

The involvement of the cerebellum in structural connectome changes in episodic migraine without aura

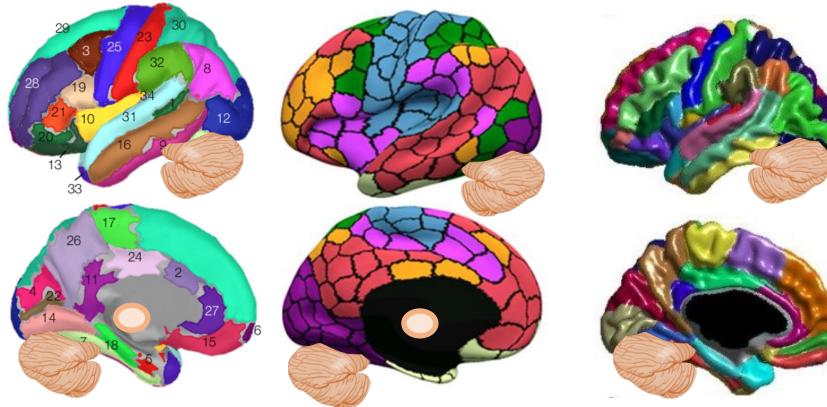
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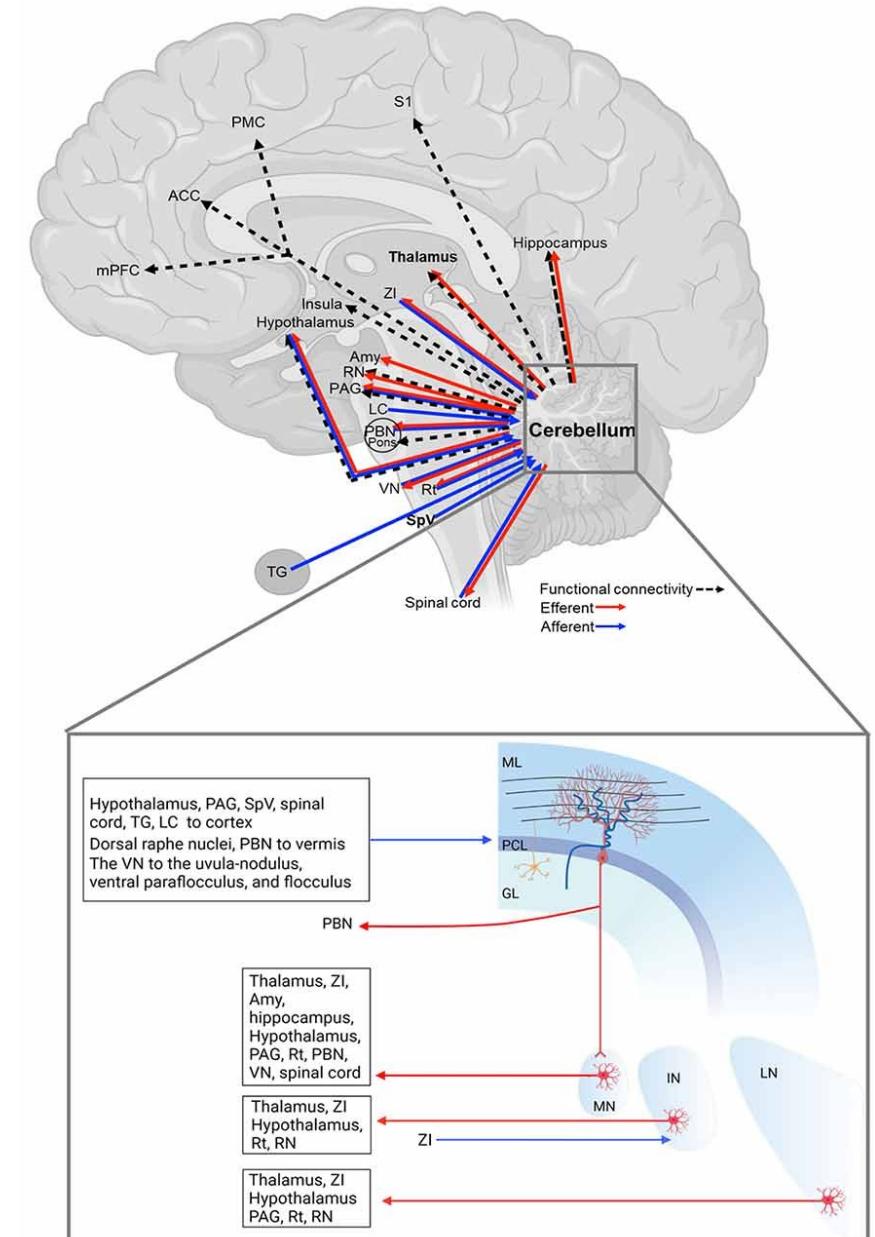
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Introduction

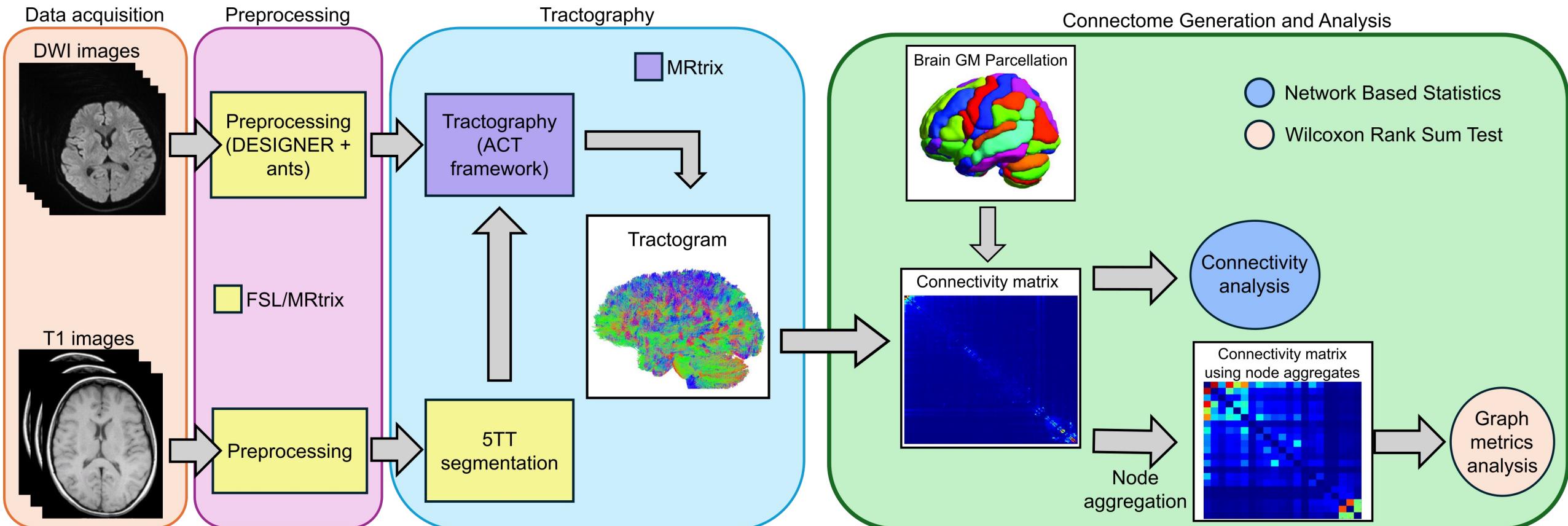
- 17% of the population worldwide
- Functional and structural disruptions brain networks
- Commonly used atlases: Desikan, Schaffer, AAL90



Goal: Investigate the structural connectome changes in migraine patients, using cortical, subcortical and cerebellar regions.



Methods



- 15 healthy controls
- 14 migraine patients

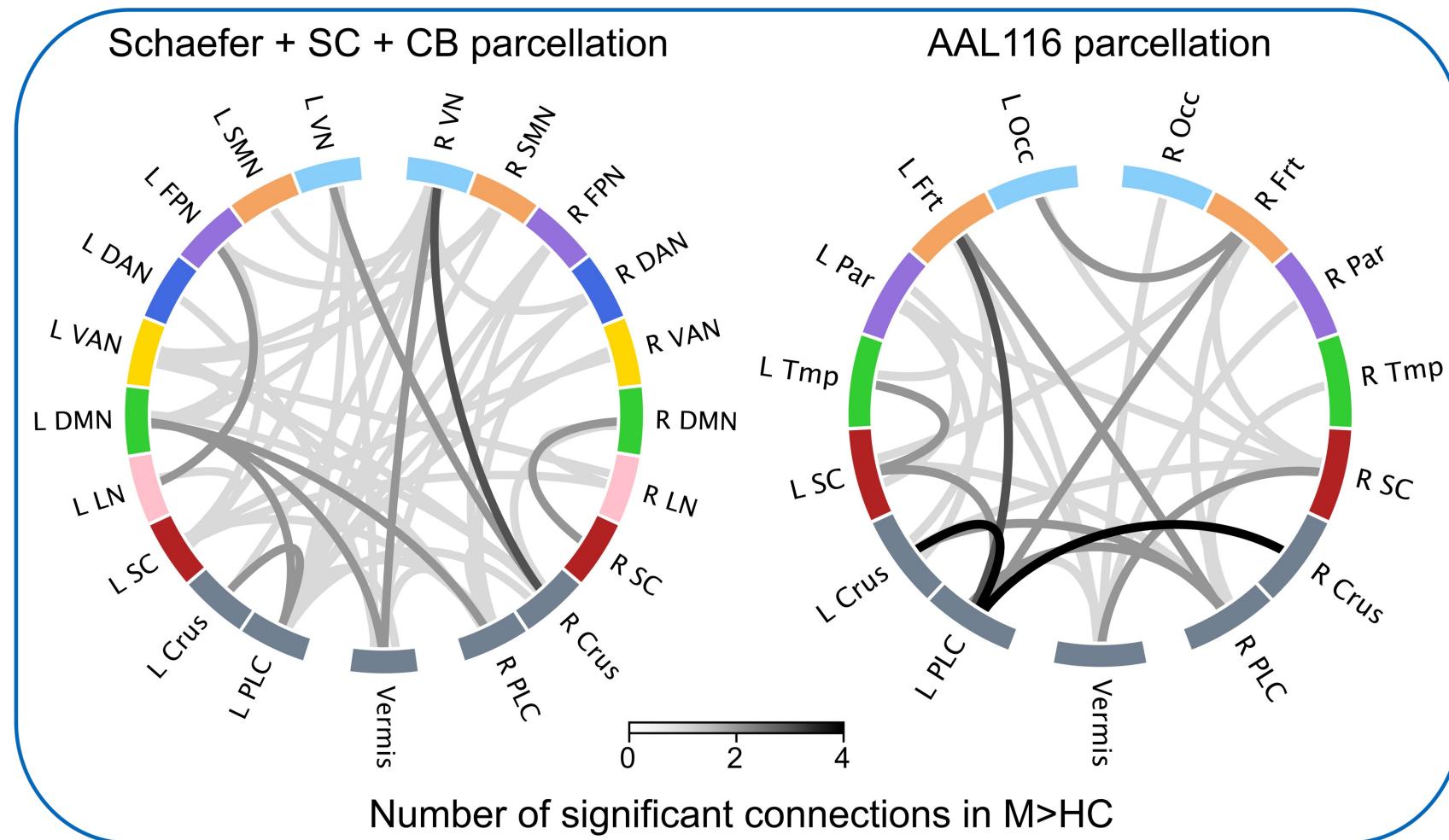
Parcellations:

- Schaefer + Subcortical + Cerebellum
- AAL116

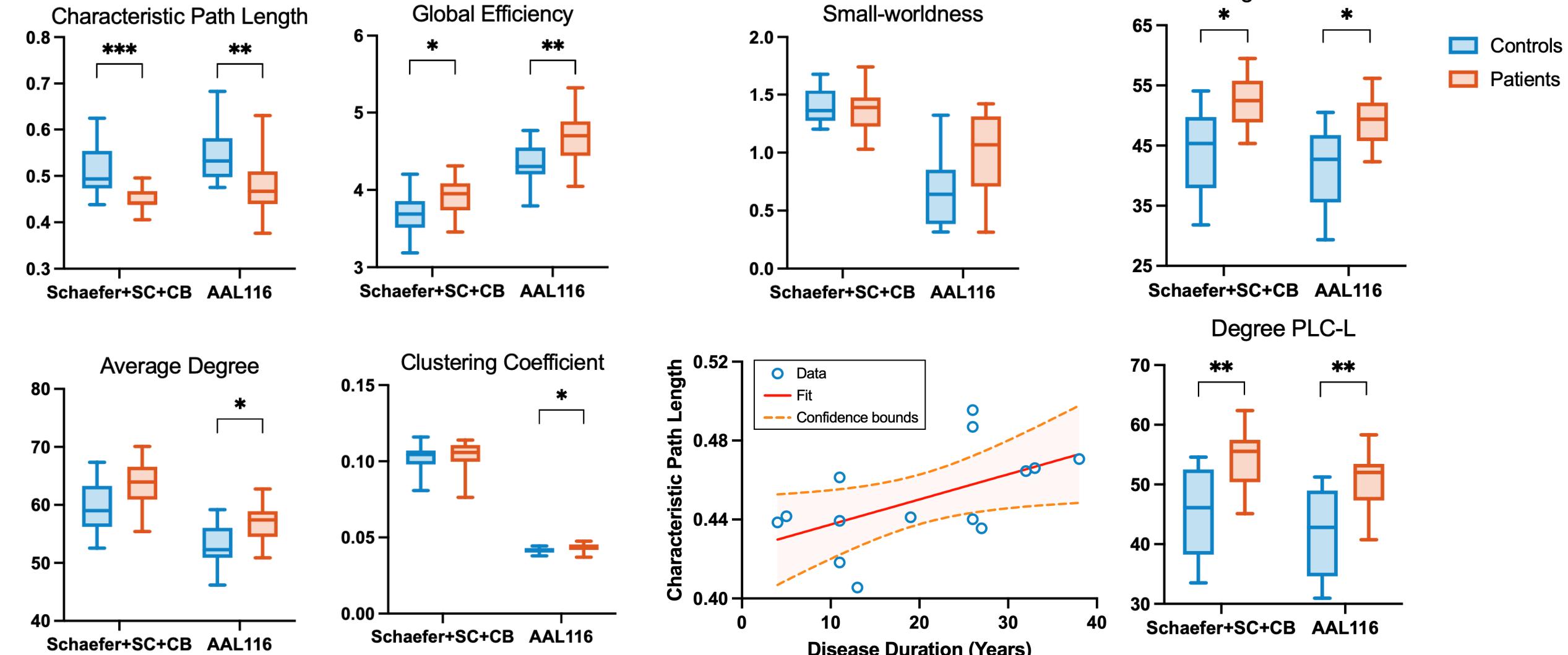
Results - Connectivity

Increased connectivity:

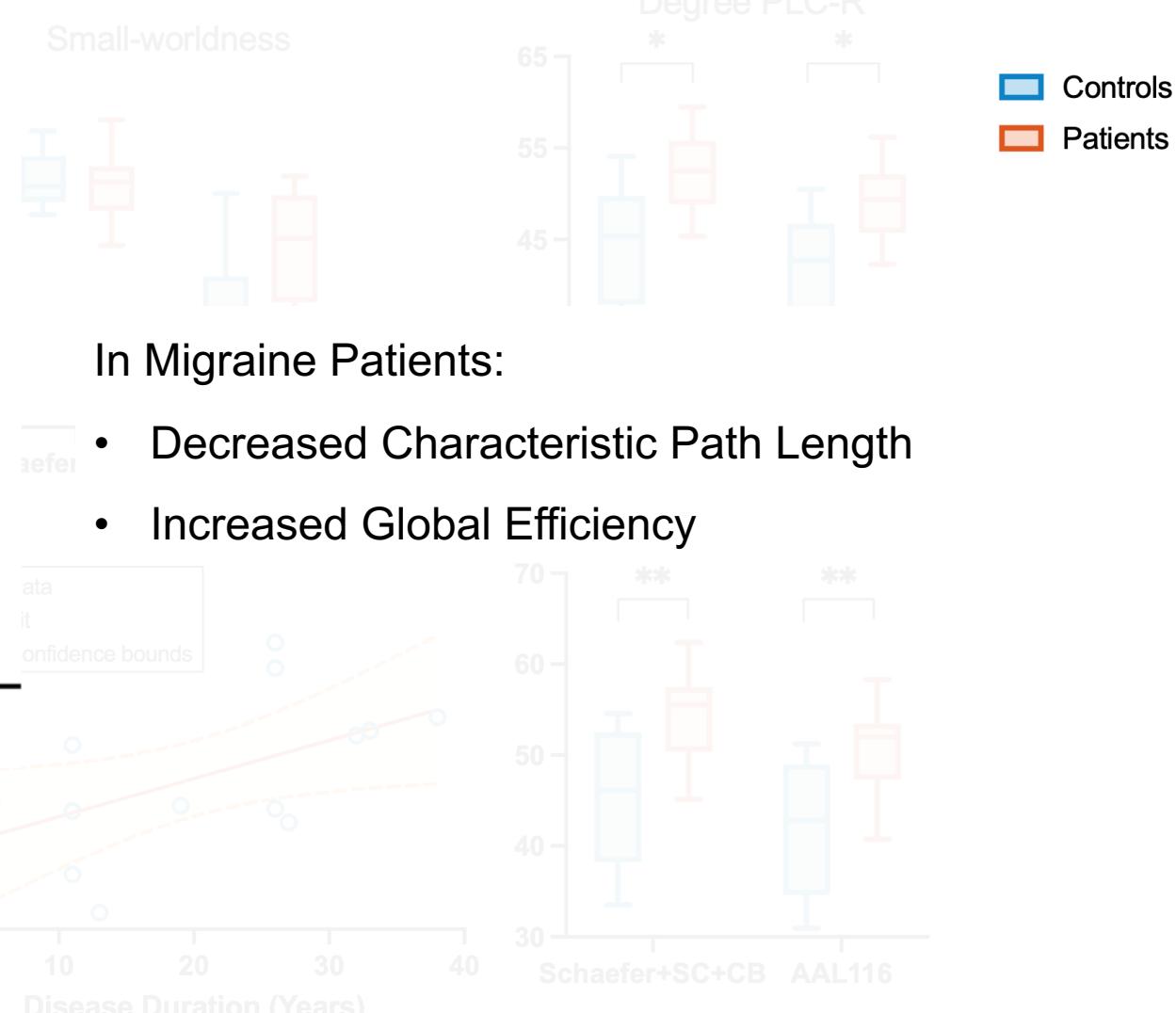
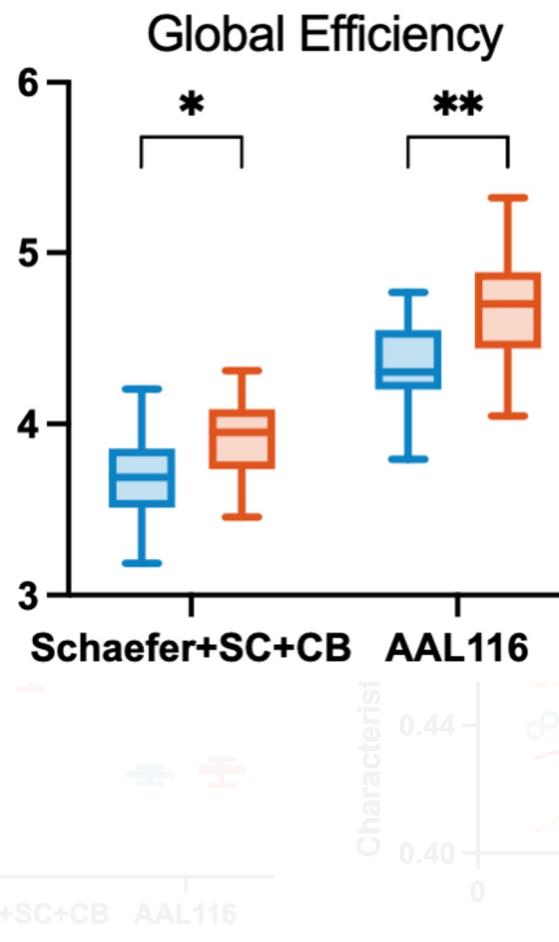
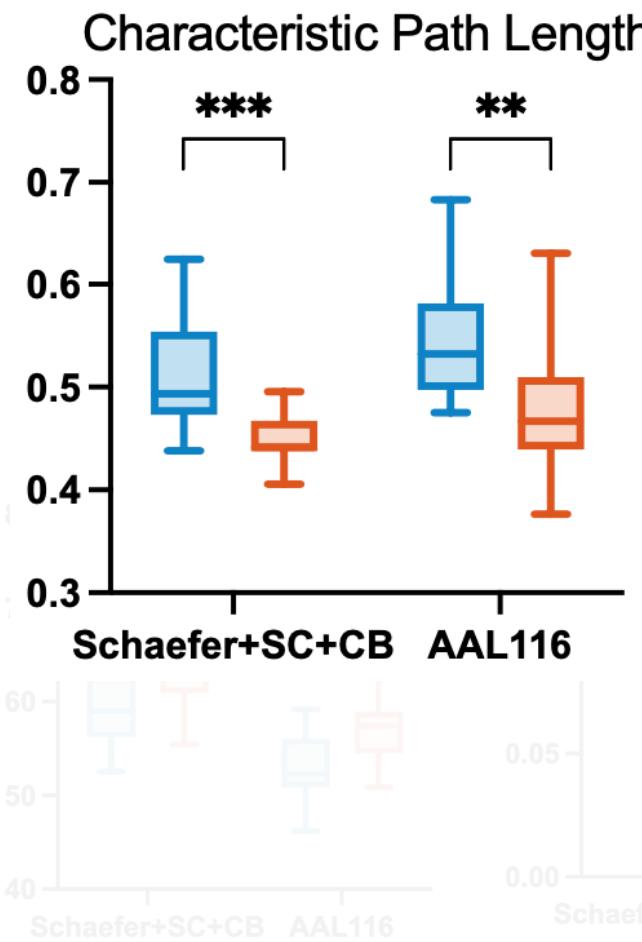
- Left Crus - Left PLC
- Occ/VN - Vermis
- Cerebellum - Frontal and Parietal regions
- Similar patterns across parcellations



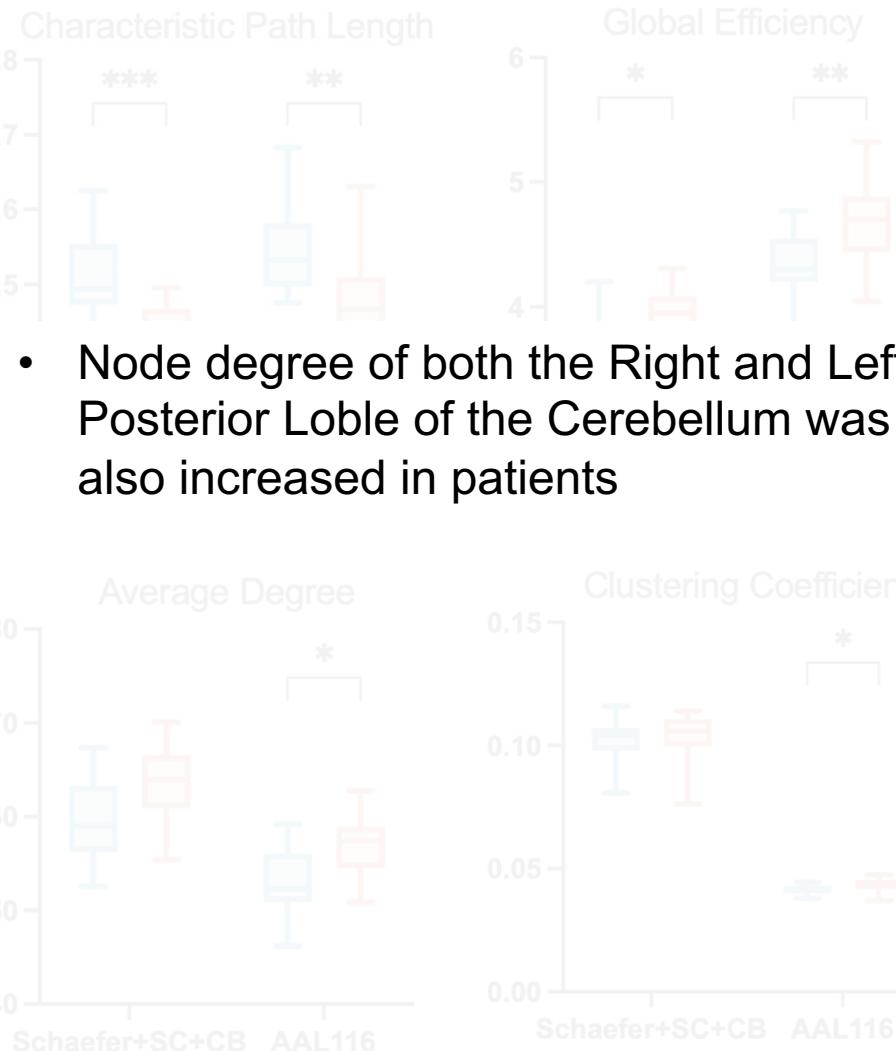
Results – Graph Metrics



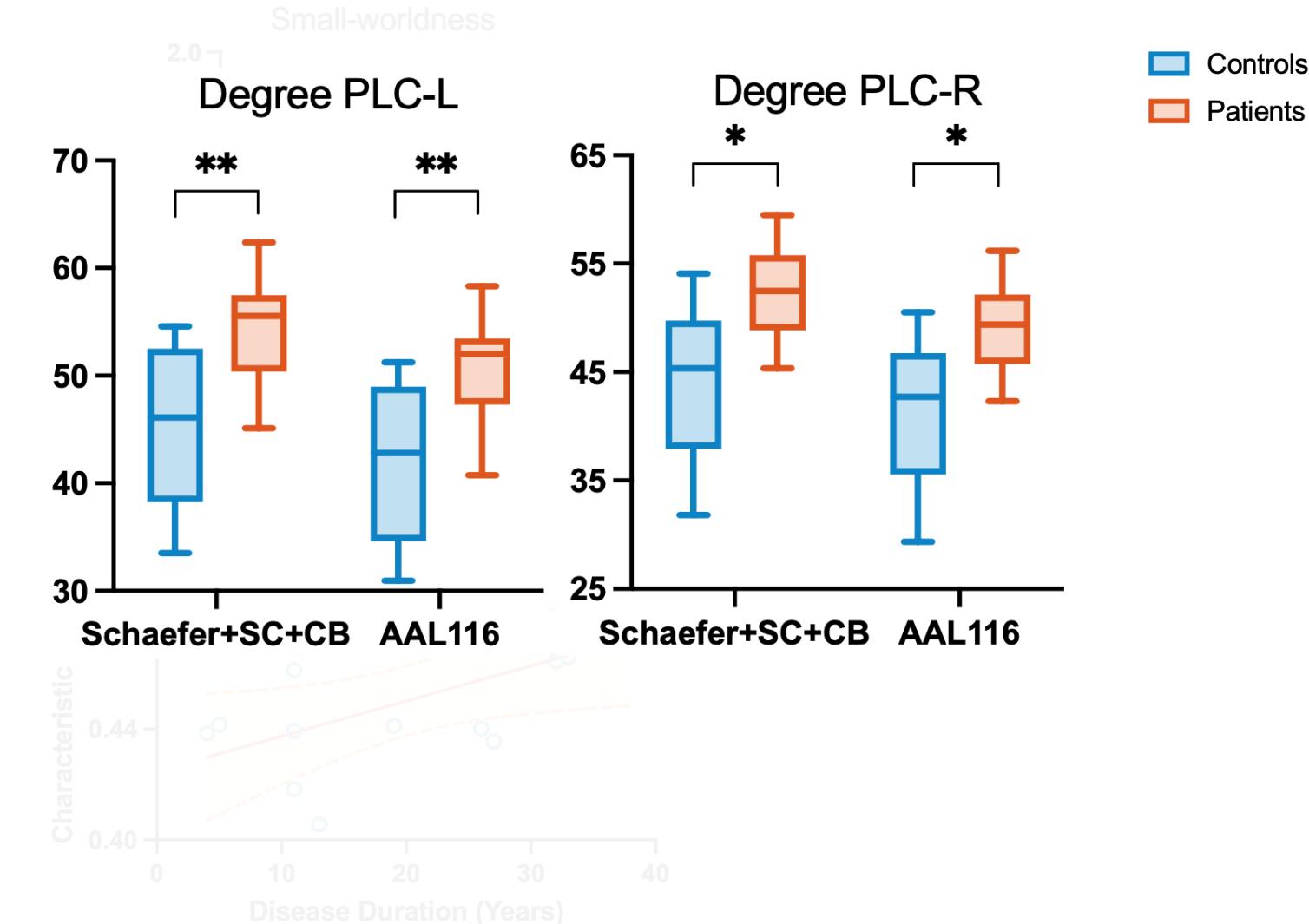
Results – Graph Metrics



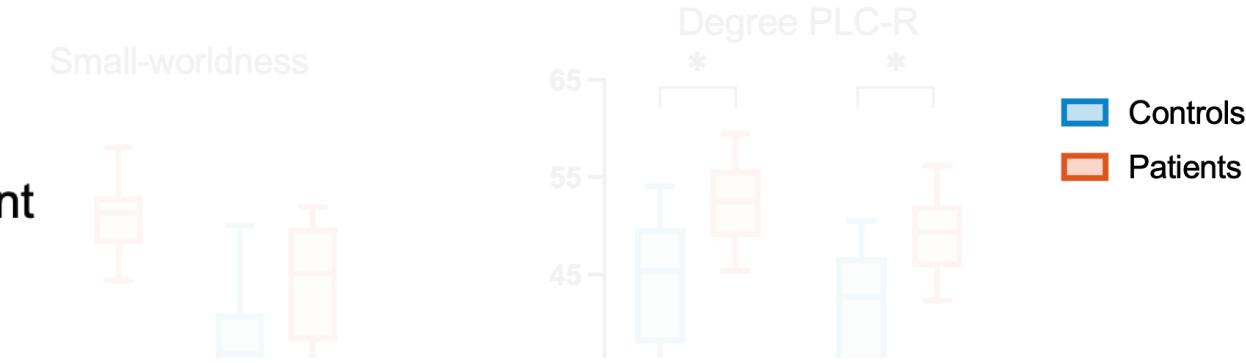
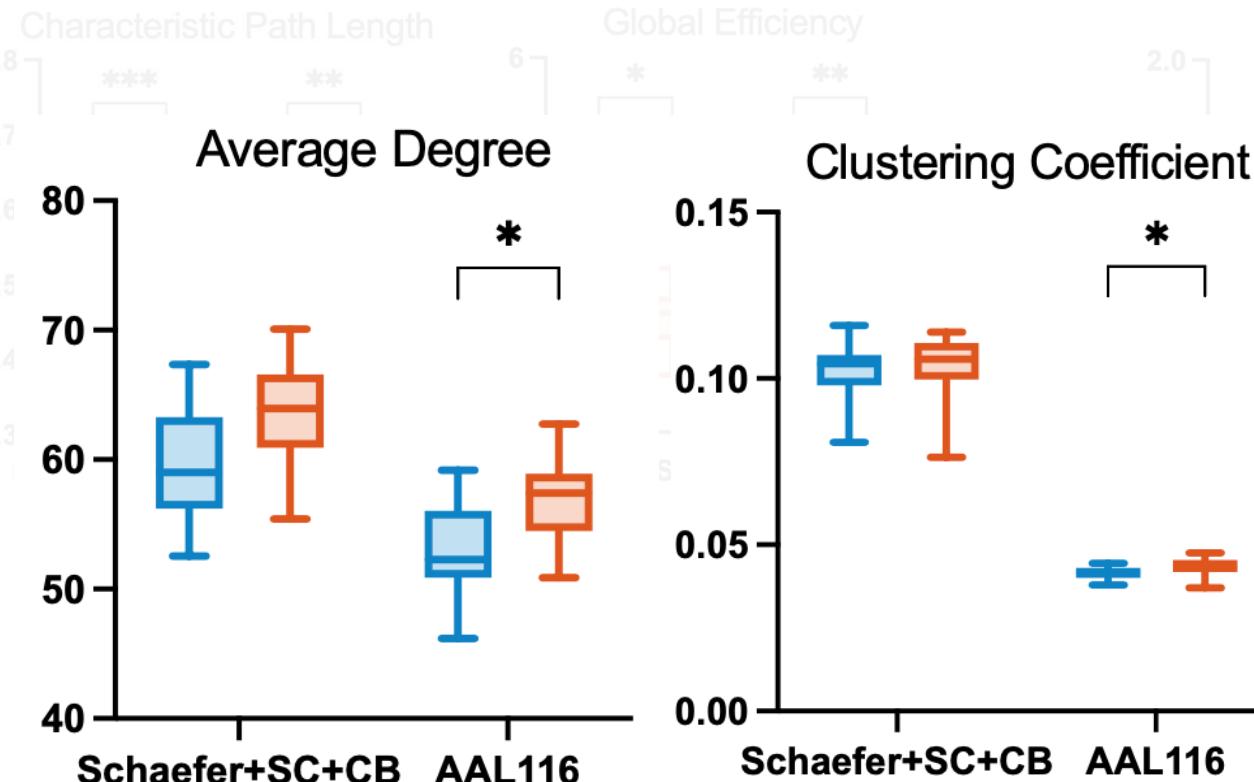
Results – Graph Metrics



- Node degree of both the Right and Left Posterior Lobe of the Cerebellum was also increased in patients

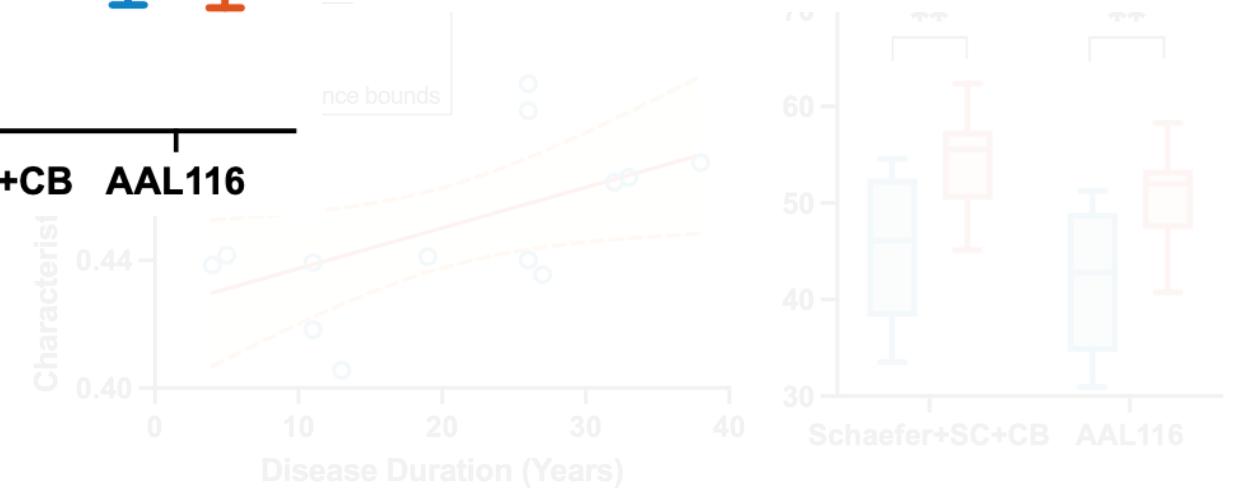


Results – Graph Metrics

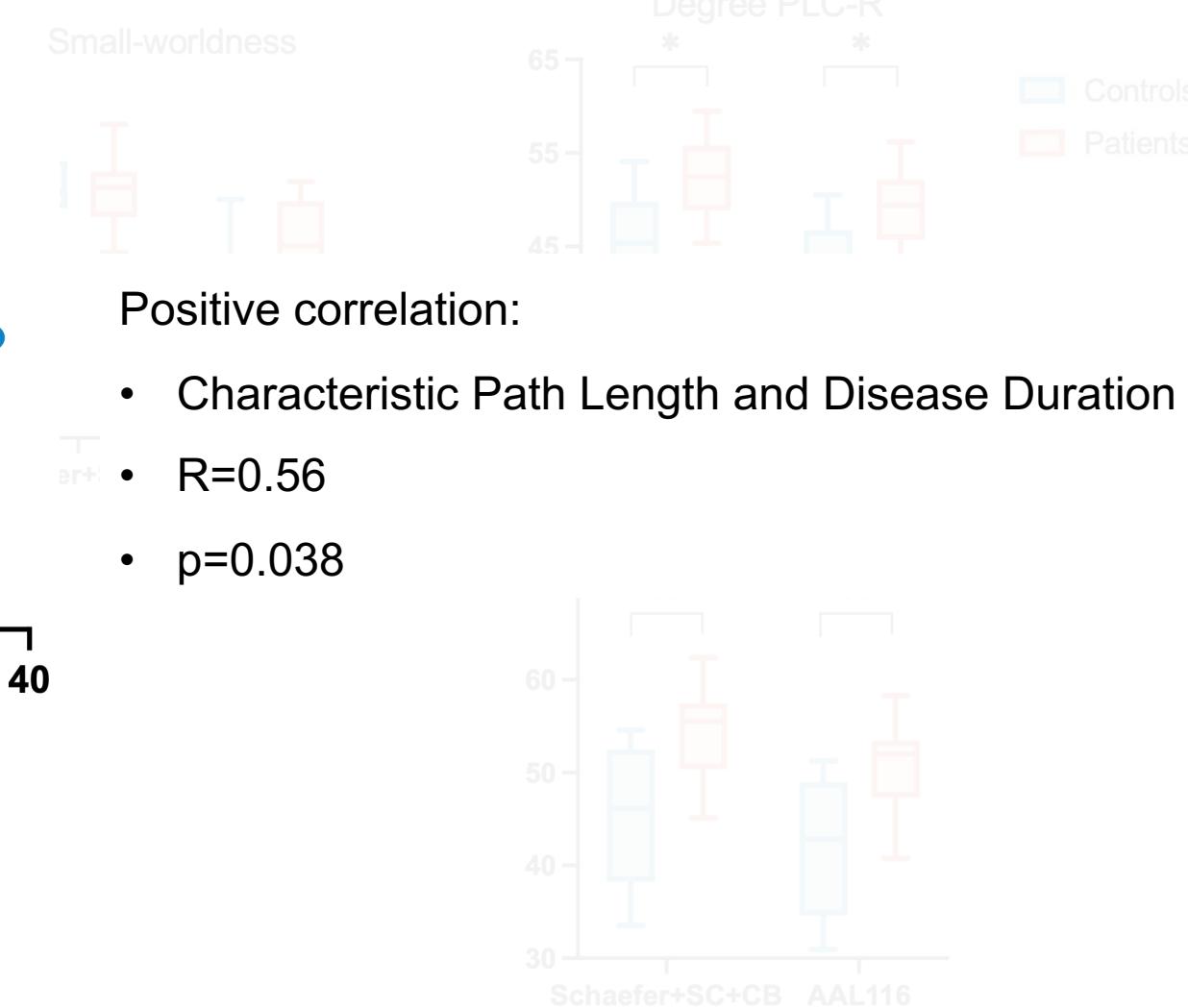
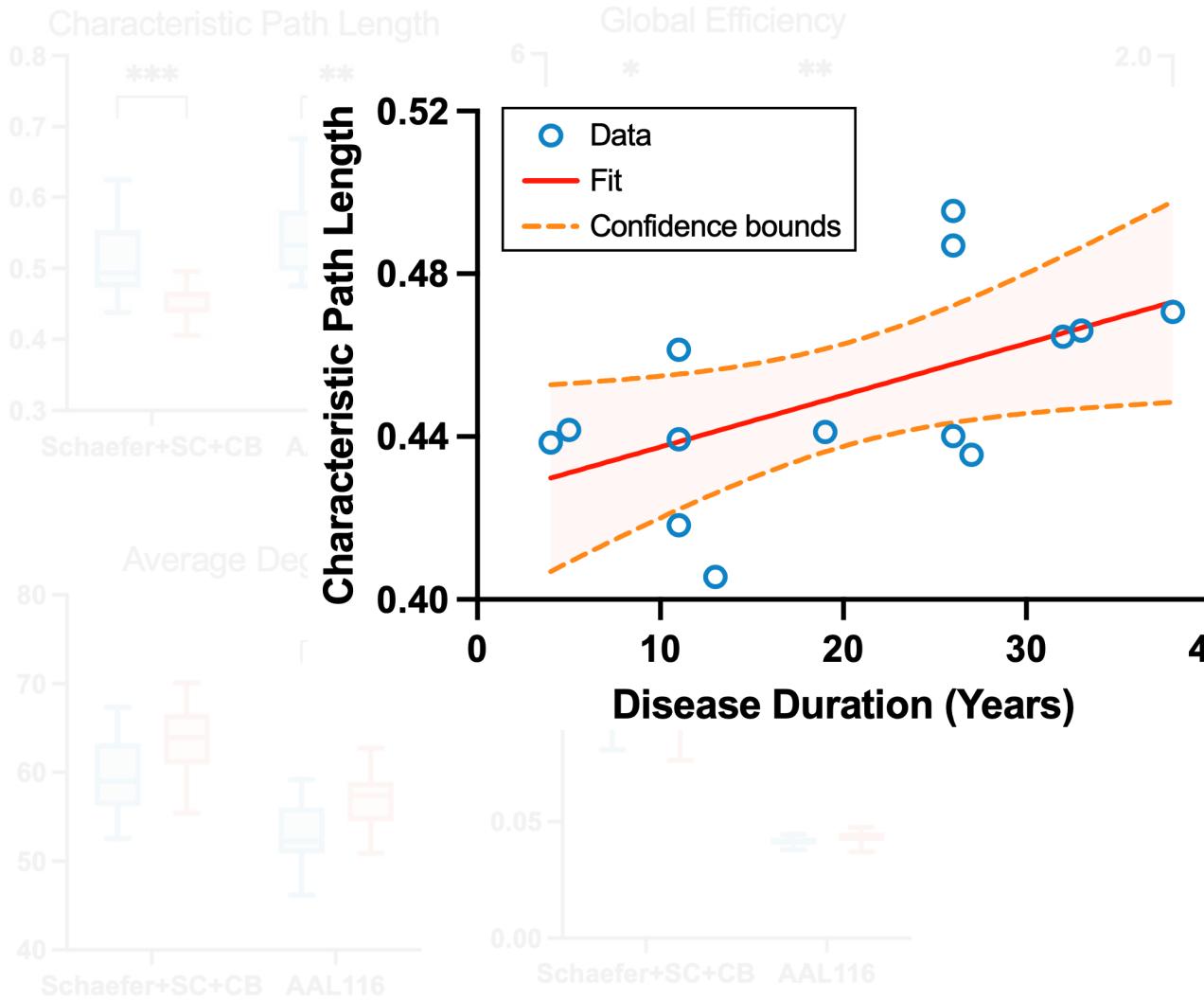


When using AAL116:

- Average Degree and Clustering Coefficient are increased in patients



Results – Graph Metrics



Discussion

- Structural connectivity disruptions in the cerebellum

↳ Consistent between parcellations

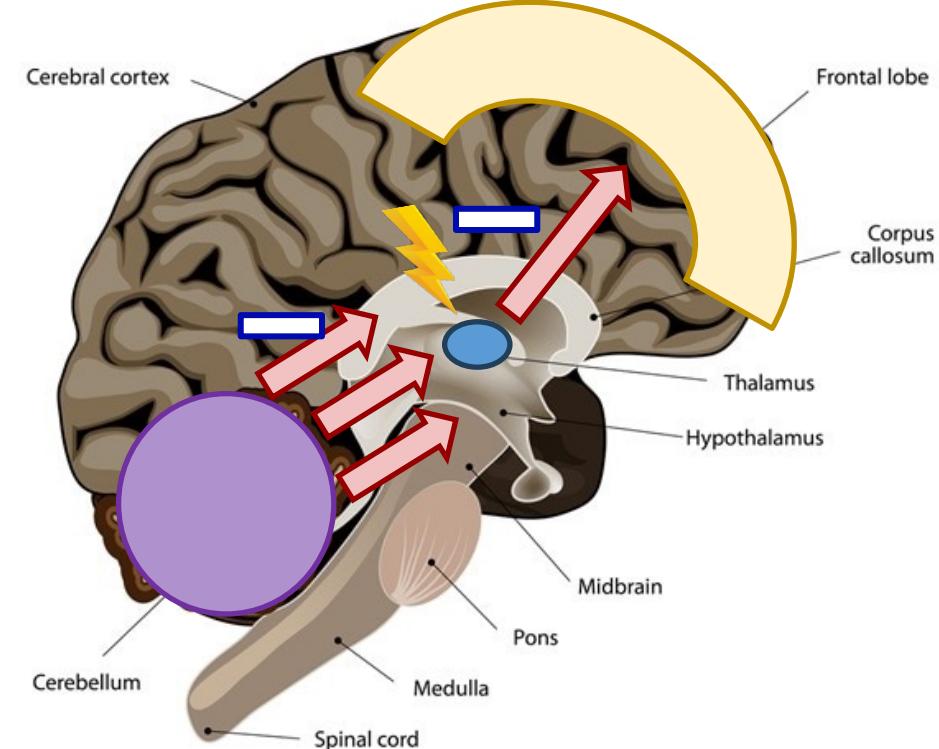


- Inhibitory role in pain processing through thalamus

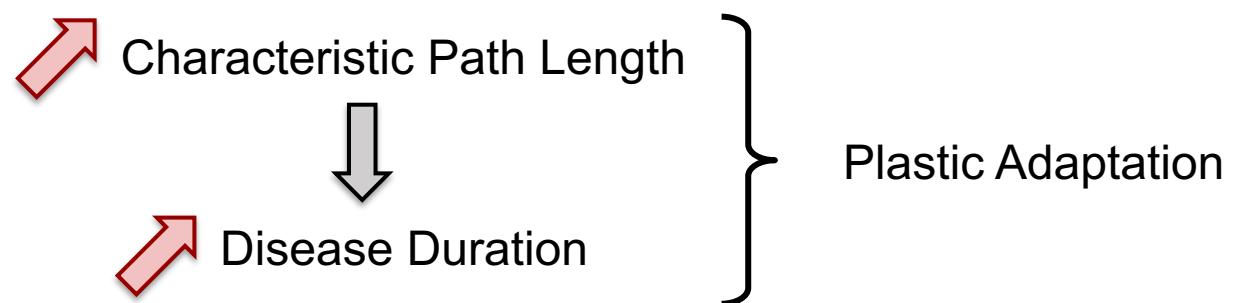
↳ Dysfunctional negative feedback loop

- The crus involved in cognitive and emotional functions

↳ Cognitive deficits common in migraine



Discussion



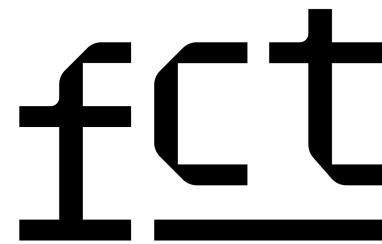
Conclusion

- ➡ **Take-home message 1:** The structural connectome of migraine patients shows to be altered, having an increased integration that may be the cause of heightened pain information dissemination

- ➡ **Take-home message 2:** The cerebellum proves to play an importante role in migraine pathophysiology and should therefore be included in connectome studies

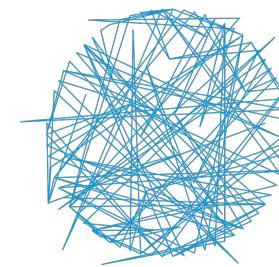
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