

# PERSIST Analysis Report

Tissue Type: breast\_cancer  
Run Date: 2026-01-22 22:29

## Metrics Summary:

- Scale Local Coherence (SLC): 1.0000 (>0.9 = Robust)
- Orthogonality (TOI): 0.7213
- Baseline ARI: 0.4082

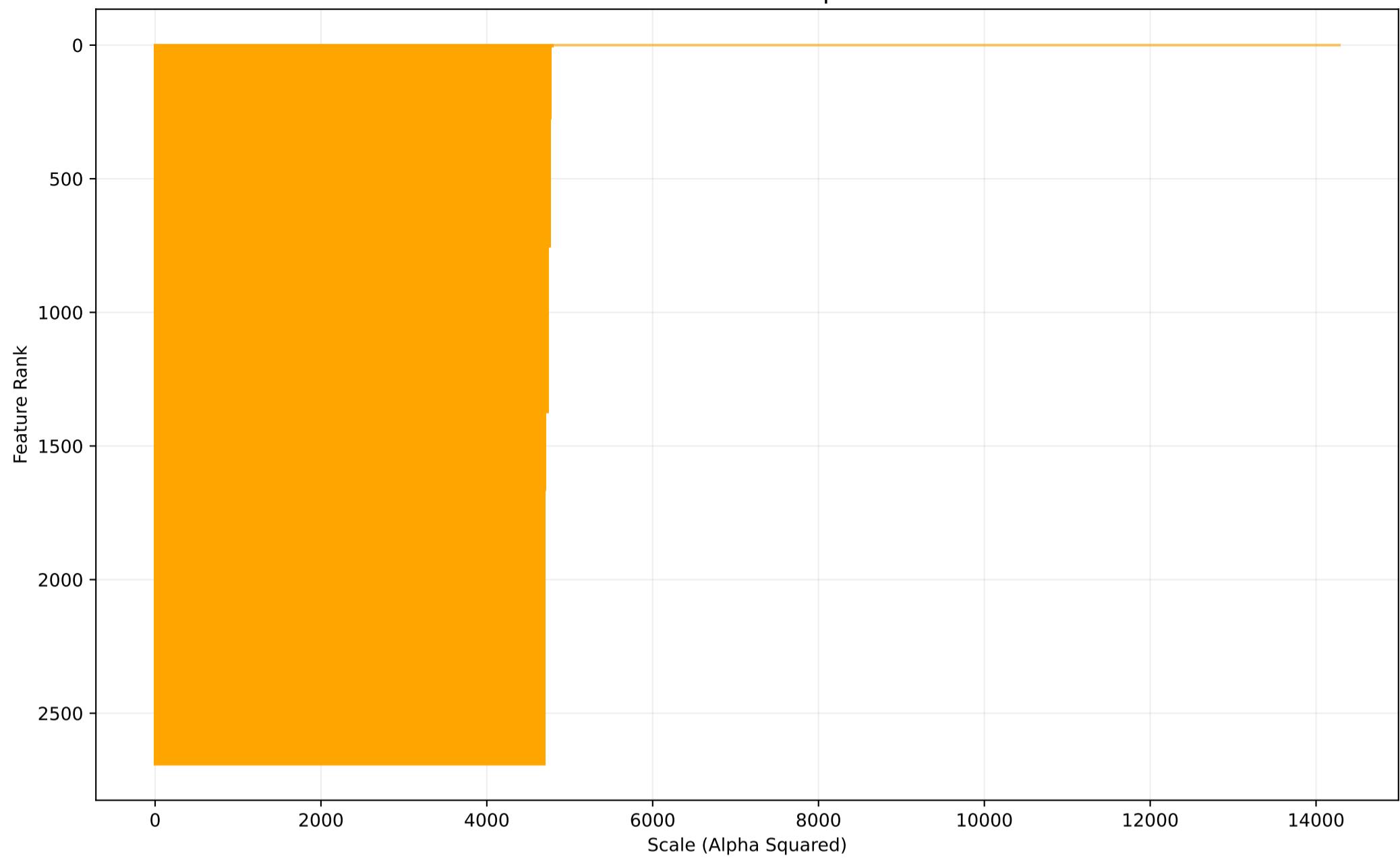
## Topology Statistics:

- H1 Features (Loops): 5157
- Significant Cores: 933
- Mean Stability: 0.672

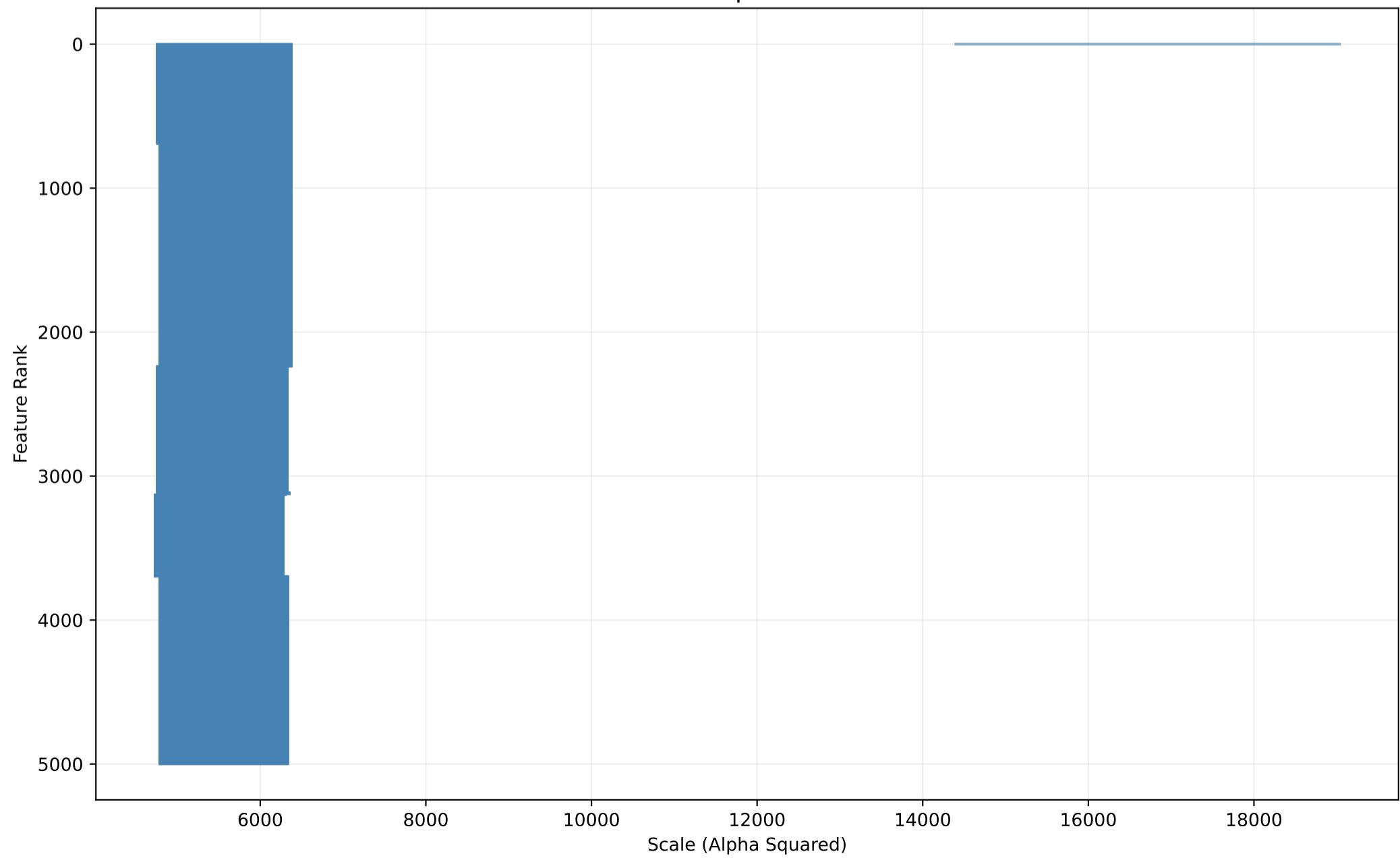
# H&E Histology



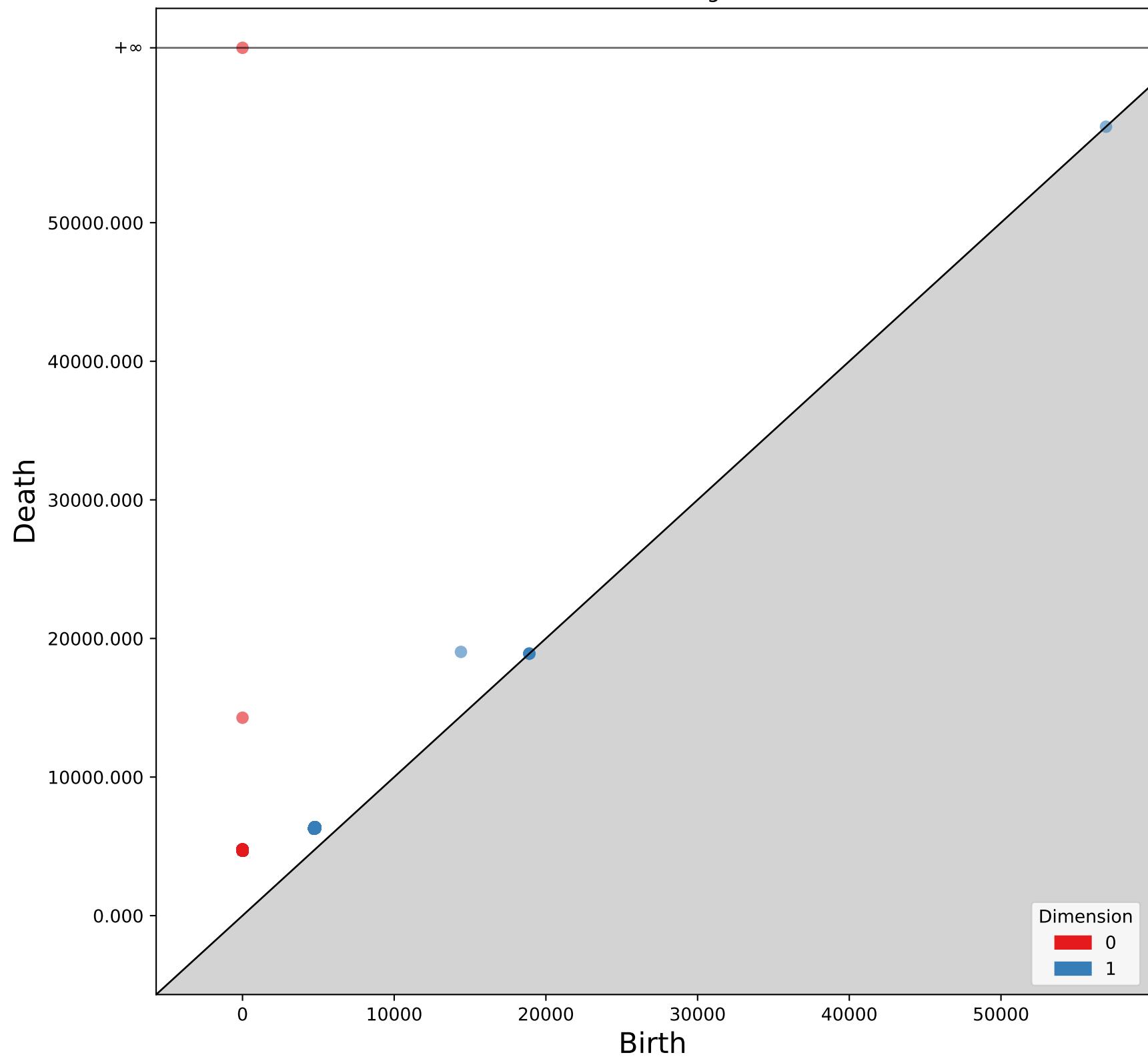
H0: Connected Components



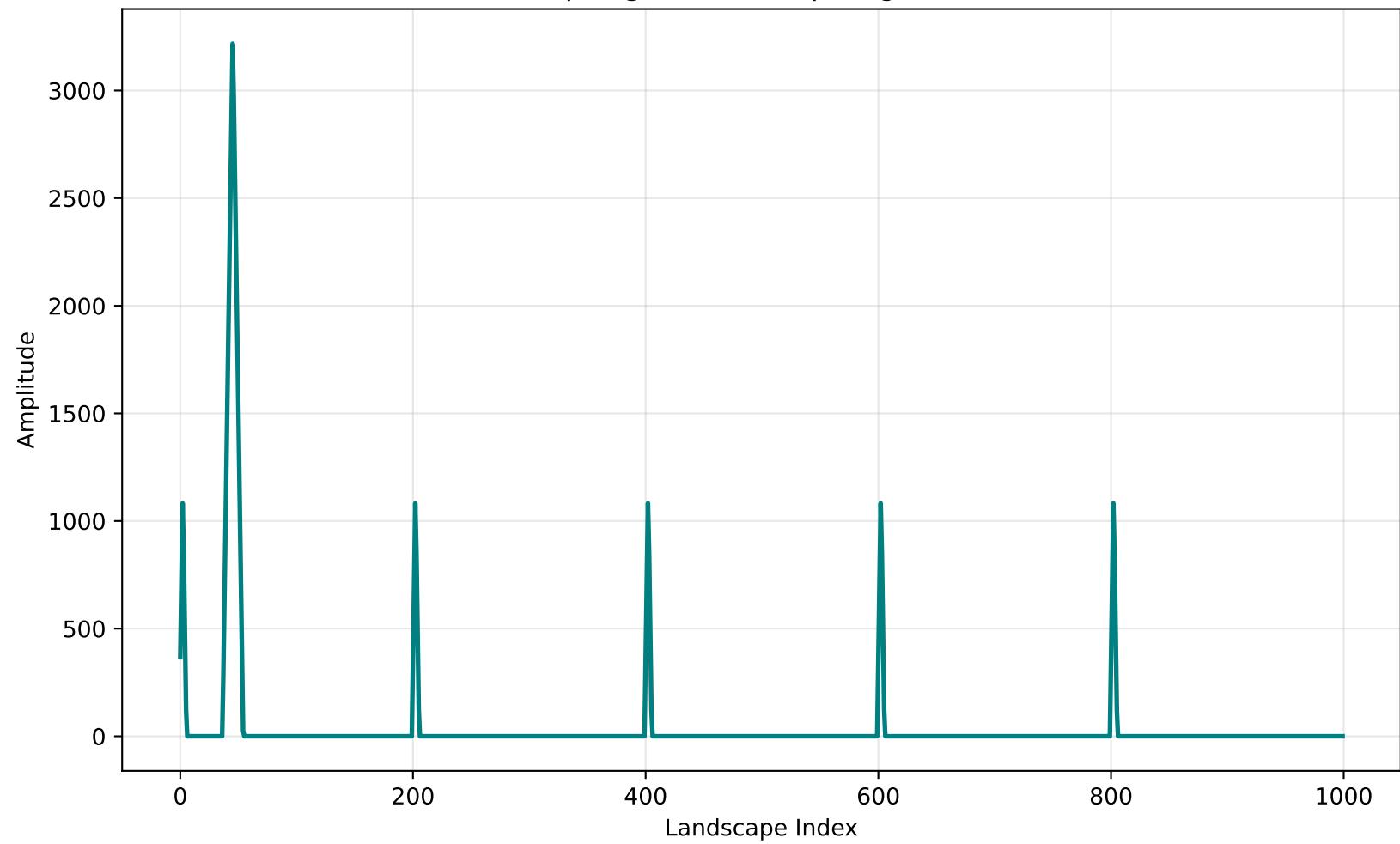
H1: Loops / Voids



Persistence Diagram

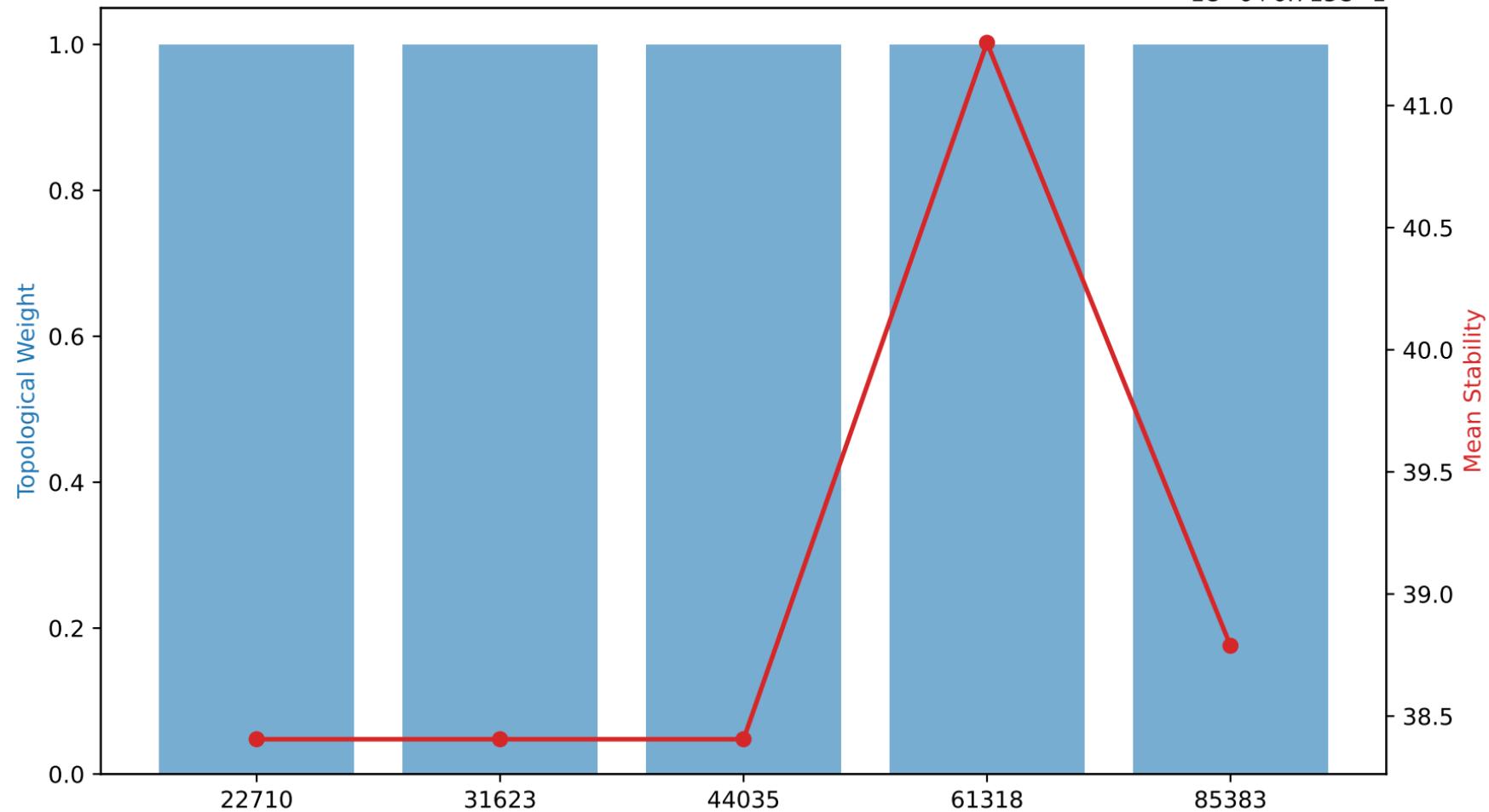


## Topological Landscape Signature

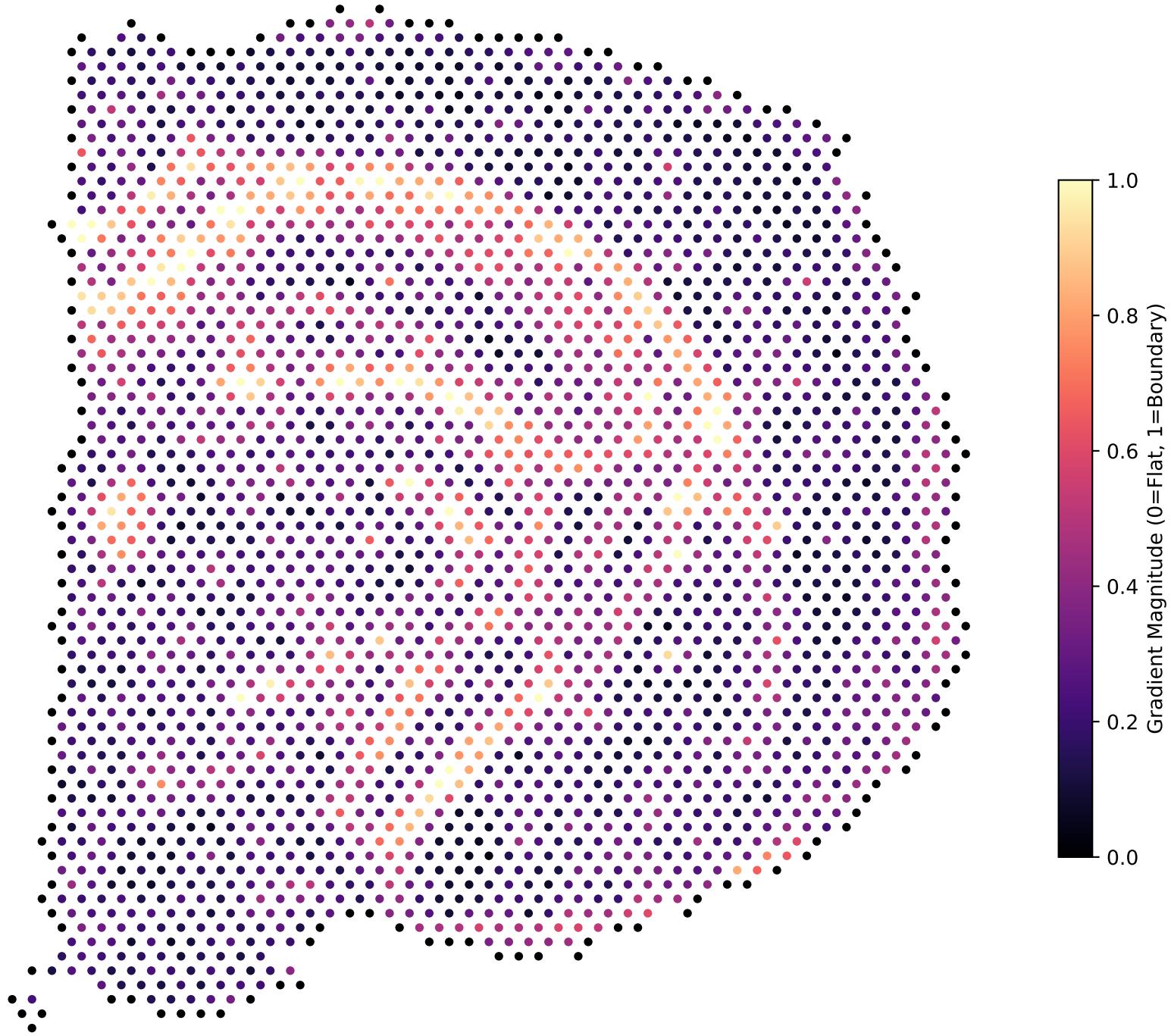


## Scale Selection Rationale

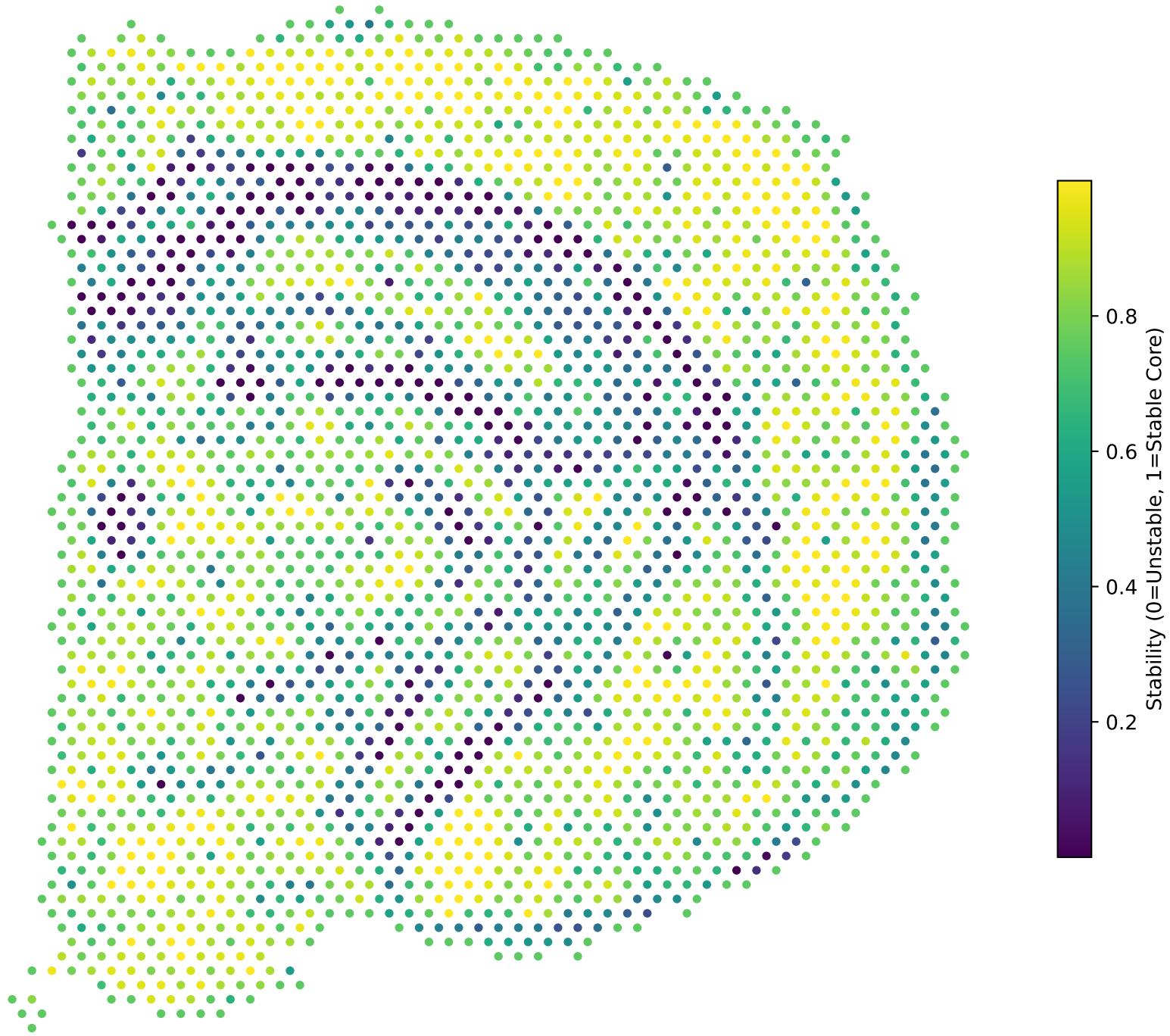
$1e-6 + 6.715e-1$



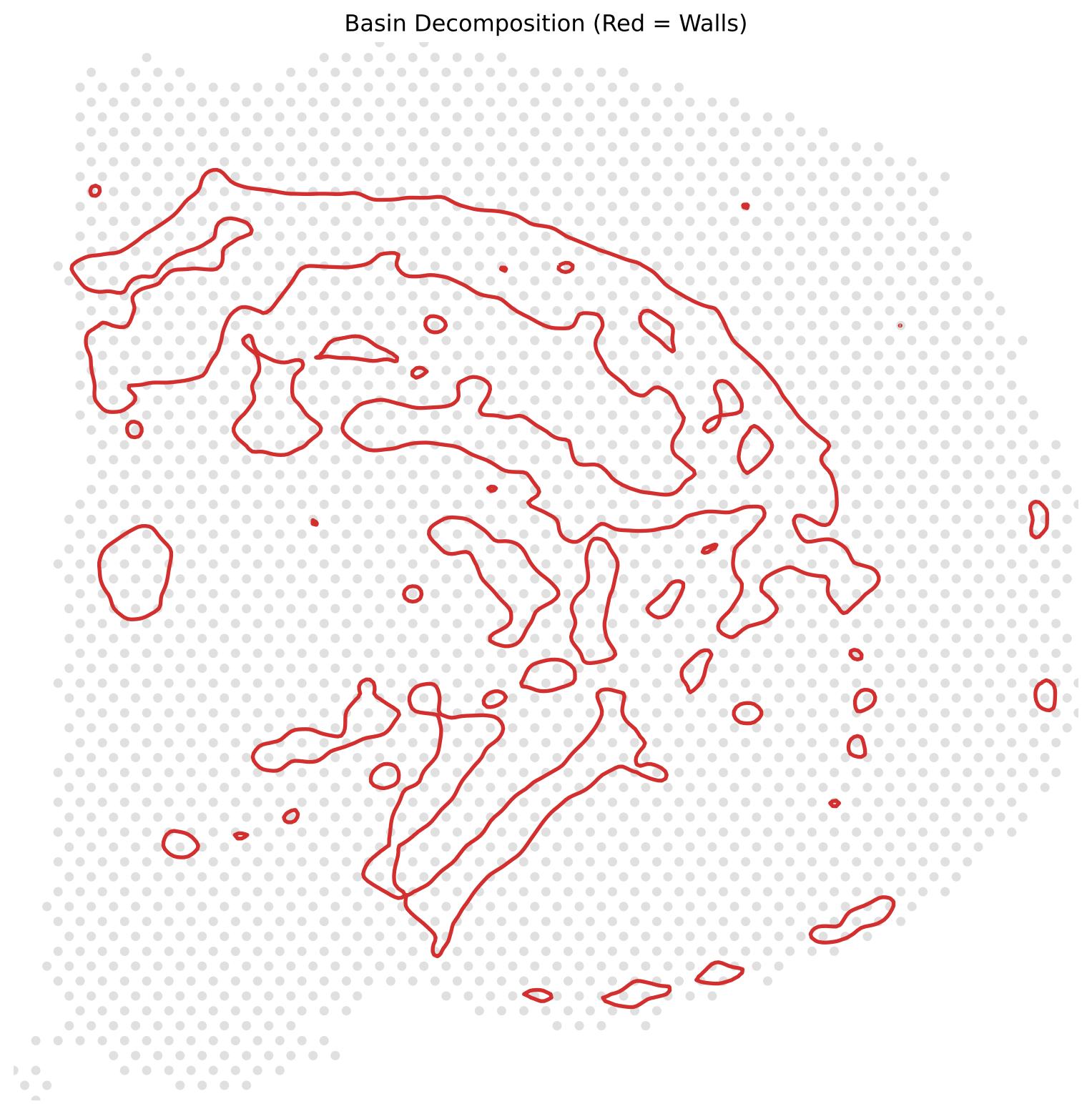
# Topological Walls (Frontiers)



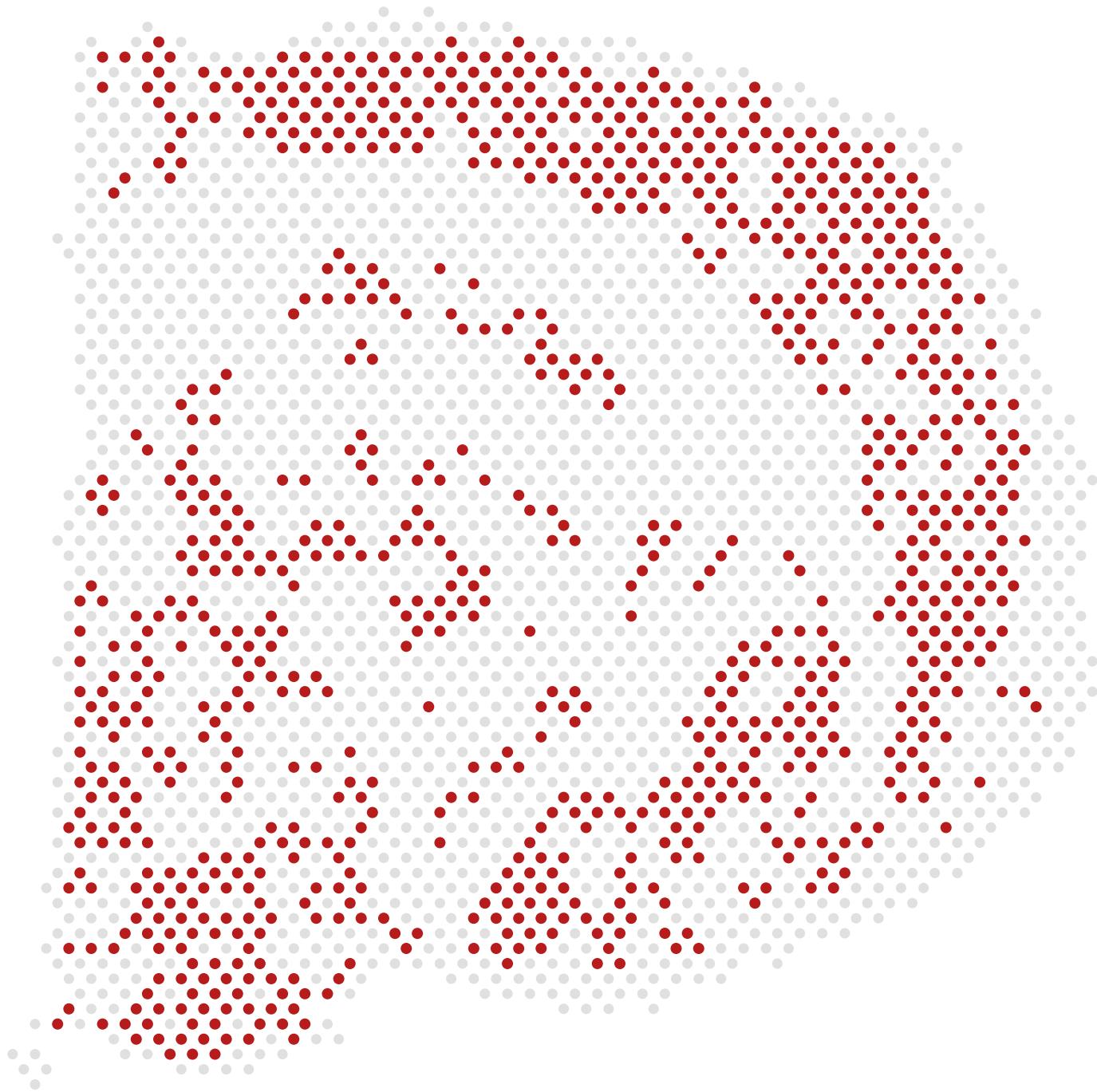
# Stability Landscape (Energy)



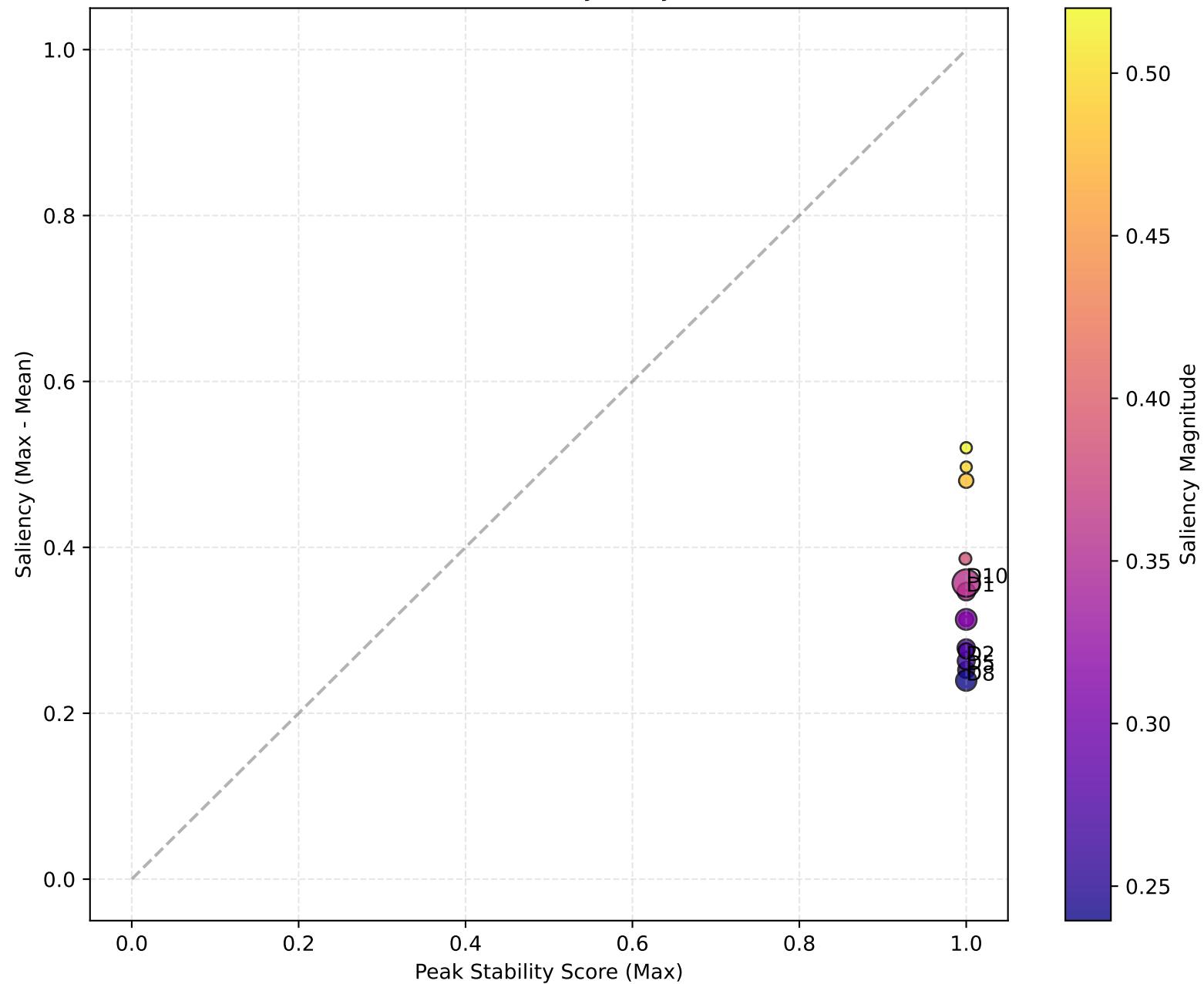
Basin Decomposition (Red = Walls)



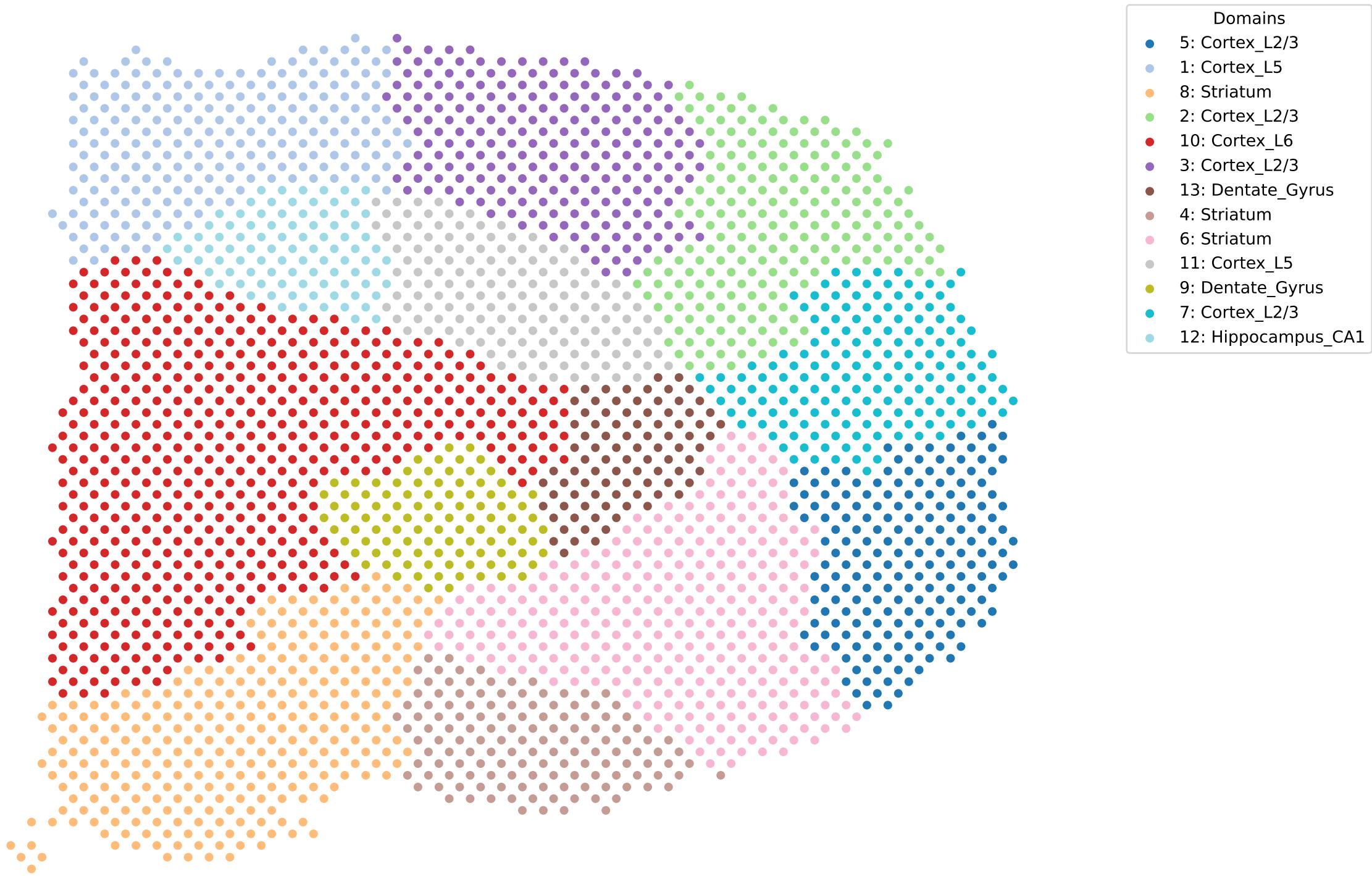
# Robust Stability Cores (933 spots)



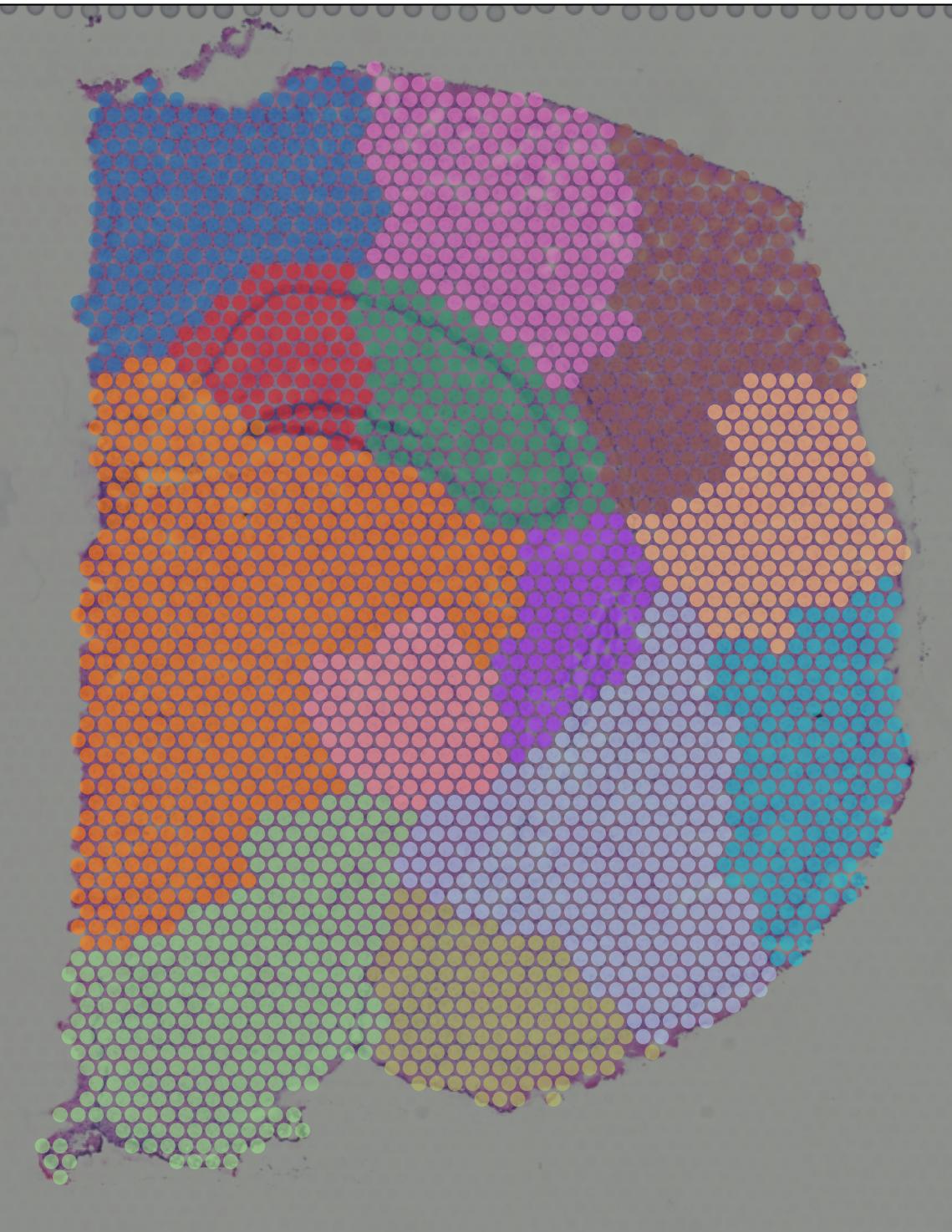
# Domain Saliency Analysis



### Final Topological Domains (Solid Map)

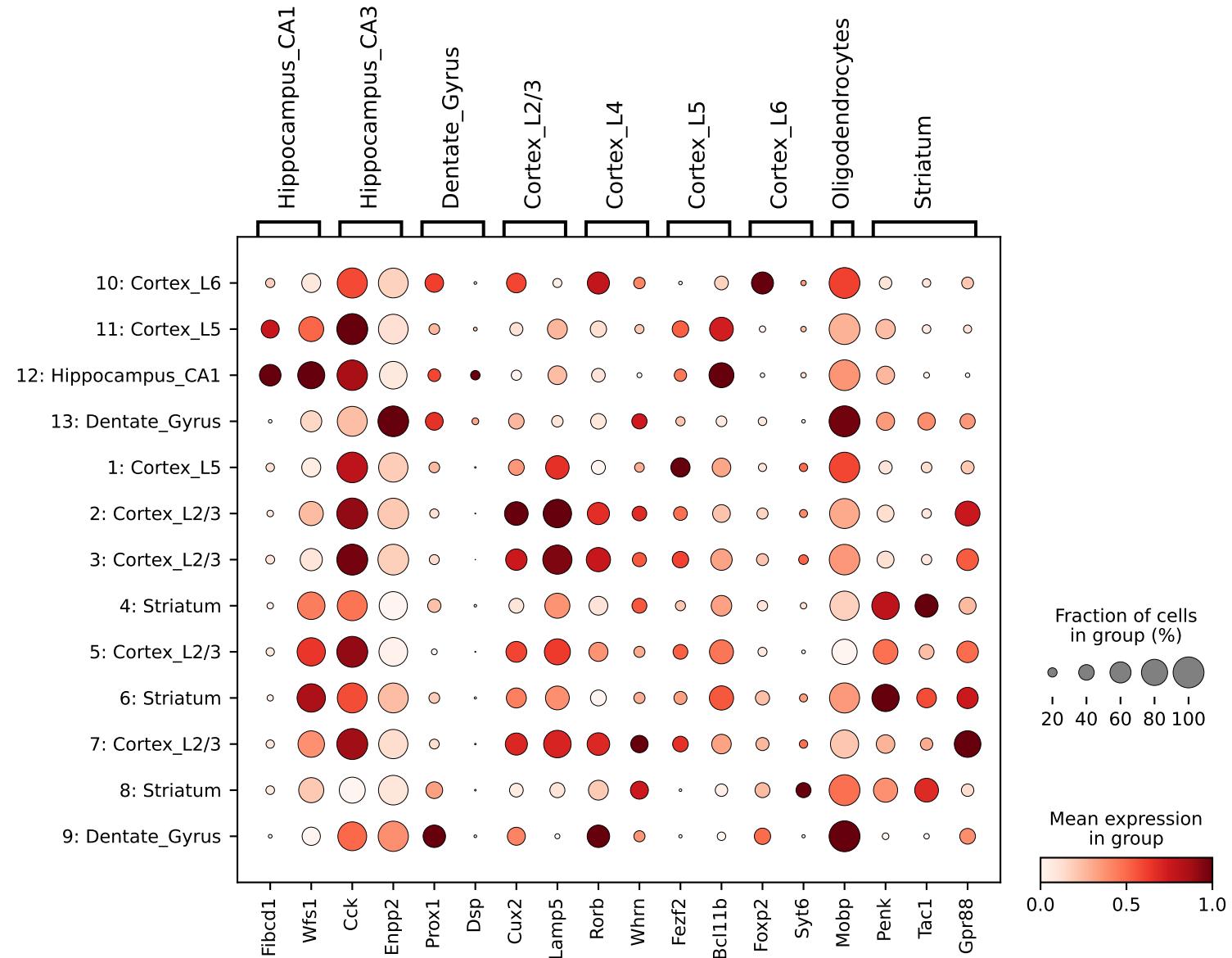


# Domain Overlay on Histology



- 1: Cortex\_L5
- 10: Cortex\_L6
- 11: Cortex\_L5
- 12: Hippocampus\_CA1
- 13: Dentate\_Gyrus
- 2: Cortex\_L2/3
- 3: Cortex\_L2/3
- 4: Striatum
- 5: Cortex\_L2/3
- 6: Striatum
- 7: Cortex\_L2/3
- 8: Striatum
- 9: Dentate\_Gyrus

# Biological Validation



# Stability Gradient Flow

