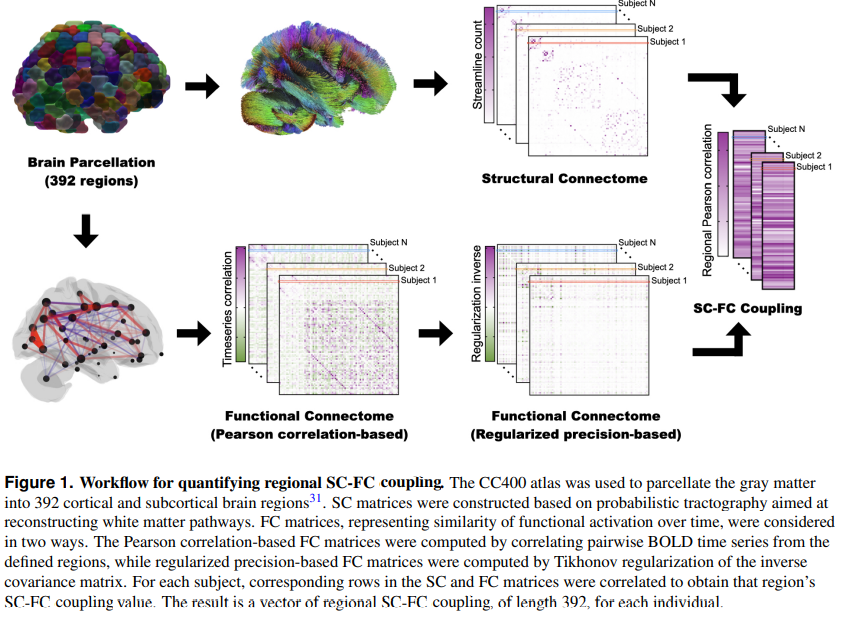
Brief research about background knowledge

SC : Physical links between brain areas

FC : in the context of resting-state functional MRI, refers to coherent slow spontaneous in the blood oxygenation level dependent

* FC commonly used to assess whole brain dynamics and function.
* Both shows specific alterations during aging and brain disorders.
* Seems to have there are strong correlation between them, but casual relation remains unknown. ( Relationship between SC and FC may vary with age and sex.)
* SC-FC coupling : Coupling between structure connectivity and its functional counterparts was computed as Pearson’s correlation coefficient between these two measures. The structure of the work flow looks like this. ( Image from ref 2)



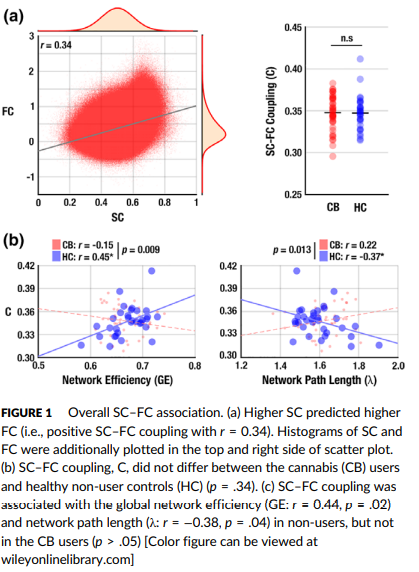
So the paper from reference 2 looks quite similar with what we want to do. They quantified the SC-FC coupling of their target group(age, sex, cognition) They also made glm model. The new concept might be SC-FC coupling. But I found how to compute this coupling and the python code from the author.

[scfc-coupling/generate\_data.py at main · zijin-gu/scfc-coupling (github.com)](https://github.com/zijin-gu/scfc-coupling/blob/main/generate_data.py)

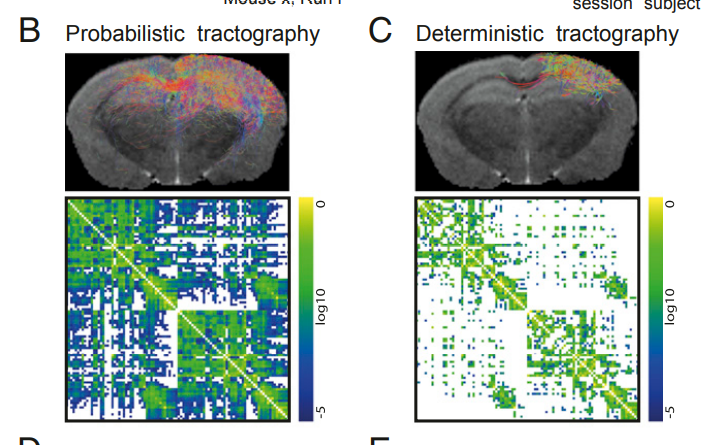
Last paper is highly related with one of our interest. In this paper they analyzed the SC-FC coupling in drug users (THC : cannabis users) .

Since we can get SC-FC coupling from paper2 so we can do similar work in the last paper.

This plot is from the paper3. CB(drug user) HC(Healthy control).

* 

Also I got some good example that we can use the plot that I made. Before making SC-FC coupling, show each subject’s MRI and plot in each group(drug users/ healthy users)



* ( Showing MRI : (can get from GUI program from the website) and the plot might be more informative) (ref 1)

Reference

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3. Aberrant structural–functional coupling in adult cannabis users Dae-Jin Kim1 | Ashley M. Schnakenberg Martin1 | Yong-Wook Shin2 | Hang Joon Jo3 | Hu Cheng1,4 | Sharlene D. Newman1,4 | Olaf Sporns1,5 | William P. Hetrick1 | Eli Calkins1 | Brian F. O'Donnell1
4. Development of structure–function coupling in human brain networks during youth”-Graham L. Baum, Zaixu Cui, David R. Roalf, Rastko Ciric, Richard F. Betzel, Bart Larsen
5. Revisiting correlation-based functional connectivity and its relationship with structural connectivity Raphaël Liégeois 1,2, Augusto Santos1 , Vincenzo Matta3 , Dimitri Van De Ville1,2, and Ali H. Sayed1