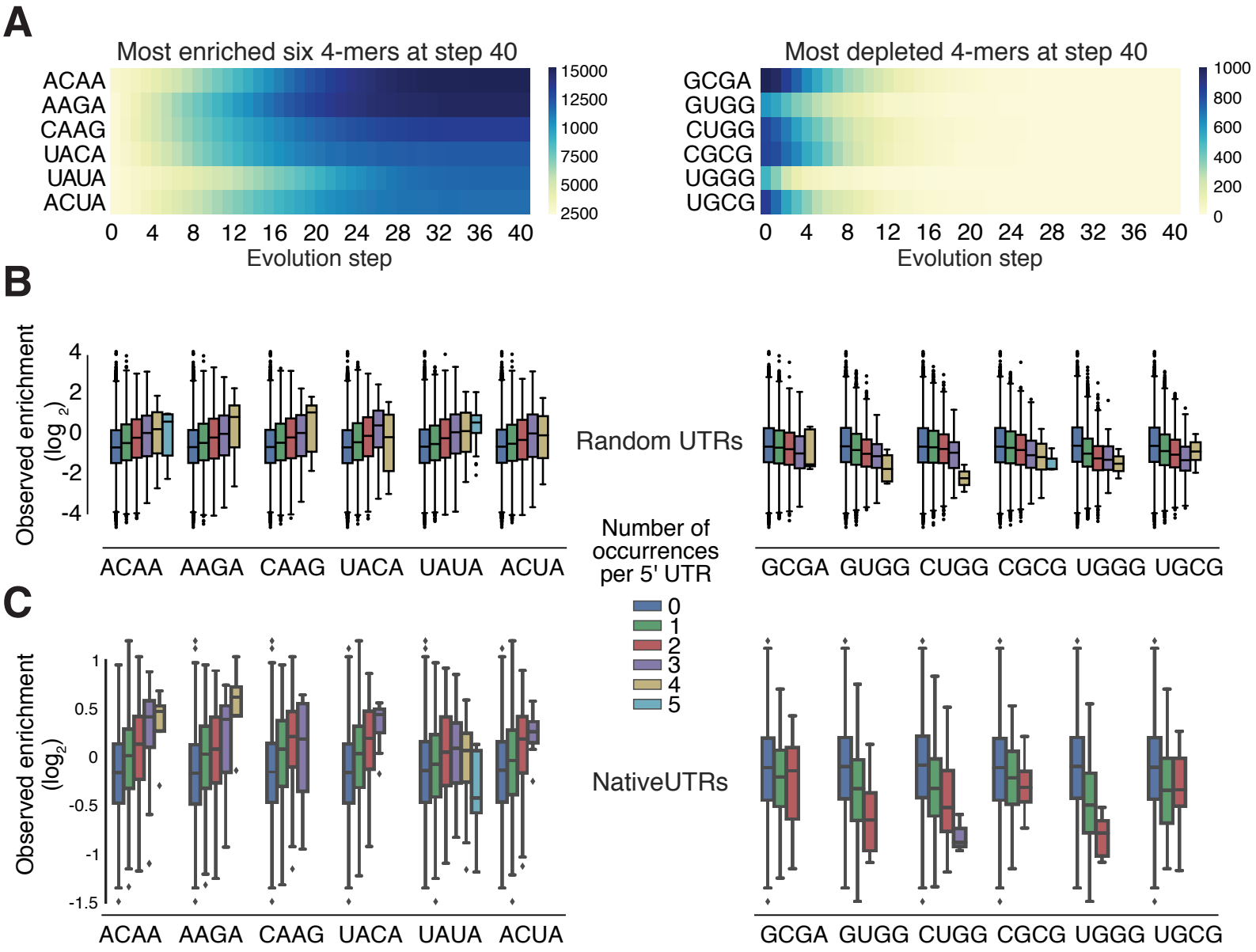

Supplemental Figure 11. Enrichment and depletion of particular 4-mers following model-guided in-silico evolutions. (A) The six most enriched (left) and most depleted (right) 4-mers following the in-silico evolutions were selected and the number of instances of each at every step is presented. The x-axis indicates the evolution step. Note that there are more instances of the most enriched 4-mers at the later steps than there are 5' UTR sequences being optimized (e.g. ~15,000 counts of ACAA appearing across 5,000 5' UTR sequences at step 36). (B) The effects of having the indicated enriched and depleted 4-mers occur multiple times in a single 5' UTR were assessed by querying our original experimental random 5' UTR dataset for enrichments based on the motif occurrences. (C) The effect of multiple occurrences of the indicated 4-mers appearing in a single 5' UTR from our native 5' UTR library. Since this dataset contained fewer sequences than our random dataset and presumably has been selected over evolution to be non-random, not all 4-mers were present more than twice, as particularly seen in the case of the six most depleted 4-mers.