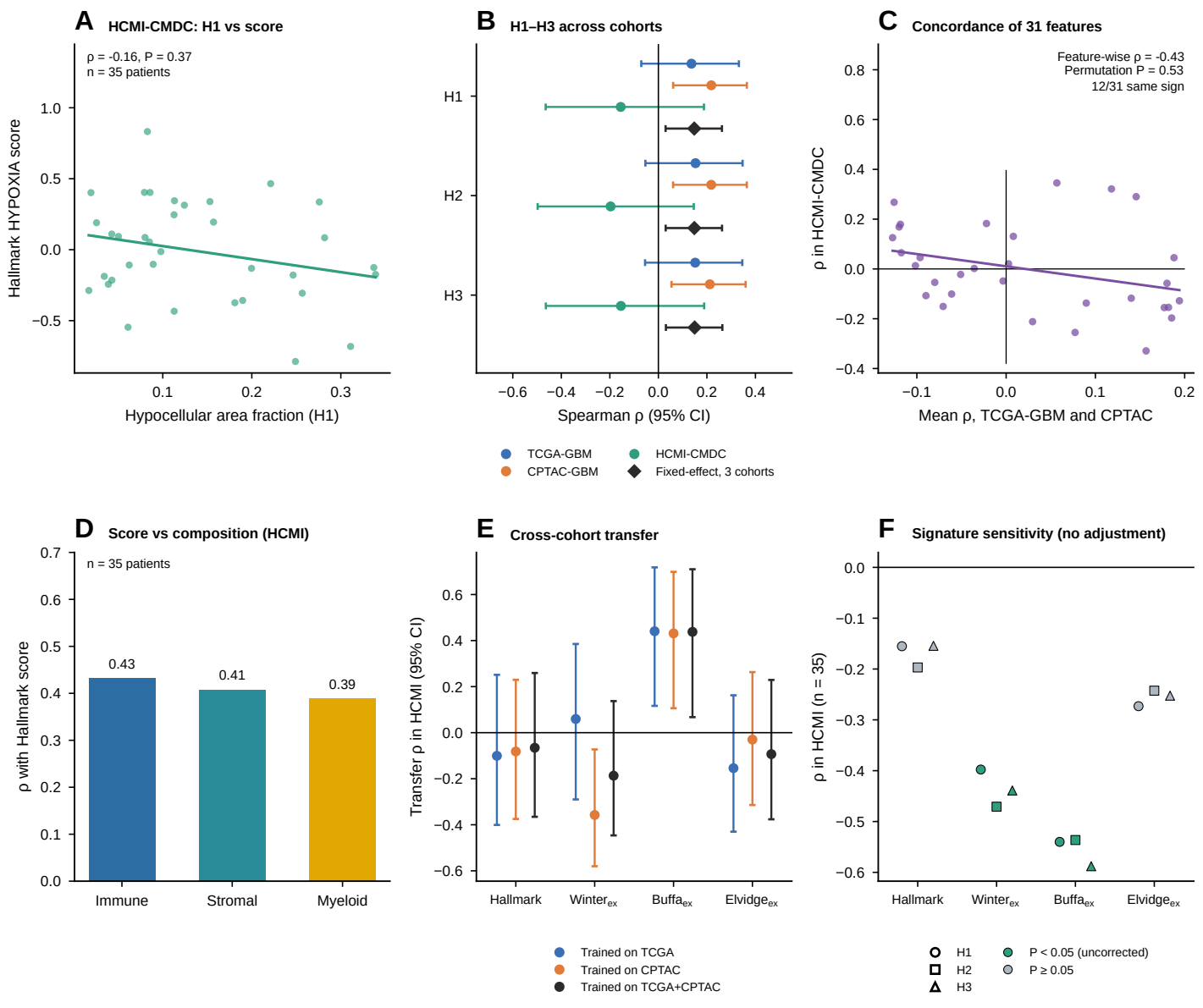

A
HCMI-CMDC: H1 vs score
ρ = -0.16, P = 0.37
n = 35 patients
Hallmark HYPOXIA score
Hypocellular area fraction (H1)
B
H1–H3 across cohorts
H1
H2
H3
Spearman ρ (95% CI)
TCGA-GBM
CPTAC-GBM
HCMI-CMDC
Fixed-effect, 3 cohorts
C
Concordance of 31 features
Feature-wise ρ = -0.43
Permutation P = 0.53
12/31 same sign
ρ in HCMI-CMDC
Mean ρ, TCGA-GBM and CPTAC
D
Score vs composition (HCMI)
n = 35 patients
ρ with Hallmark score
0.43
0.41
0.39
Immune
Stromal
Myeloid
E
Cross-cohort transfer
Transfer ρ in HCMI (95% CI)
Hallmark
Winter_ex
Buffa_ex
Elvidge_ex
Trained on TCGA
Trained on CPTAC
Trained on TCGA+CPTAC
F
Signature sensitivity (no adjustment)
ρ in HCMI (n = 35)
Hallmark
Winter_ex
Buffa_ex
Elvidge_ex
H1
H2
H3
P < 0.05 (uncorrected)
P ≥ 0.05