

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

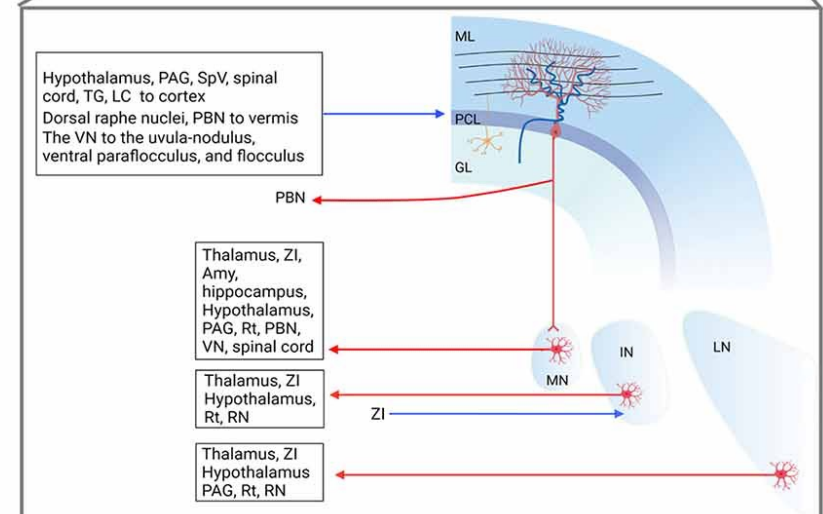
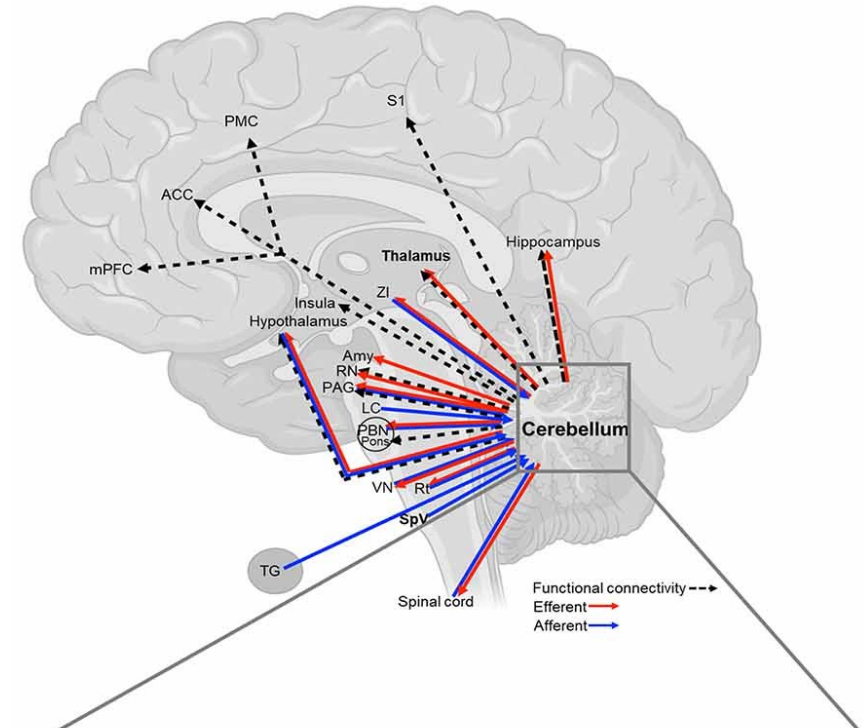
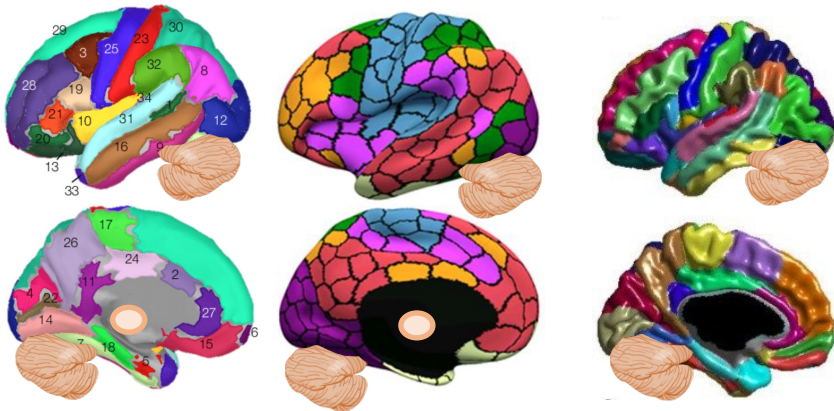
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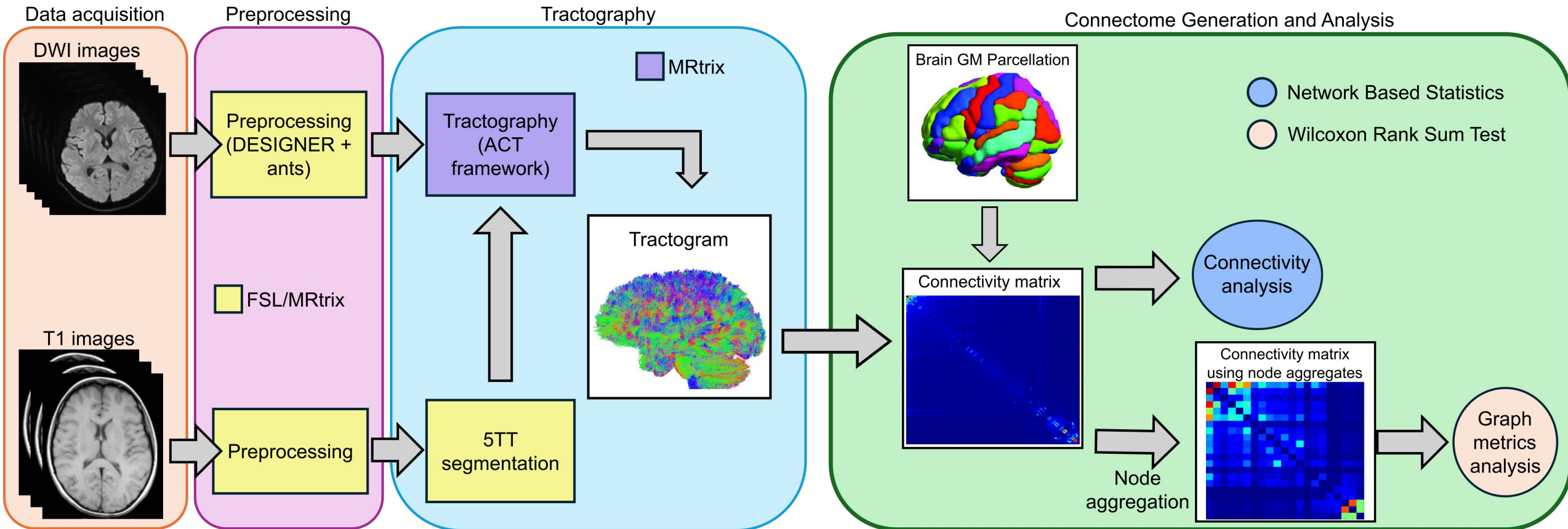
# Introduction

- 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

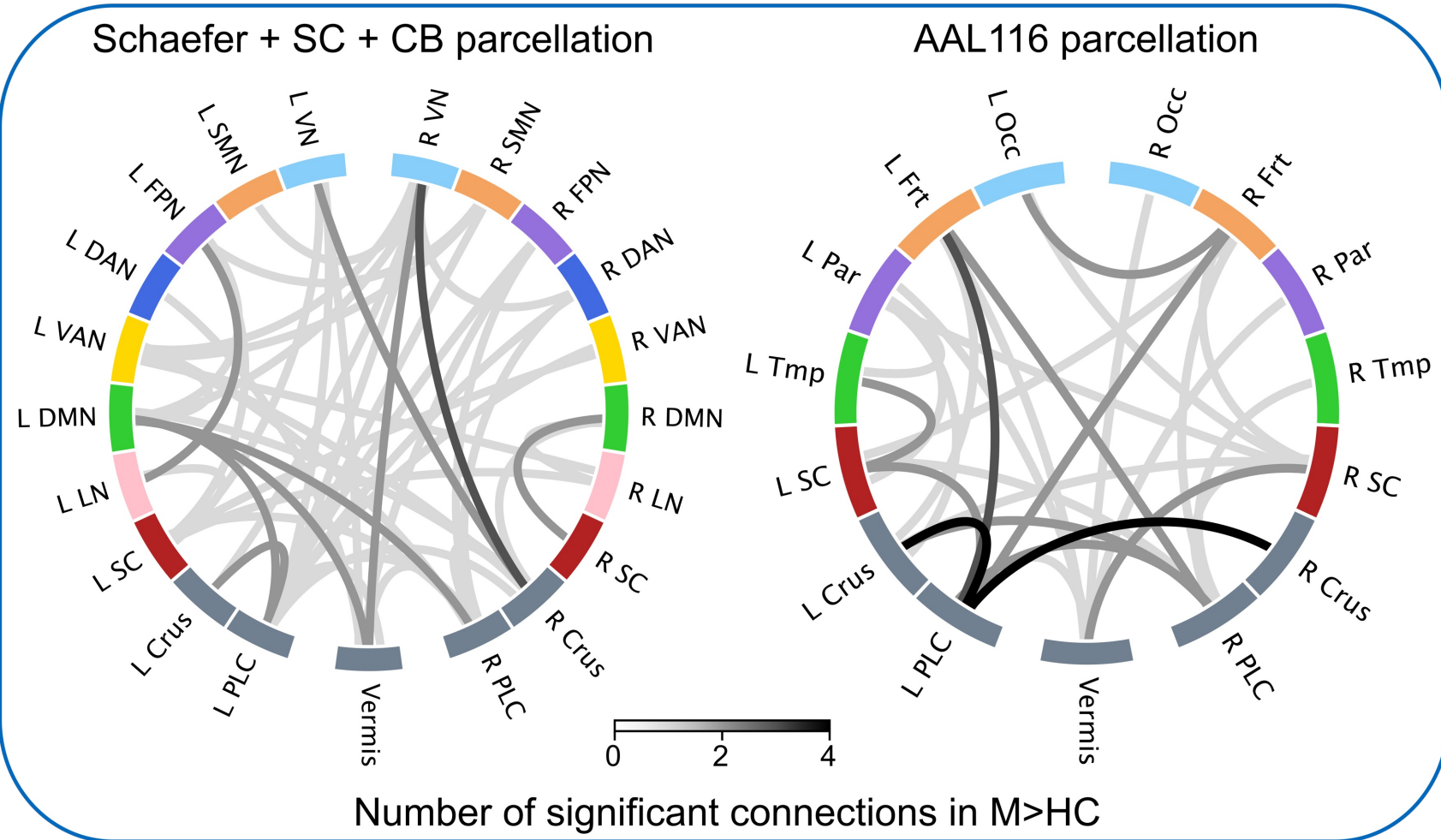
Parcellations:

- Schaefer + Subcortical + Cerebellum
- AAL116

# Results - Connectivity

Schaefer + SC + CB parcellation

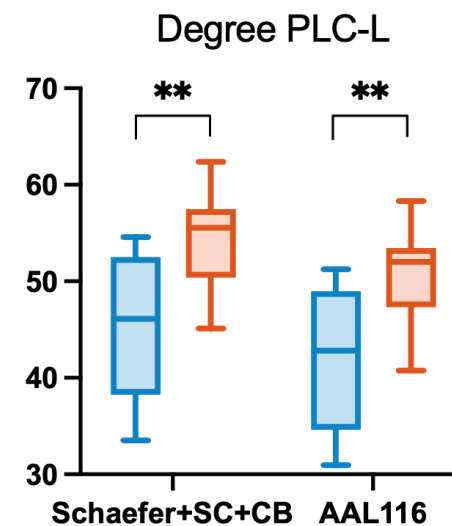
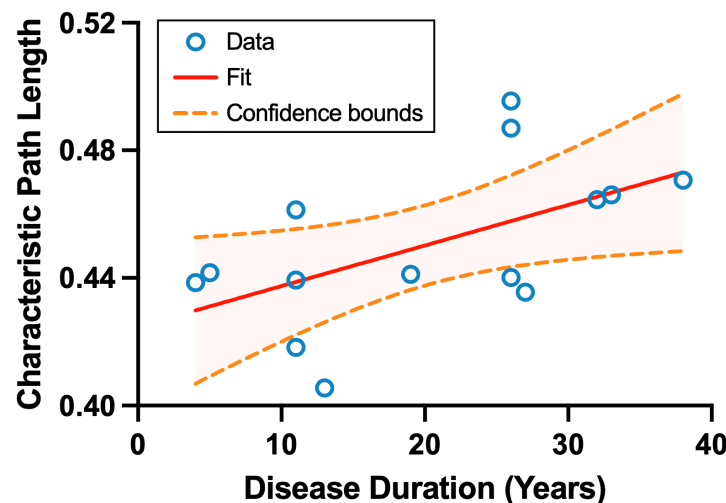
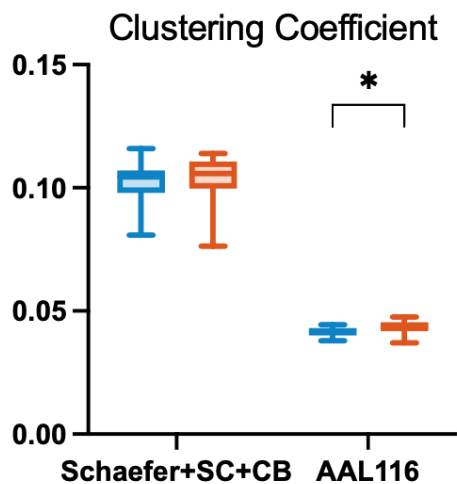
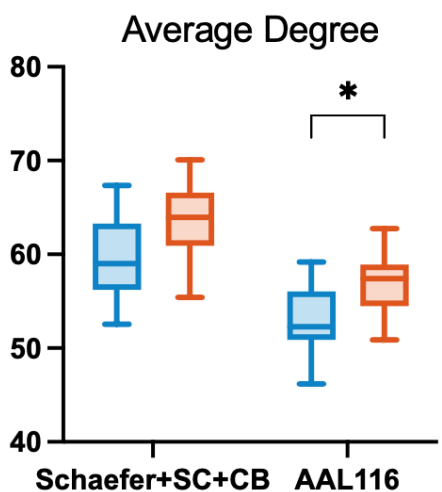
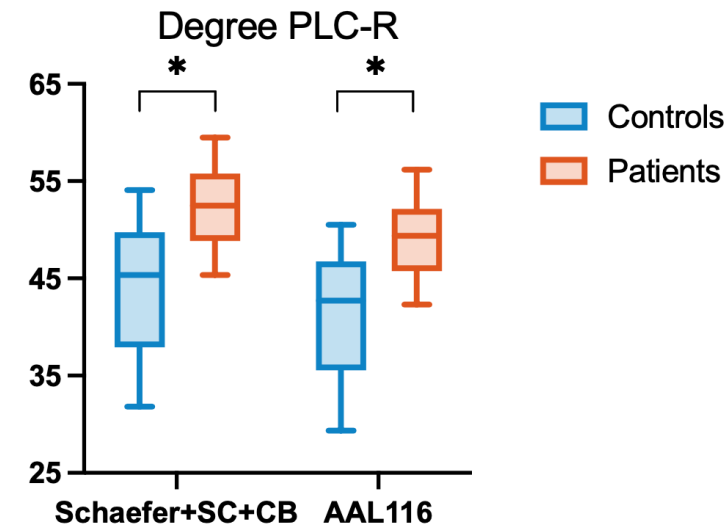
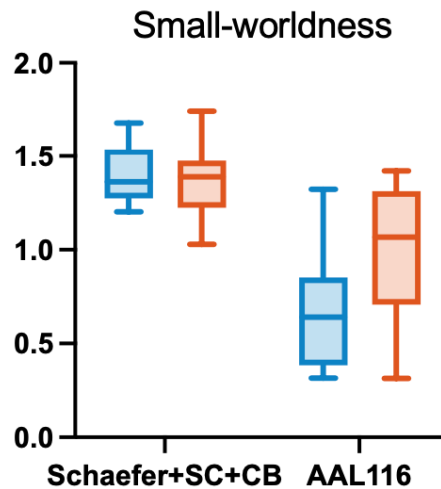
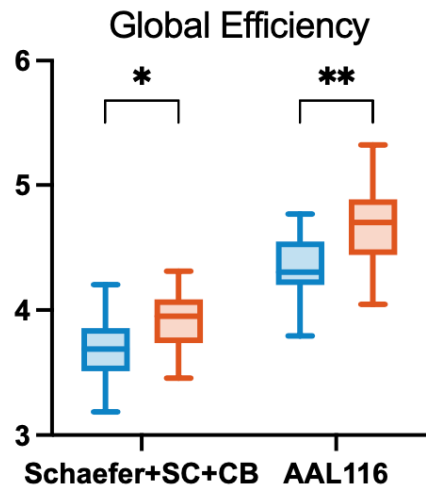
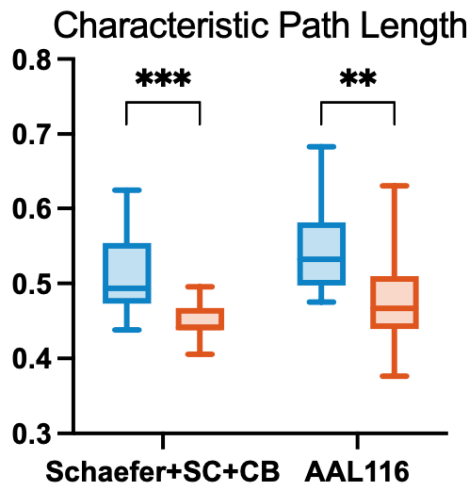
AAL116 parcellation



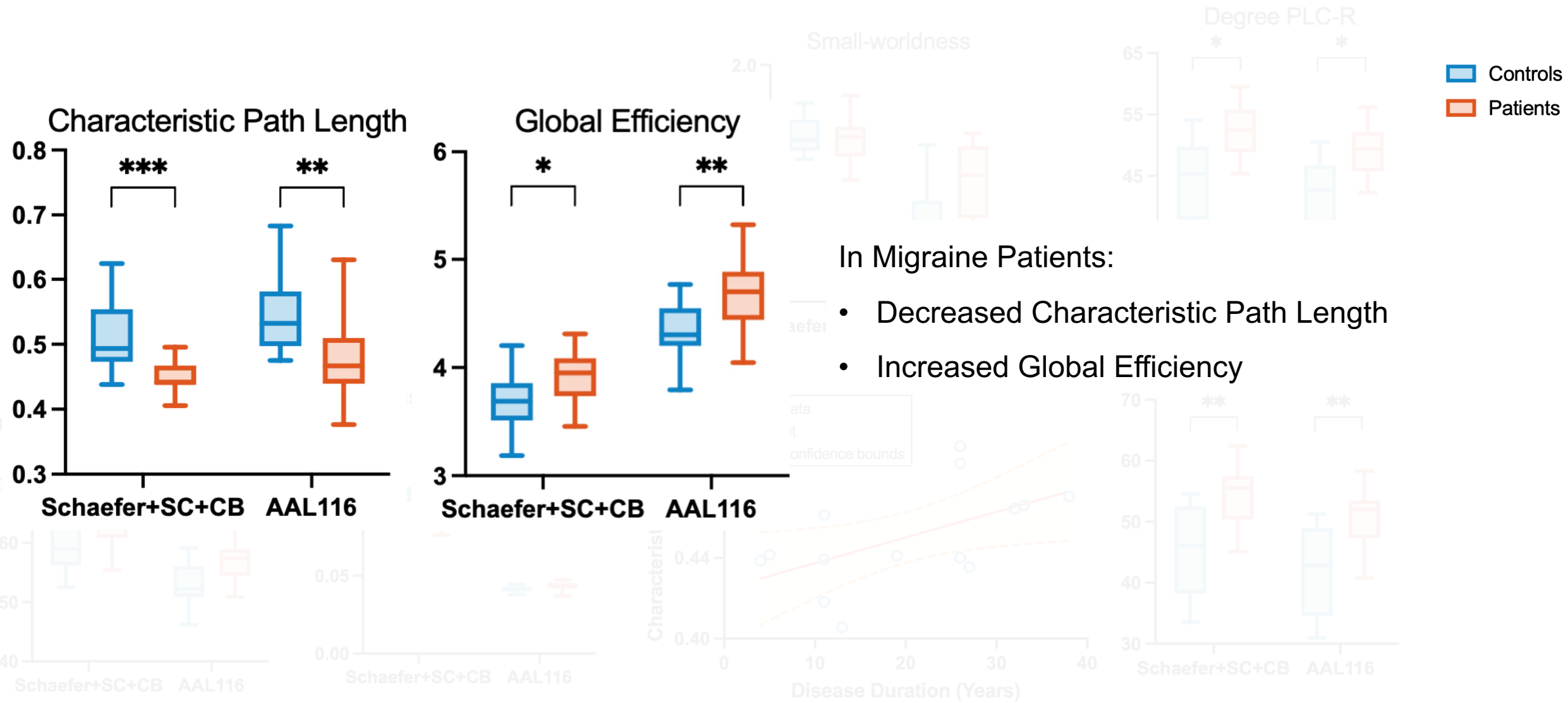
Increased connectivity:

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

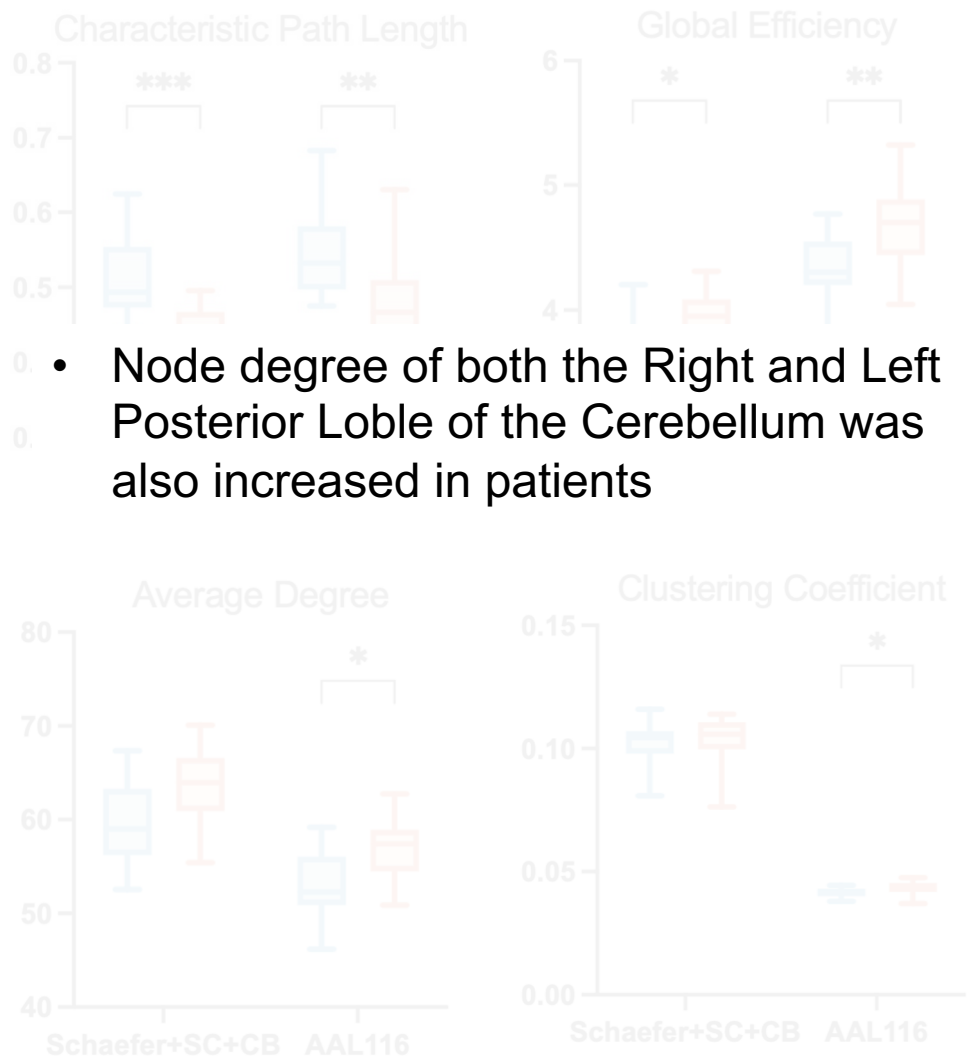
# Results – Graph Metrics



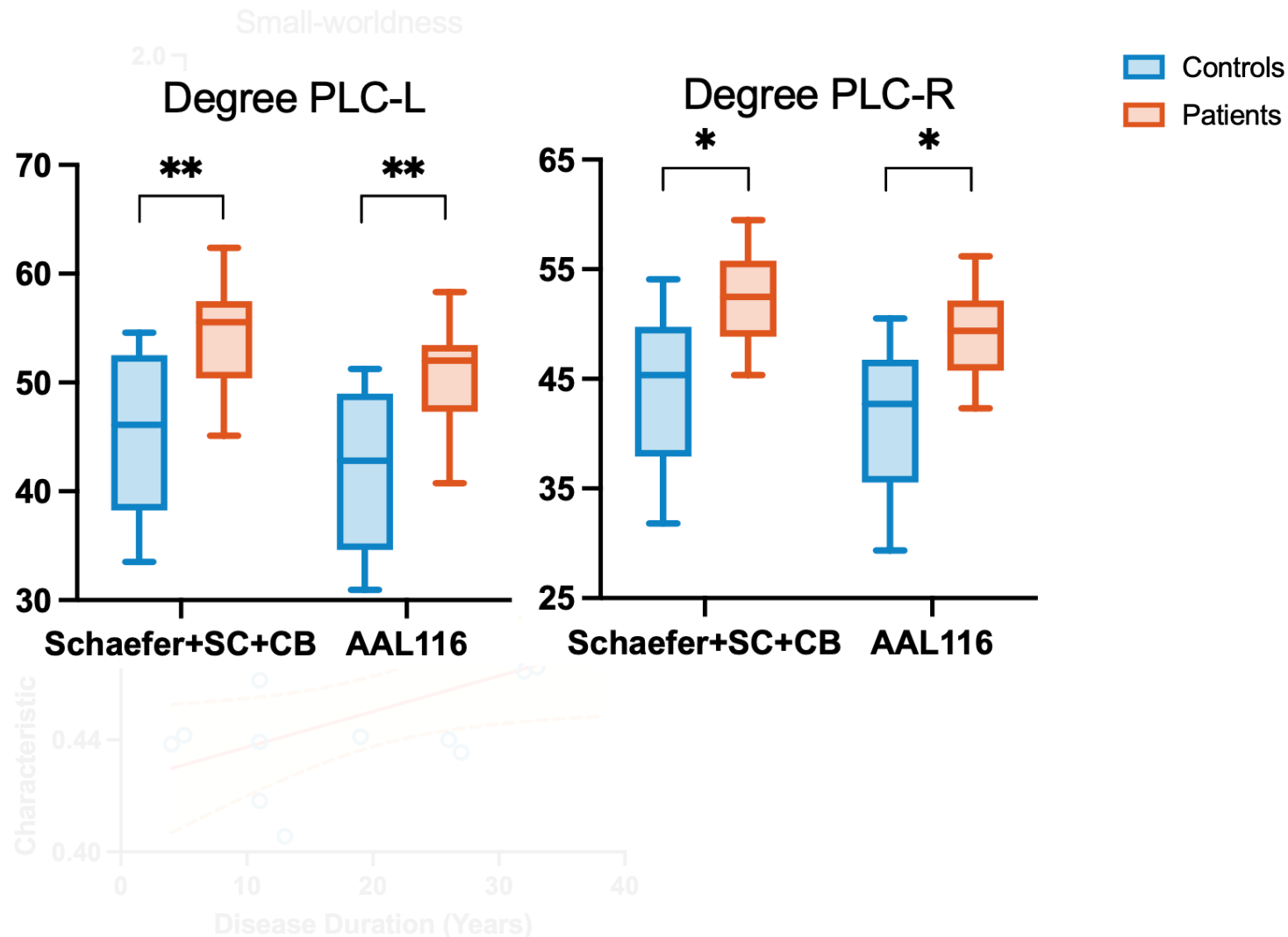
# Results – Graph Metrics



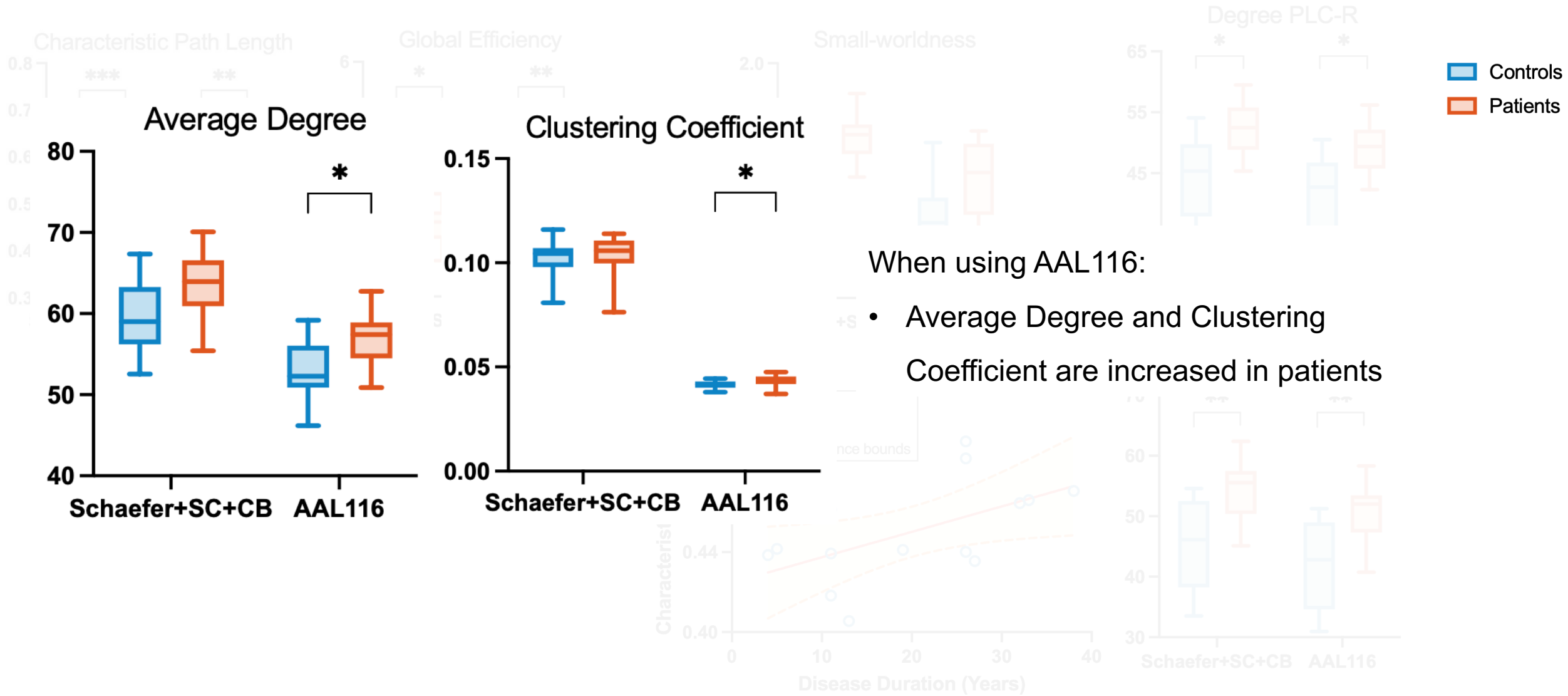
# Results – Graph Metrics



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

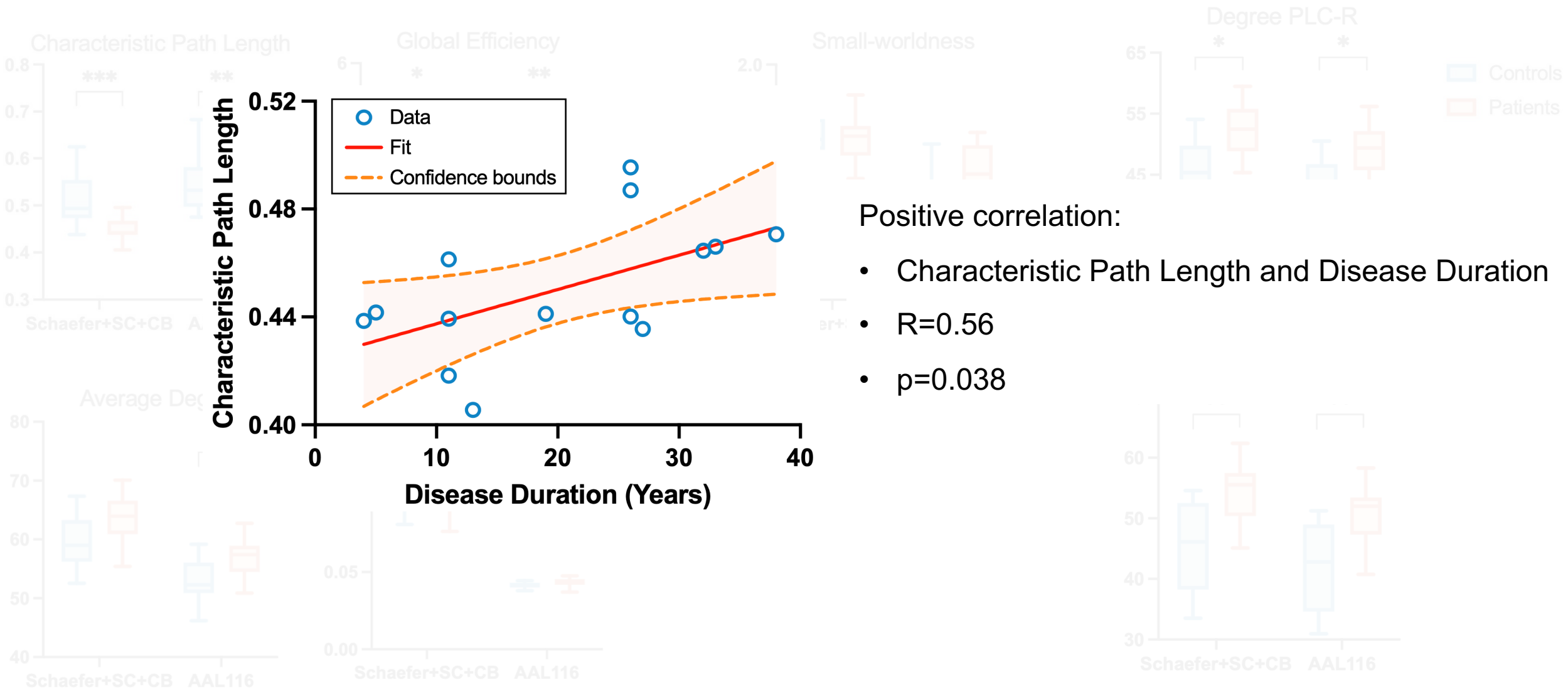


# Results – Graph Metrics





# Results – Graph Metrics



# Discussion

- Structural connectivity disruptions in the cerebellum

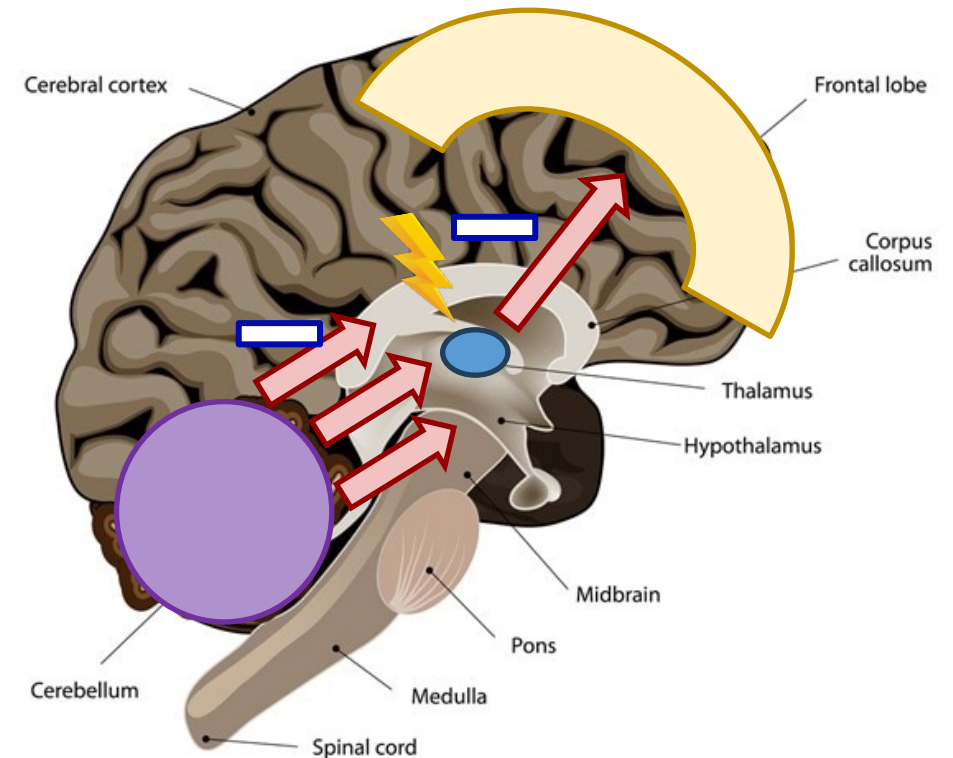
↳ Consistent between parcellations

- Inhibitory role in pain processing through thalamus

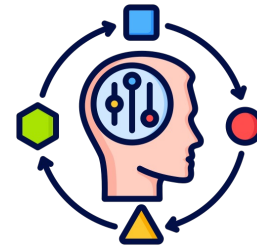
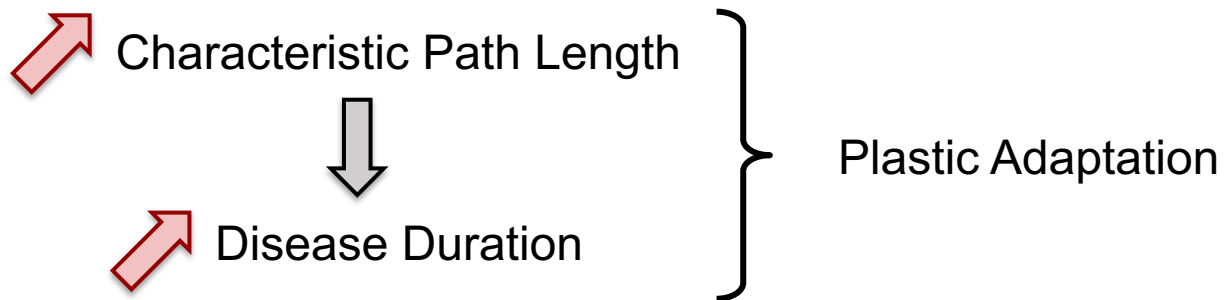
↳ Dysfunctional negative feedback loop

- The crus involved in cognitive and emotional functions

↳ Cognitive deficits common in migraine



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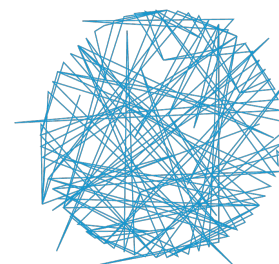
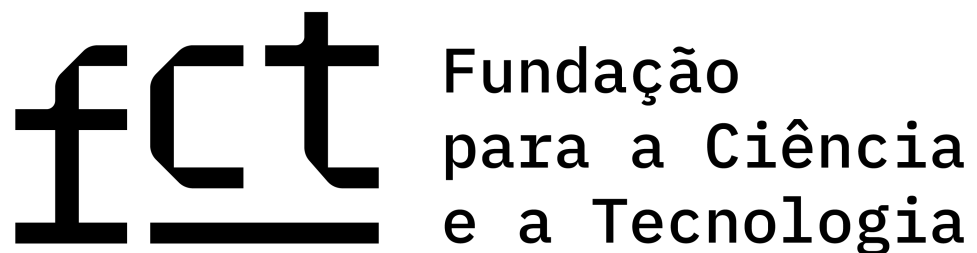


# Conclusion

- ➔ **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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