Predictors vs experimental outcome ARC-E2G score ArchR (Pearson correlation) ABC (A=scATAC, C=power law) Cicero (co-accessibility) 0.8 1.00 0.75 0.6 0.75 0.50 0.4 0.50 -0.25 0.2 0.25 0.00 0.00 0.0 TRUE TRUE FALSE TRUE FALSE TRUE FALSE FALSE Distance to TSS (kb) **DIRECTNET** (importance) Kendall correlation FigR (p-value) 0.16 1250 1.00 0.6 1000 0.12 0.75 0.4 750 0.08 0.50 500 0.2 0.04 -0.25 250 Predictor value (sqrt) 0.00 0.00 TRUE FALSE TRUE TRUE FALSE FALSE FALSE TRUE scE2G (ATAC) scE2G (Multiome) SCENIC+ (importance) SCENT (bootstrap p-value, -log10, signed) 1.00 0.2 0.75 0.50 -0.1 0.25 0.25 0.00 0.00 FALSE TRUE FALSE TRUE FALSE TRUE FALSE TRUE SnapATAC (z-score) STARE (gABC, power law) Signac (p-value) 1.00 15 0.75 0.75 10 0.50 0.50 5 0.25 -0.25

0.00 -

FALSE

TRUE

FALSE

TRUE

Experimental E-G pair

FALSE

TRUE