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Supplementary Materials for

Patient-centered connectivity-based prediction of tau pathology spread in Alzheimer's disease

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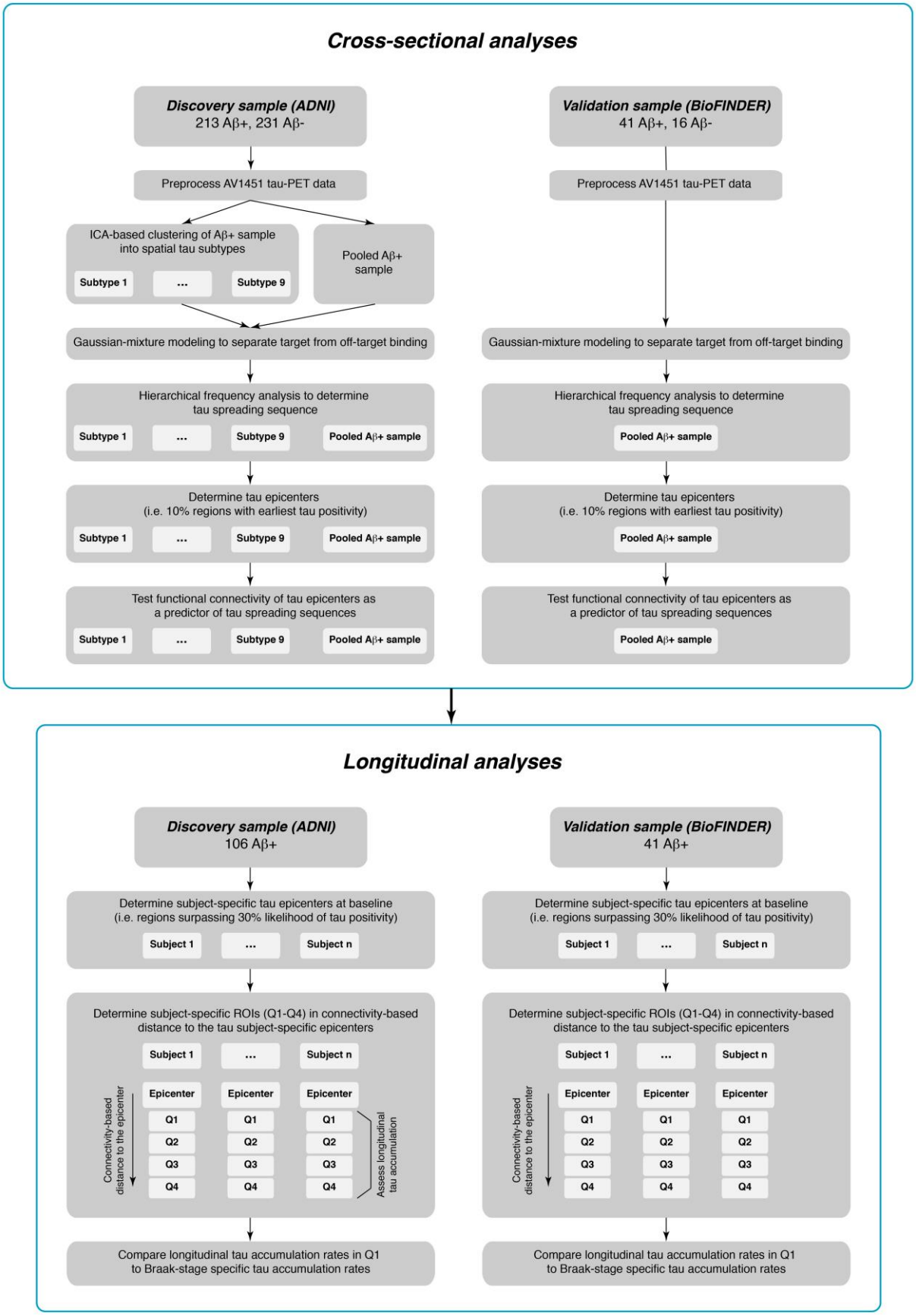
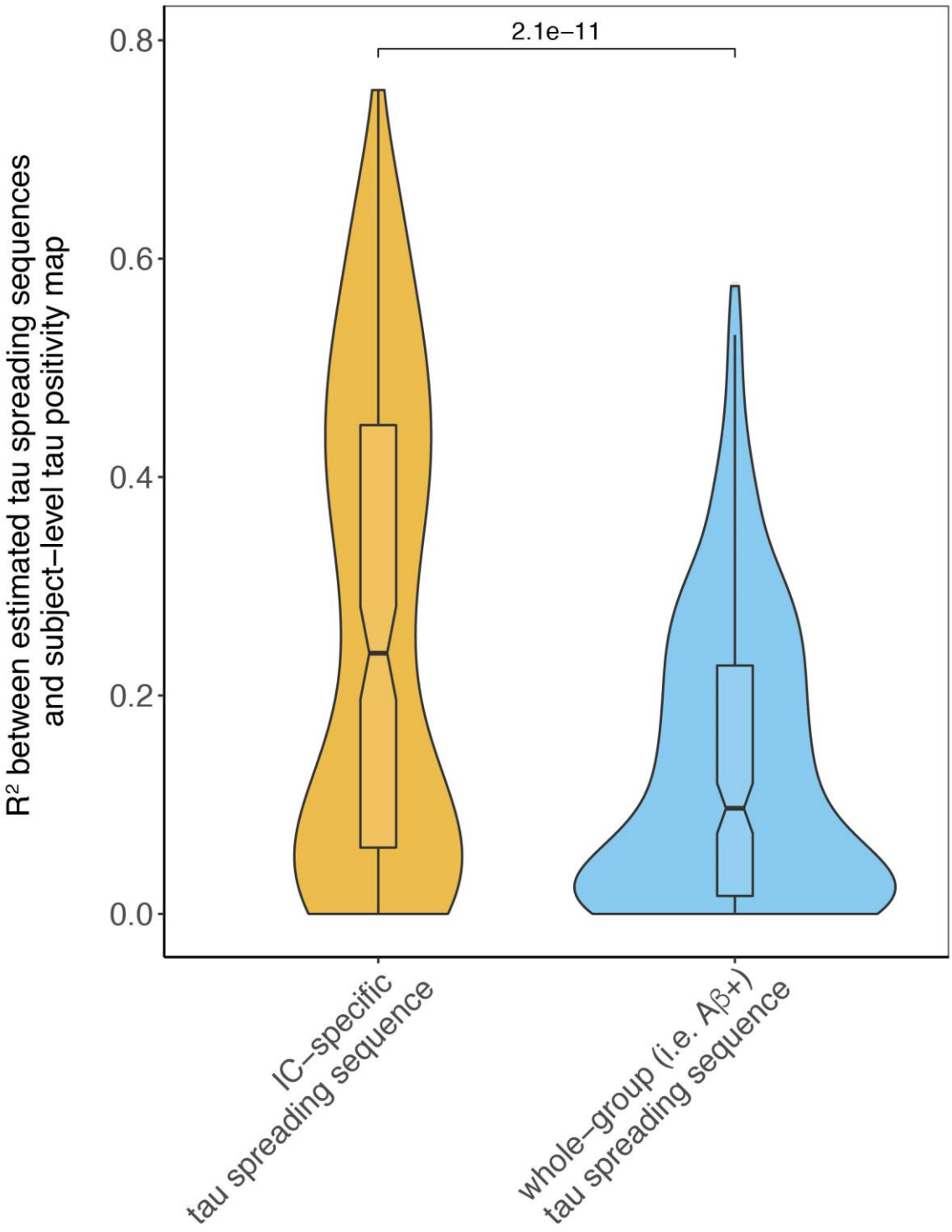
This PDF file includes:

Supplementary Figure 1: Study flowchart



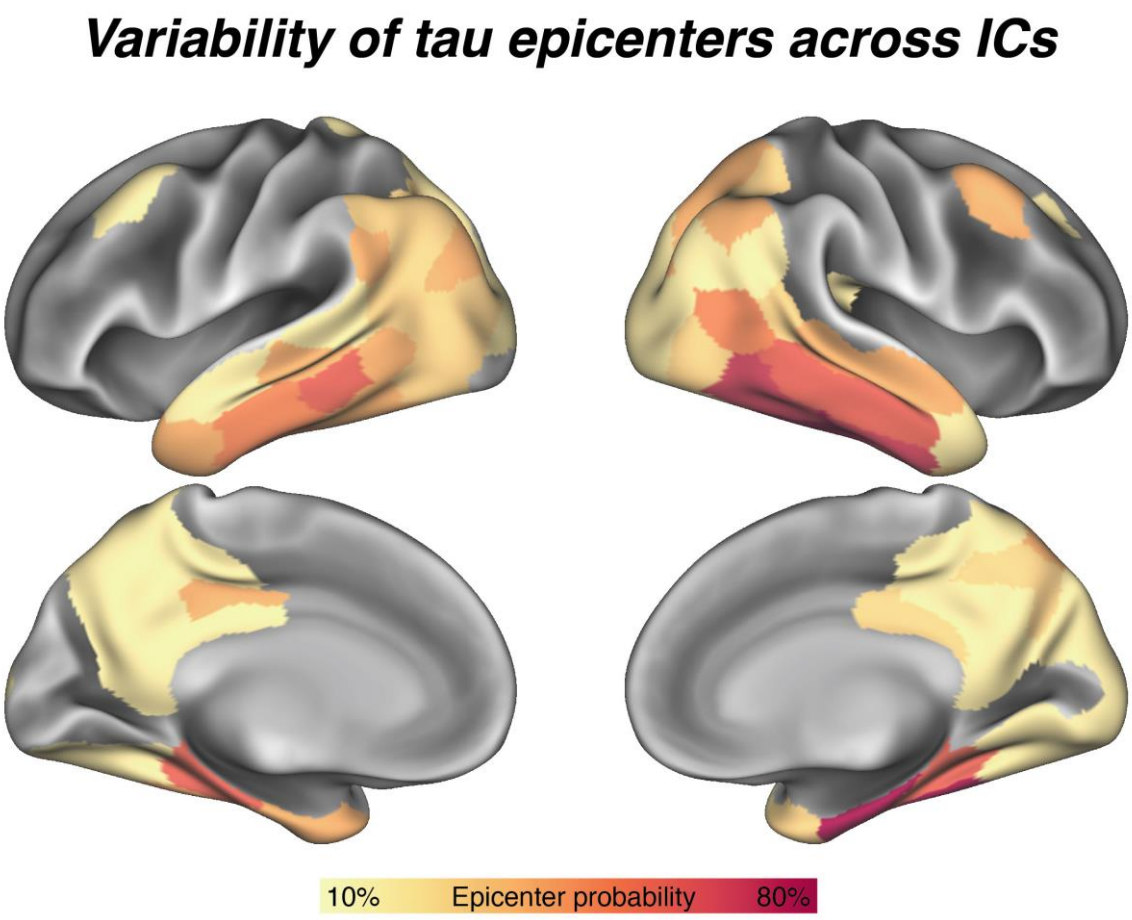
Flowchart schematically illustrating the analyses steps for cross-sectional and longitudinal analyses included in the current study.

Supplementary Figure 2: Connectivity-based prediction of subject specific tau positivity patterns



Spatial association (i.e. R^2) between patient specific tau positivity maps and group-defined tau positivity sequences in ADNI Aβ+. R^2-values were determined using either IC-specific tau positivity sequences (illustrated in Figure 5) or whole group tau positivity sequences (illustrated in Figures 2 A&C). R^2-values were compared using a paired Wilcoxon test.

Supplementary Figure 3: Variability of tau epicenters across ICs



Surface rendering of epicenter probabilities across ICs shown in figures 4-6.

Supplementary table 1: Epicenter connectivity vs. tau positivity sequences at variable connectivity thresholds

Prediction of group-average tau positivity sequences by epicenter connectivity (as shown in Figures 2G&H) at variable epicenter and connectivity thresholds

ADNI		***Tau epicenter threshold (% of ROIs used as tau epicenters)***			
		5%	*10%*	*15%*	*20%*
Connectivity density threshold (% of connections retained)	*10%*	*β=0.53, p<0.001*	*β=0.61, p<0.001*	*β=0.63, p<0.001*	*β=0.62, p<0.001*
	20%	*β=0.65, p<0.001*	*β=0.73, p<0.001*	*β=0.72, p<0.001*	*β=0.71, p<0.001*
	30%	*β=0.63, p<0.001*	*β=0.72, p<0.001*	*β=0.72, p<0.001*	*β=0.71, p<0.001*
	40%	*β=0.63, p<0.001*	*β=0.73, p<0.001*	*β=0.73, p<0.001*	*β=0.71, p<0.001*
	50%	*β=0.63, p<0.001*	*β=0.73, p<0.001*	*β=0.73, p<0.001*	*β=0.71, p<0.001*
BioFINDER		***Tau epicenter threshold (% of ROIs used as tau epicenters)***			
		5%	*10%*	*15%*	*20%*
Connectivity density threshold (% of connections retained)	*10%*	*β=0.59, p<0.001*	*β=0.68, p<0.001*	*β=0.74, p<0.001*	*β=0.71, p<0.001*
	20%	*β=0.59, p<0.001*	*β=0.71, p<0.001*	*β=0.76, p<0.001*	*β=0.74, p<0.001*
	30%	*β=0.59, p<0.001*	*β=0.71, p<0.001*	*β=0.76, p<0.001*	*β=0.74, p<0.001*
	40%	*β=0.58, p<0.001*	*β=0.70, p<0.001*	*β=0.76, p<0.001*	*β=0.73, p<0.001*
	50%	*β=0.58, p<0.001*	*β=0.70, p<0.001*	*β=0.76, p<0.001*	*β=0.73, p<0.001*

Supplementary table 2: Epicenter connectivity vs. tau positivity sequences including functional and structural connectivity

	Prediction of group-average tau positivity sequences by epicenter connectivity (as shown in Figures 2G&H)	
Functional connectivity matrix restricted to ROI pairs with an underlying structural connection	*ADNI*	*BioFINDER*
Strongest 10% structural connections	*β=0.53, p<0.001*	*β =0.63, p<0.001*
Strongest 20% structural connections	*β =0.52, p<0.001*	*β =0.62, p<0.001*
Strongest 30% structural connections	*β =0.64, p<0.001*	*β =0.68, p<0.001*
Strongest 40% structural connections	*β =0.68, p<0.001*	*β =0.69, p<0.001*
Strongest 50% structural connections	*β =0.69, p<0.001*	*β =0.69, p<0.001*
Strongest 60% structural connections	*β =0.72, p<0.001*	*β =0.70, p<0.001*
Strongest 70% structural connections	*β =0.74, p<0.001*	*β =0.71, p<0.001*
Strongest 80% structural connections	*β =0.74, p<0.001*	*β =0.71, p<0.001*
Strongest 90% structural connections	*β =0.73, p<0.001*	*β =0.71, p<0.001*