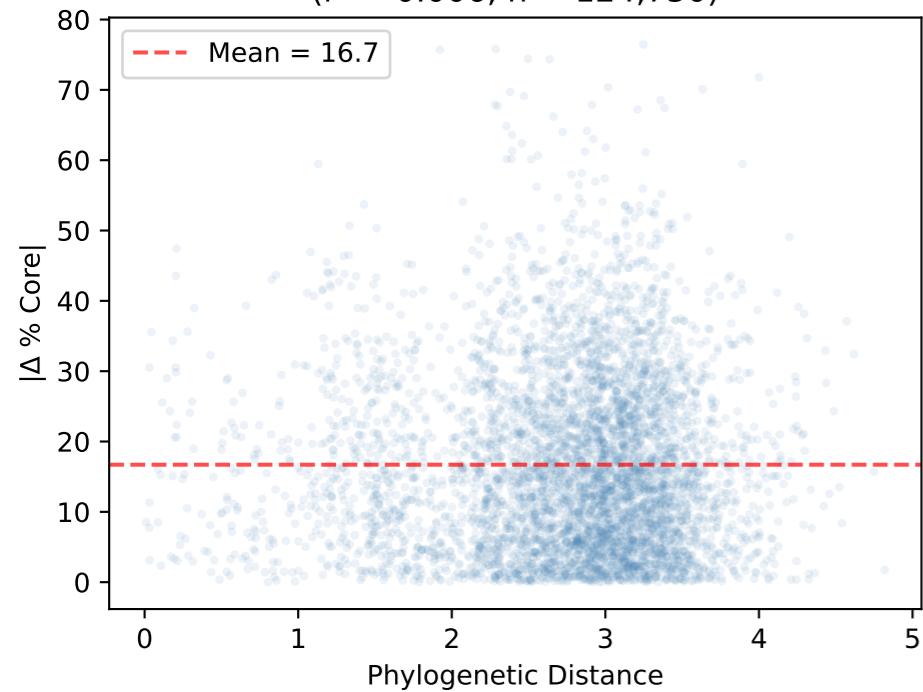
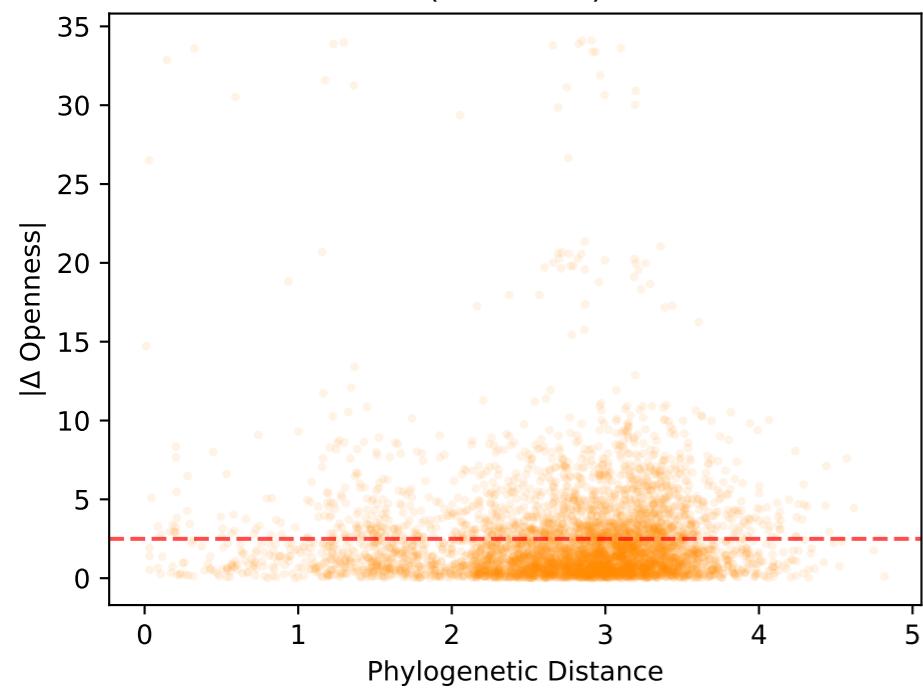


# Phylogeny vs Pangenome Structure: Species-Level Analysis

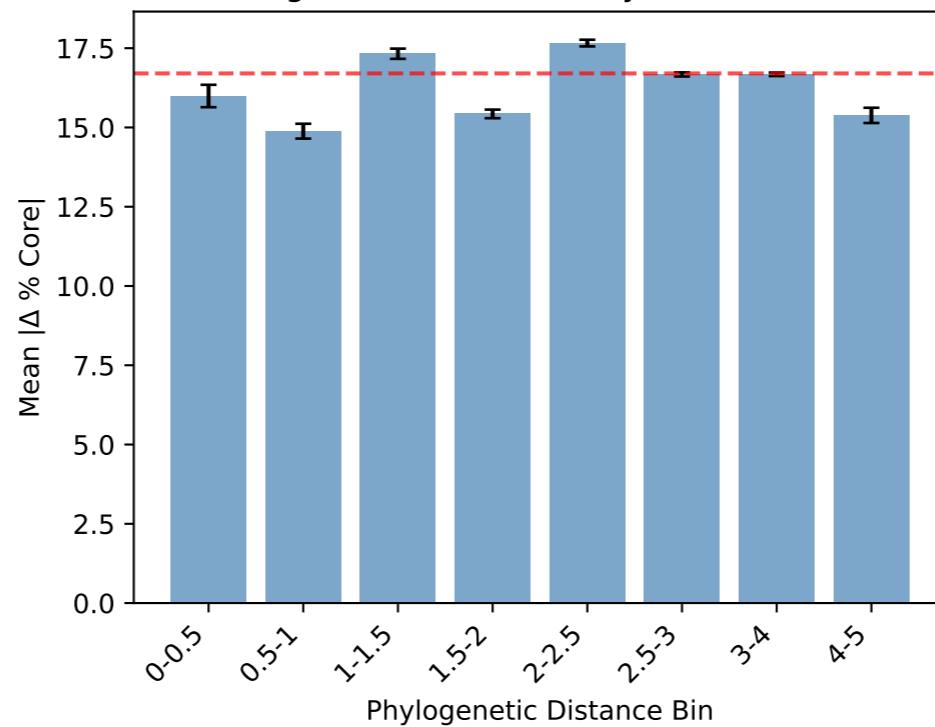
% Core Difference vs Phylogeny  
( $r = -0.006$ ,  $n = 124,750$ )



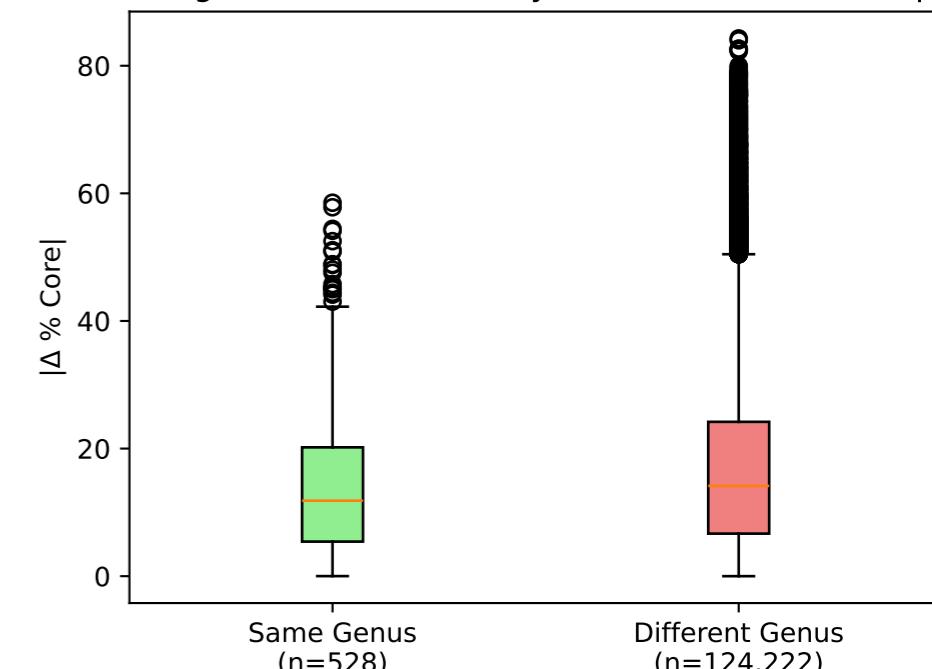
Openness Difference vs Phylogeny  
( $r = 0.008$ )



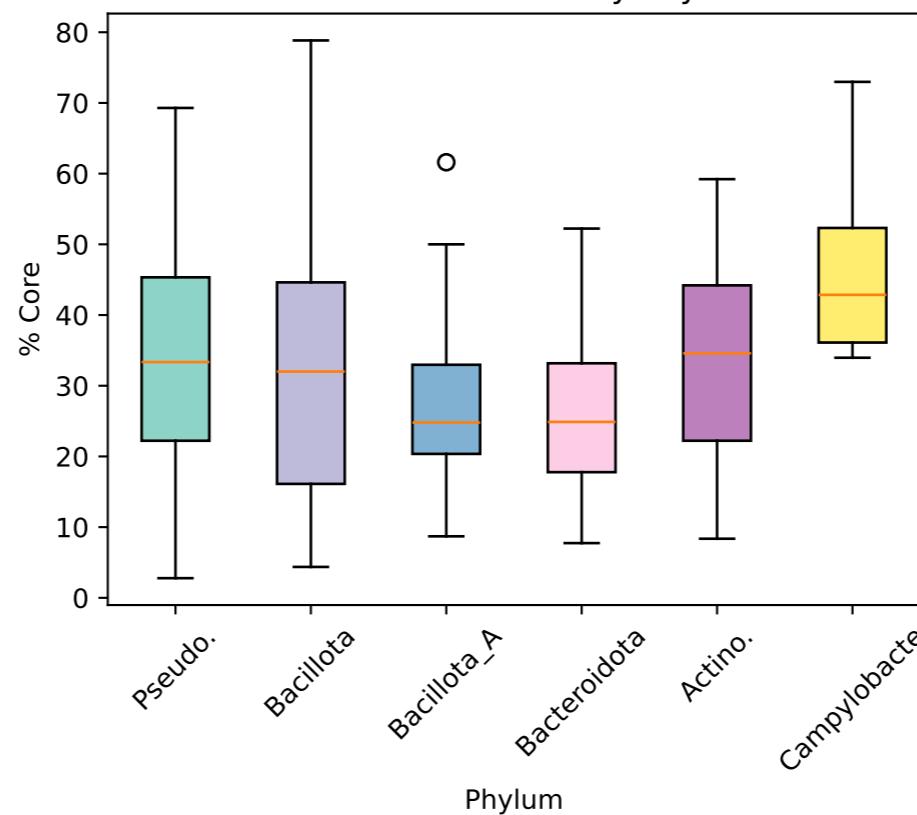
Pangenome Difference by Distance Bin



Pangenome Difference by Taxonomic Relationship



% Core Distribution by Phylum



## KEY FINDINGS

- No correlation between phylogeny and pangenome structure
  - $r = 0.006$  for % core
  - $r = 0.008$  for openness
- Same-genus species are NOT more similar in pangenome structure
  - Same genus:  $\Delta\%core = 14.6$
  - Diff genus:  $\Delta\%core = 16.7$
- Pangenome structure differences are CONSTANT across all phylogenetic distances (0.2 to 5.0)

## INTERPRETATION

Pangenome structure (% core, openness) reflects ECOLOGICAL STRATEGY, not evolutionary ancestry.

- Closely related species can have very different pangenome structures
- Distantly related species can converge on similar structures