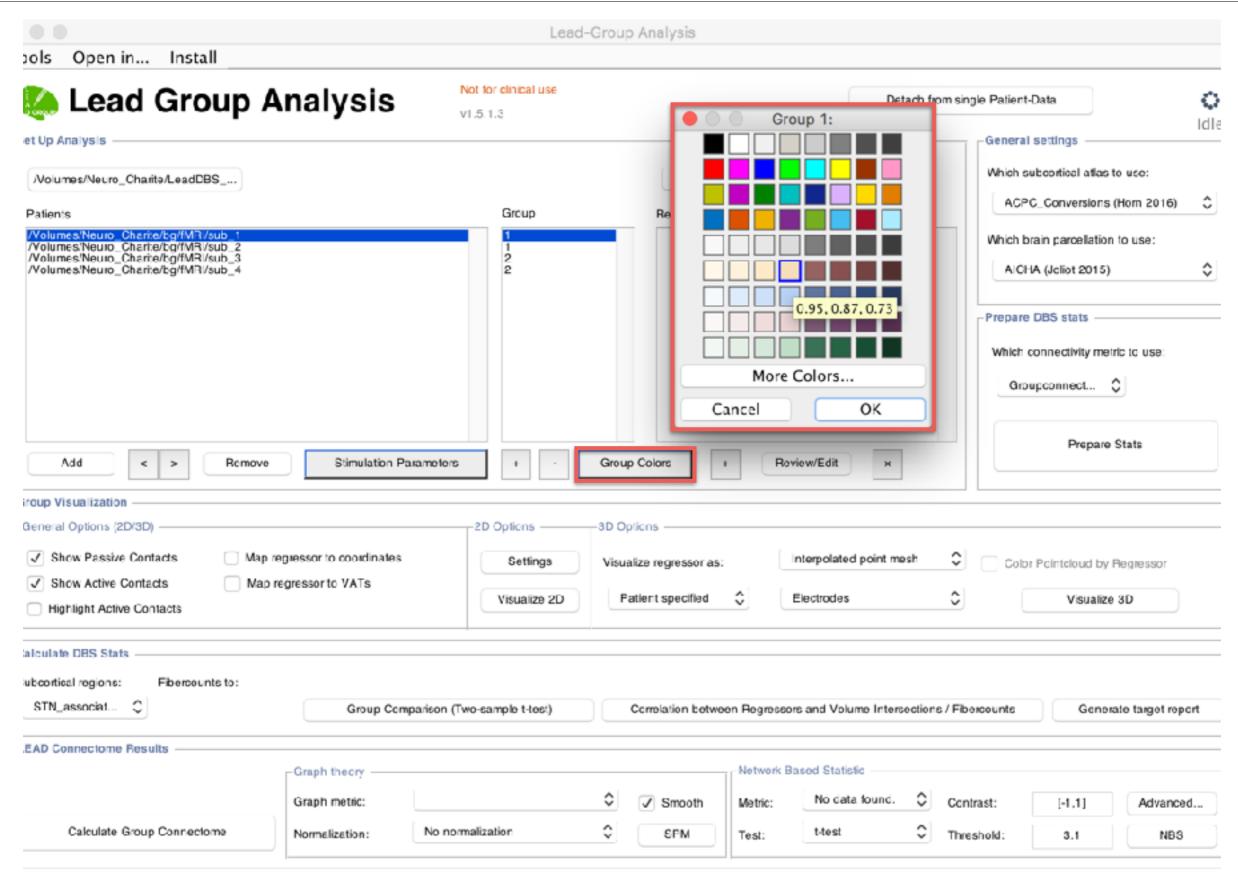**1. Define an empty folder where to store the group analysis "model"**
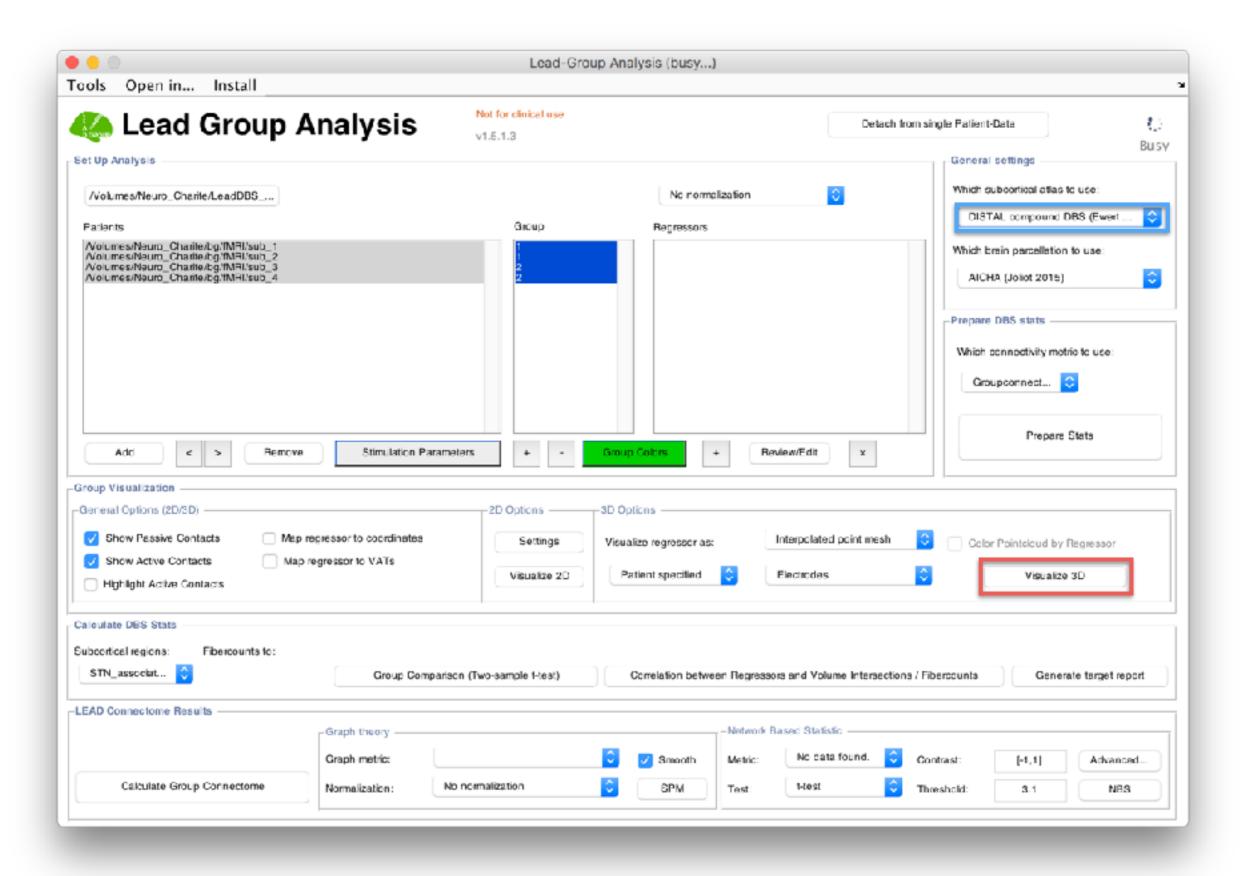
Add patients to your group analysis

Add patients to your group analysis

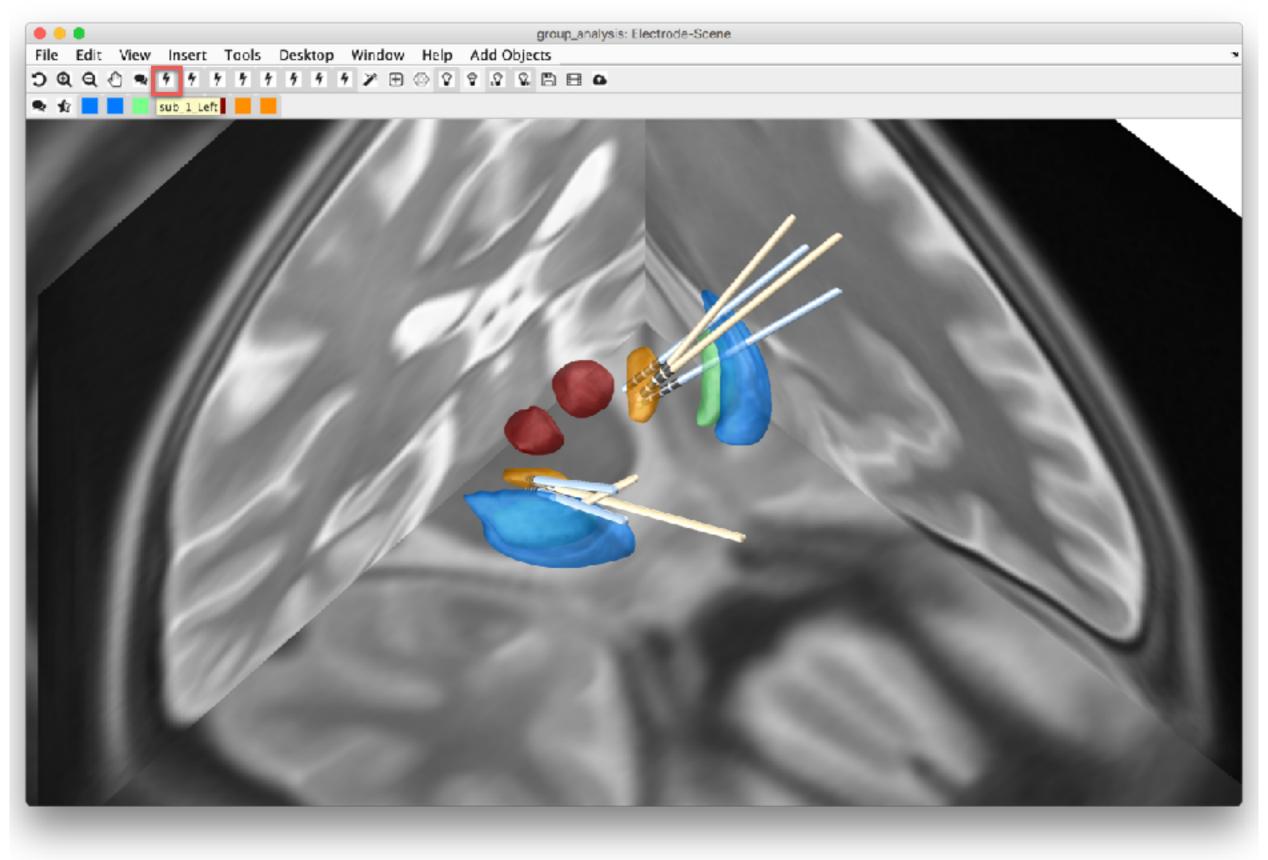**Assign subgroups if needed**

Assign group colors if needed
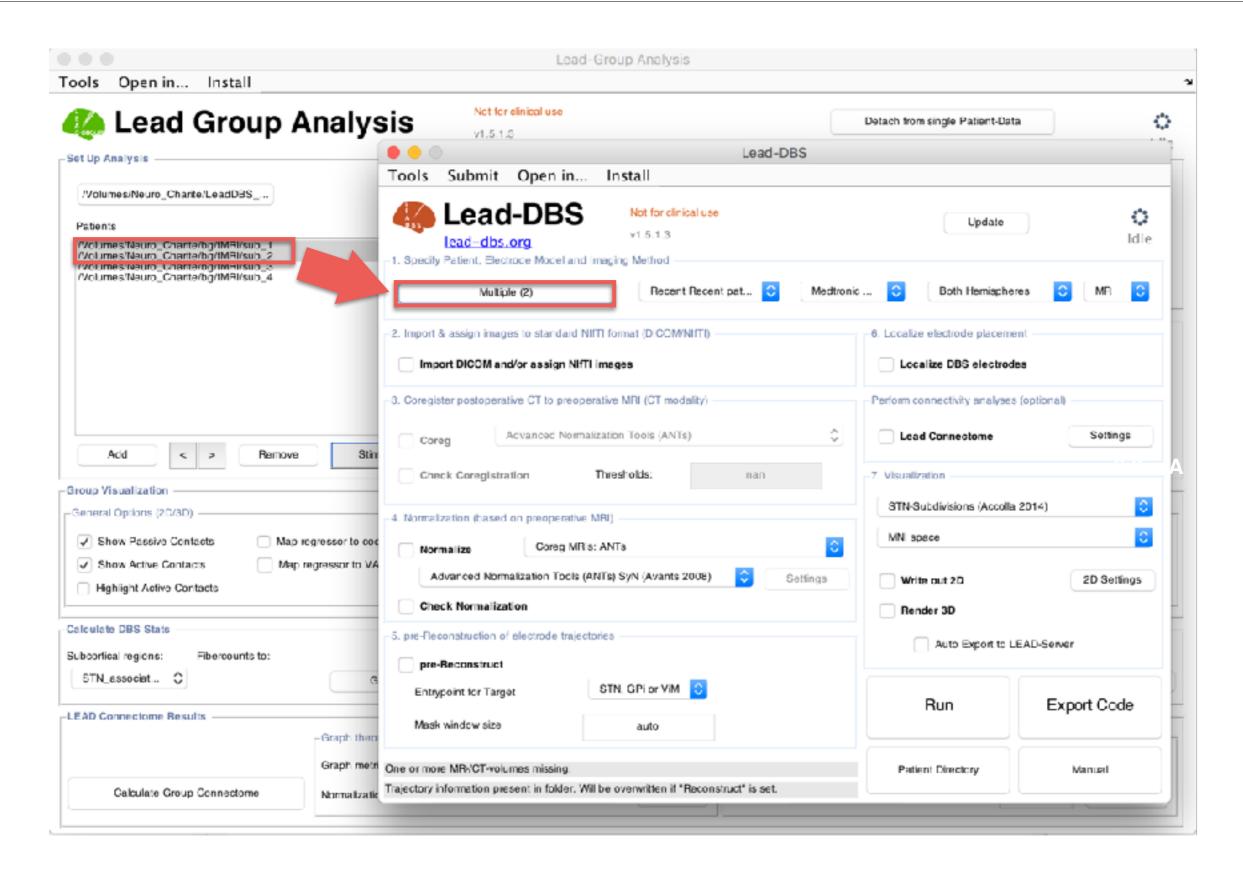
Group analyses in Lead-DBS

Select atlas and click **"Visualize 3D"**
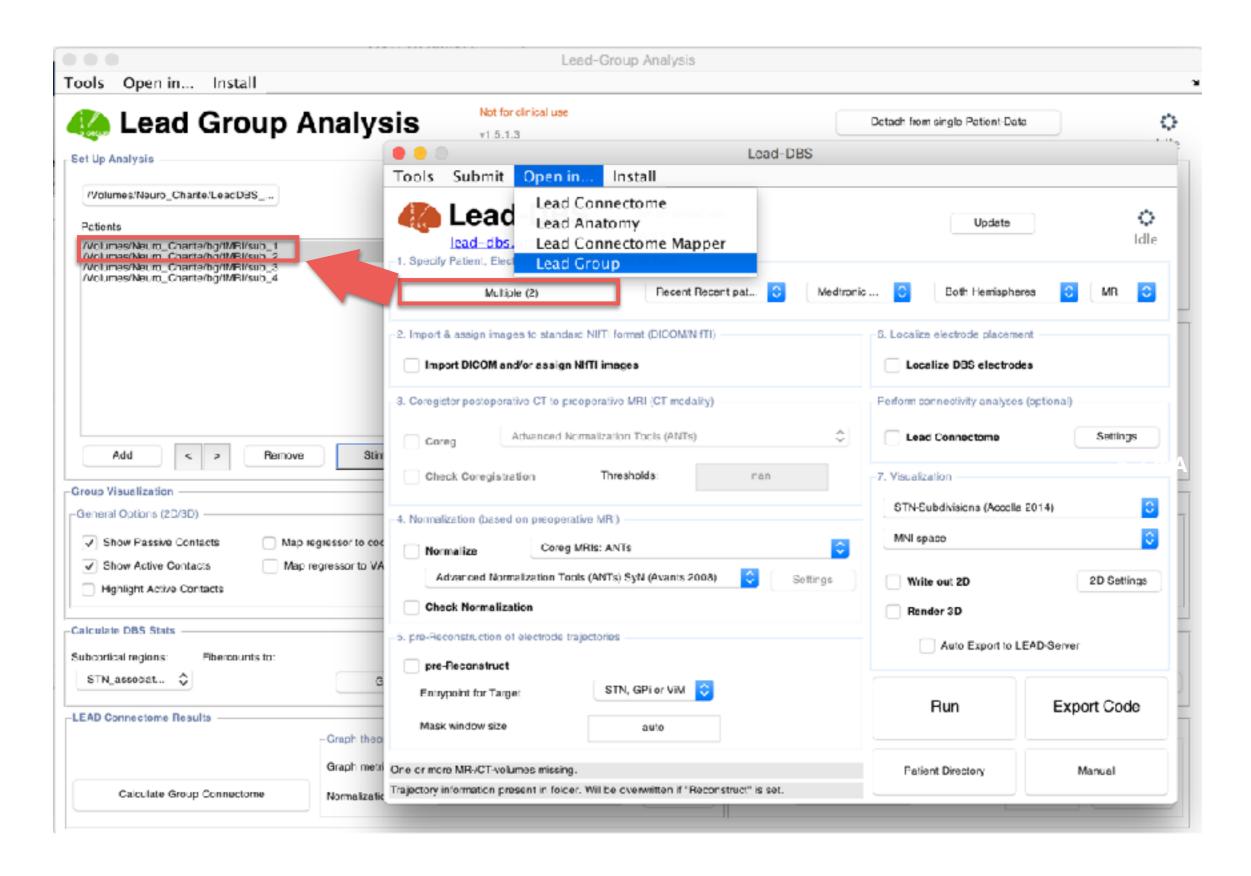
Select/Deselect electrodes to visualize

Select subjects to open them in Lead-DBS from group project

Select subjects to open them in Lead-DBS from group project

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(…the same would work vice versa e.g. to add subjects to group projects or to create new group projects)

Tune 2D visualization settings

Select atlas **and click "Visualize 2D"**

Add Stimulation parameters by clicking on the red button

Select VTA model approach, add amplitude and cathodal/anodal contacts.

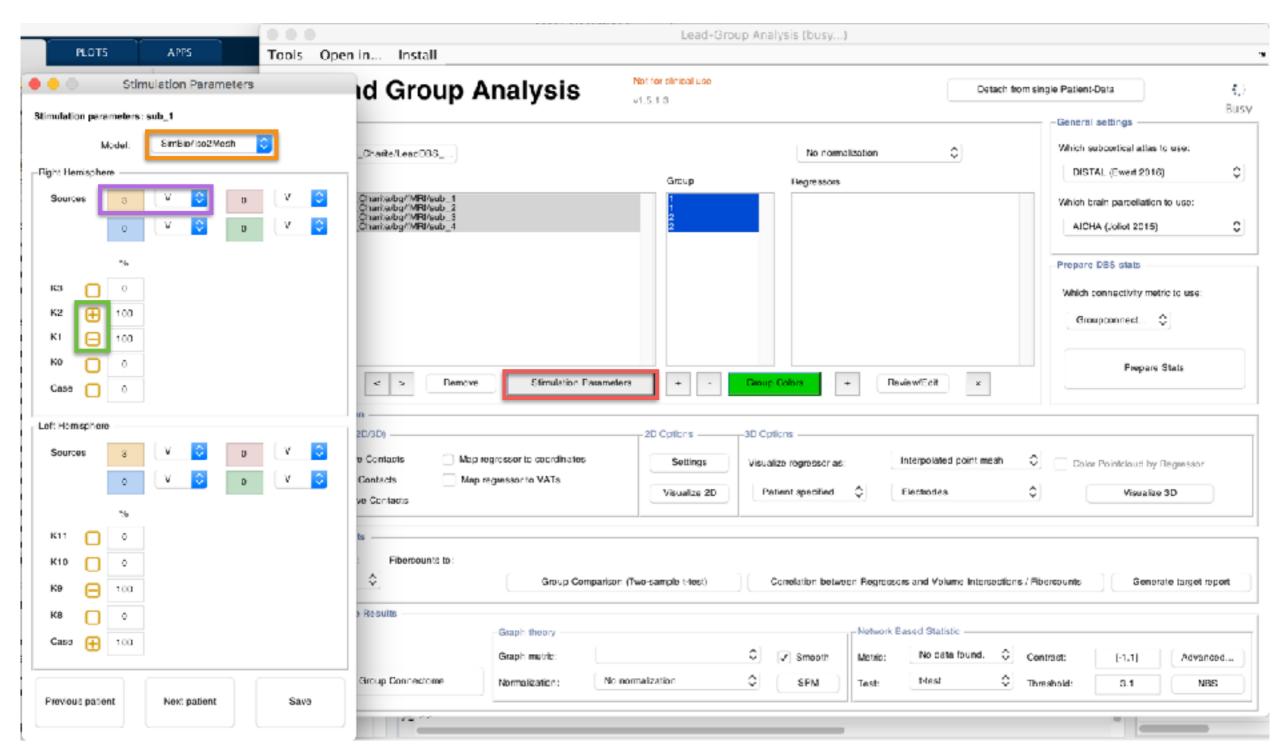**Do same for right and left electrode**

You can enter up to 4 power sources each with different amplitudes/active contacts
Color of contacts shows which source is currently being programmed

Jump to next patient and after adding parameters for all patients click save

Stim params and Group colors buttons turn green if information has been stored in model

Select "Highlight Active Contacts" to mark active contacts in red

Select "Highlight Active Contacts" to mark active contacts in red

2D result – here can also choose to show only active contacts and not show passive contacts

Specify to show contacts as point clouds instead of electrodes

Now you can specify also in 3D whether to show passive and/or active contacts and whether to highlight active ones

Select an atlas, a whole-brain parcellation, a fiberset and click "Prepare Stats"

Now overlaps between each VTA and each atlas structure have been calculated based on selected atlas

Now connectivity between VTA and each brain parcel has been calculated based on selected parcellation

Compare overlaps / connectivity values in a two-sample t-test

Generate "target report" of which contact resides inside / outside atlas structure

Group analyses in Lead-DBS

Distances between each contact center and nearest atlas voxel center

Thresholded values (by 0.5 mm)

Distances of electrode centers to nearest...

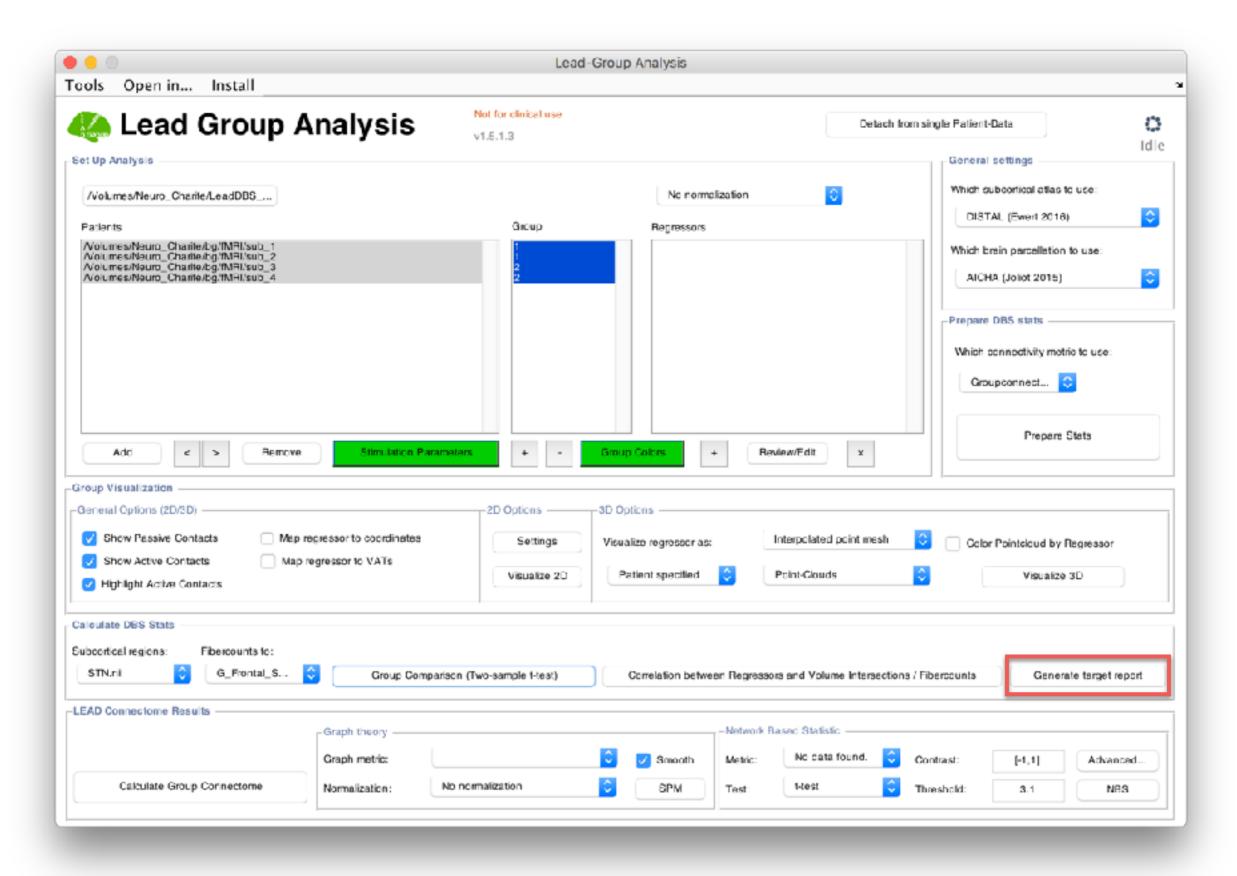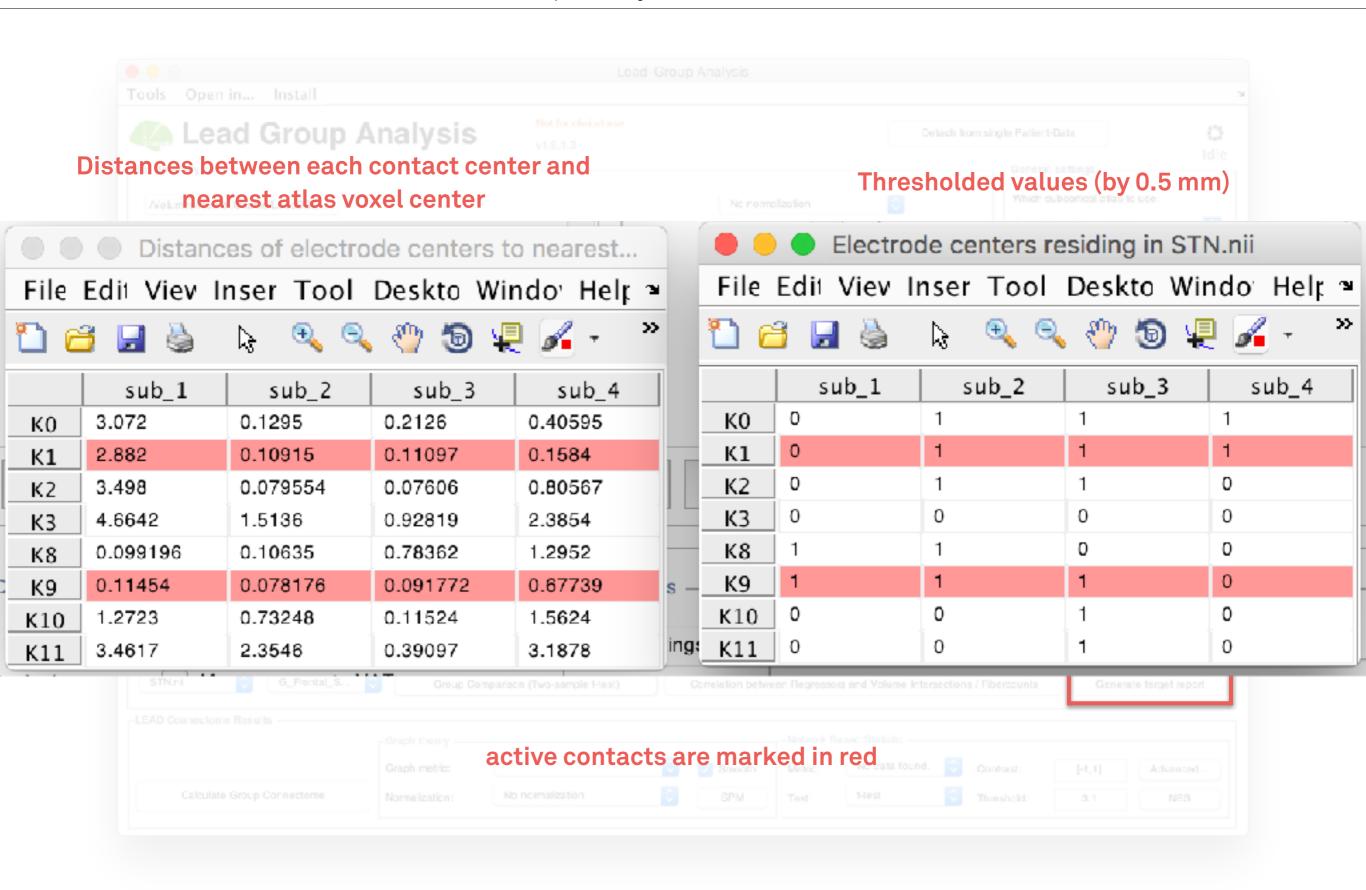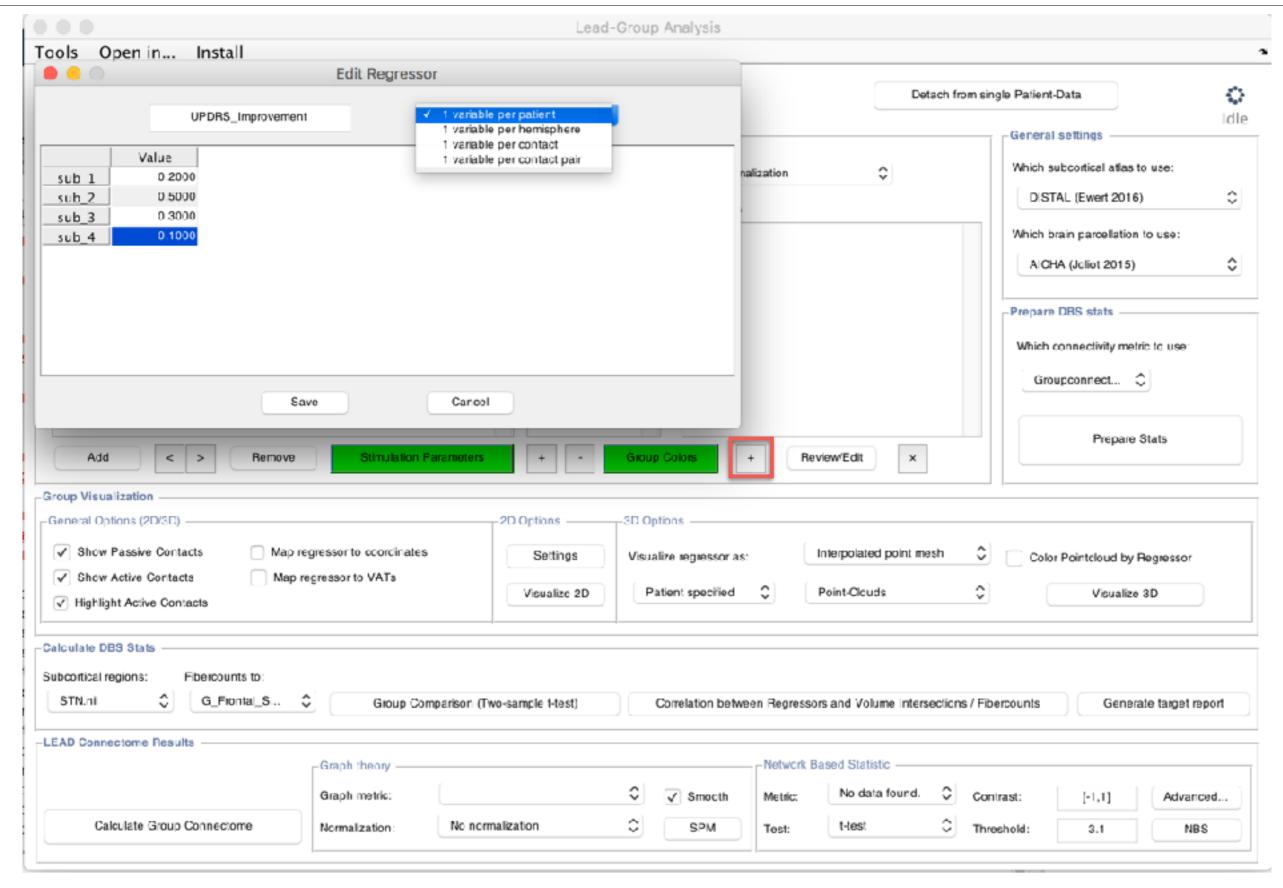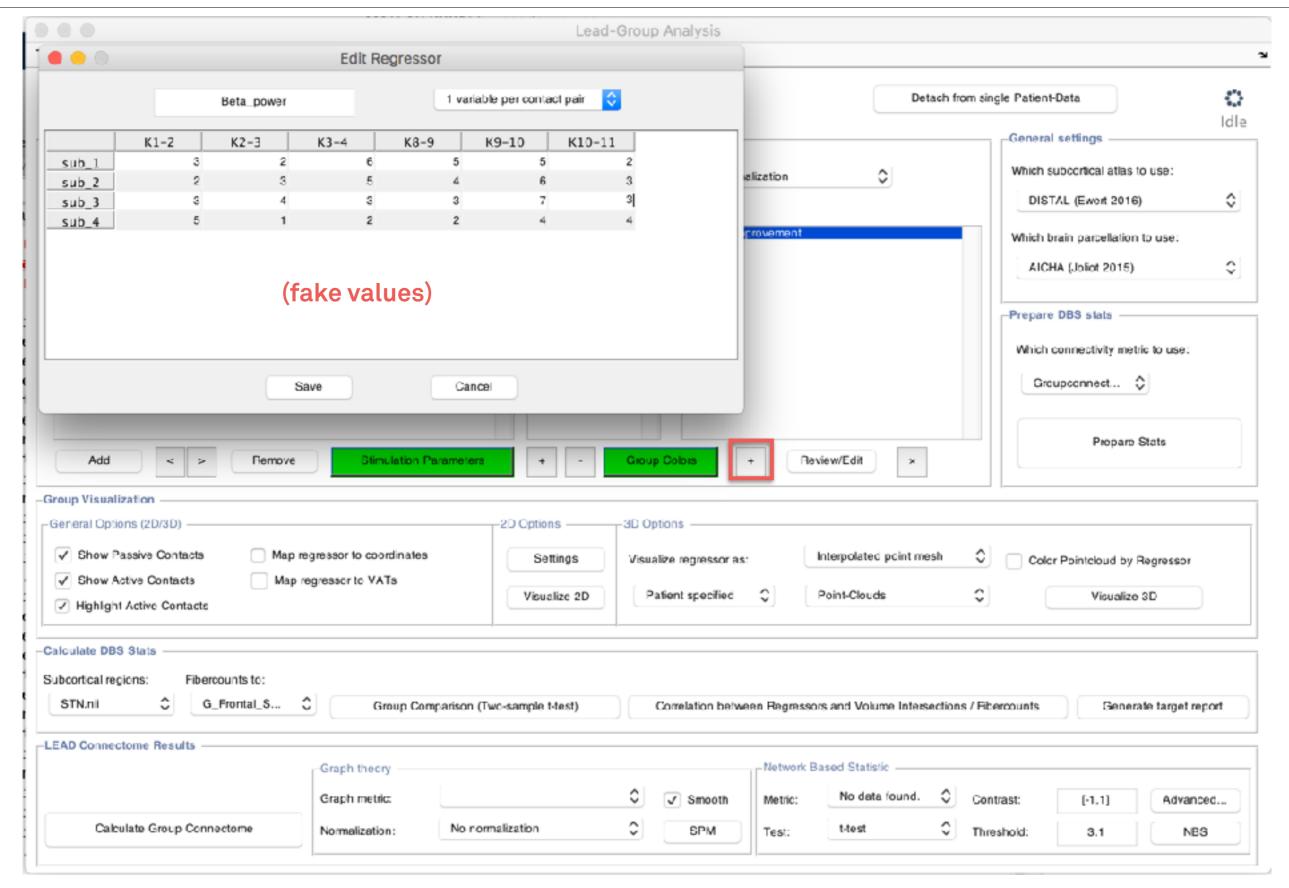|	sub_1	sub_2	sub_3	sub_4
K0	3.072	0.1295	0.2126	0.40595
K1	2.882	0.10915	0.11097	0.1584
K2	3.498	0.079554	0.07606	0.80567
K3	4.6642	1.5136	0.92819	2.3854
K8	0.099196	0.10635	0.78362	1.2952
K9	0.11454	0.078176	0.091772	0.87739
K10	1.2723	0.73248	0.11524	1.5624
K11	3.4617	2.3546	0.39097	3.1878

Electrode centers residing in STN.nii

	sub_1	sub_2	sub_3	sub_4
K0	0	1	1	1
K1	0	1	1	1
K2	0	1	1	0
K3	0	0	0	0
K8	1	1	0	0
K9	1	1	1	0
K10	0	0	1	0
K11	0	0	1	0

active contacts are marked in red

Generate "target report" of which contact resides inside / outside atlas structure

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Group analyses in Lead-DBS

Add new "regressor" to project

Regressors can have various dimensions

Group analyses in Lead-DBS

Calculate correlation between selected regressor and VAT/Atlas overlap or Connectivity between VAT/region

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Spatially map selected regressor to either coordinates or VATs