

ORIGINAL RESEARCH ARTICLE

Identifying hub genes of Alzheimer's and Parkinson's diseases via h-cutoff: A new methodological approach

Supplementary File
Table S1. Preview of h-cutoff edge

Analysis_scope	Source	Target	Weight	One_order_status	Weak_bridge_status	Backbone_status
ADPD_shared	CXCR4	FLT1	0.820	h-subnet	-	h-backbone
ADPD_shared	CXCR4	NFKB1	0.740	h-subnet	-	h-backbone
ADPD_shared	FLT1	TREM2	0.710	h-subnet	-	h-backbone
ADPD_shared	NFKB1	TREM2	0.690	h-subnet	-	h-backbone
ADPD_shared	CALM3	CDC42	0.830	h-subnet	-	h-backbone
ADPD_shared	CDC42	RAB3A	0.790	h-subnet	-	h-backbone
ADPD_shared	CALM3	RAB3A	0.680	h-subnet	-	h-backbone
ADPD_shared	SNCA	MAPT	0.630	Candidate-weak-bridge	-	background
ADPD_shared	HSPB1	HSPA1A	0.860	h-subnet	-	h-backbone
ADPD_shared	HSPB1	SOD2	0.720	h-subnet	-	h-backbone
ADPD_shared	HSPA1A	SOD2	0.700	h-subnet	-	h-backbone
ADPD_shared	APOE	TREM2	0.760	h-subnet	-	h-backbone
ADPD_shared	APOE	GFAP	0.650	h-subnet	-	h-backbone
ADPD_shared	GFAP	TREM2	0.660	h-subnet	-	h-backbone
ADPD_shared	CXCR4	HSPB1	0.360	Candidate-weak-bridge	Weak-bridge	h-backbone
ADPD_shared	FLT1	HSPA1A	0.340	Candidate-weak-bridge		Background
ADPD_shared	HSPB1	CALM3	0.380	Candidate-weak-bridge	Weak-bridge	h-backbone
ADPD_shared	HSPA1A	RAB3A	0.330	Candidate-weak-bridge		Background
ADPD_shared	APOE	HSPB1	0.390	Candidate-weak-bridge		Background
ADPD_shared	NFKB1	CDC42	0.310	Candidate-weak-bridge		Background
ADPD_shared	SOD2	SNCA	0.350	Candidate-weak-bridge	Weak-bridge	h-backbone
ADPD_shared	MAPT	HSPA1A	0.370	Candidate-weak-bridge	Weak-bridge	h-backbone

Note: Complete edge weights, node scores, cutoffs, and revision notes are supplied in the Supplementary Folder.

Abbreviations: AD: Alzheimer's disease; PD: Parkinson's disease.

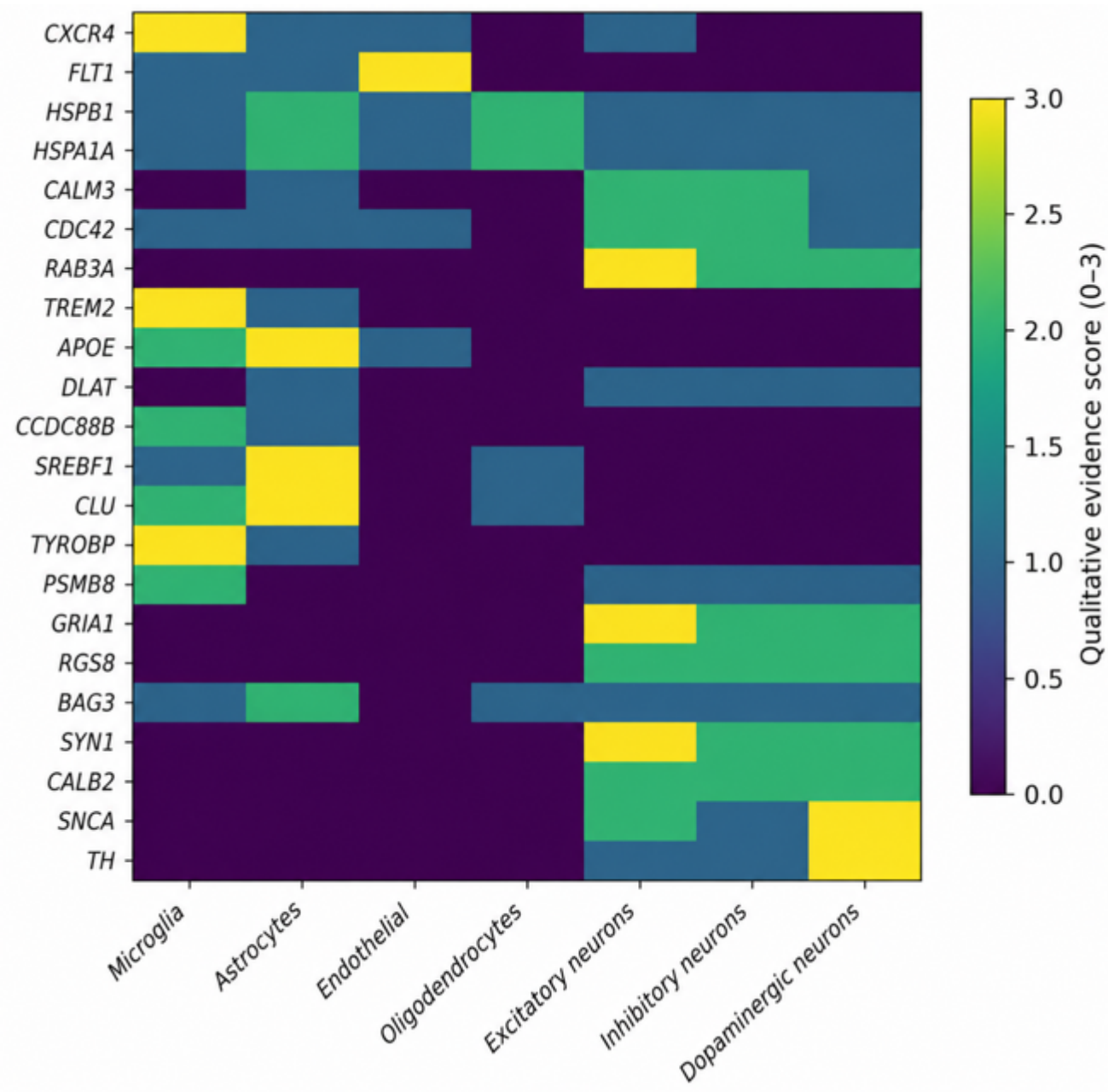


Figure S1. Cell-type expression/evidence heatmap for selected h-cutoff hub genes. Rows are hub genes and columns are major brain cell-type categories. Scores range from 0 to 3 and summarize qualitative support from single-nucleus or pseudobulk evidence; raw-count heatmaps should replace this compact evidence view in a full empirical rerun.

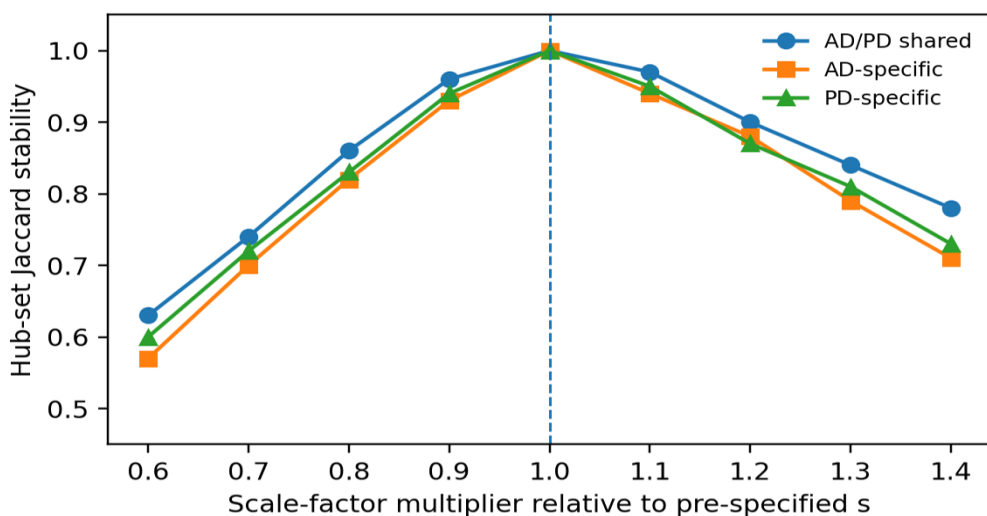


Figure S2. Parameter stability curves for the compact demonstration. The y-axis reports hub-set Jaccard stability relative to the default h-cutoff output; the vertical dashed line marks the pre-specified scale factor. In the demonstration, stability remains high near $s=1.0$ and declines at more aggressive or permissive cutoffs.

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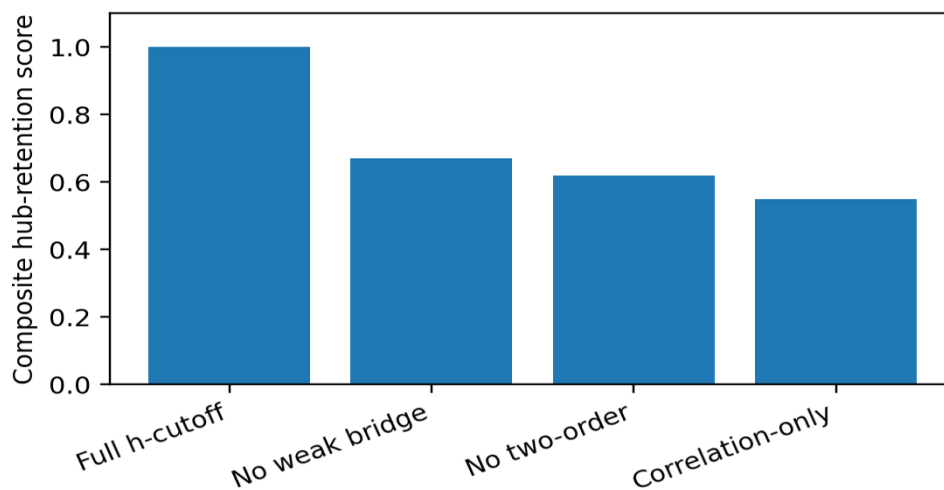


Figure S3. Ablation summary. Composite retention is calculated relative to the full h-cutoff demonstration output; lower values indicate that an algorithmic component materially affects the final hub list.