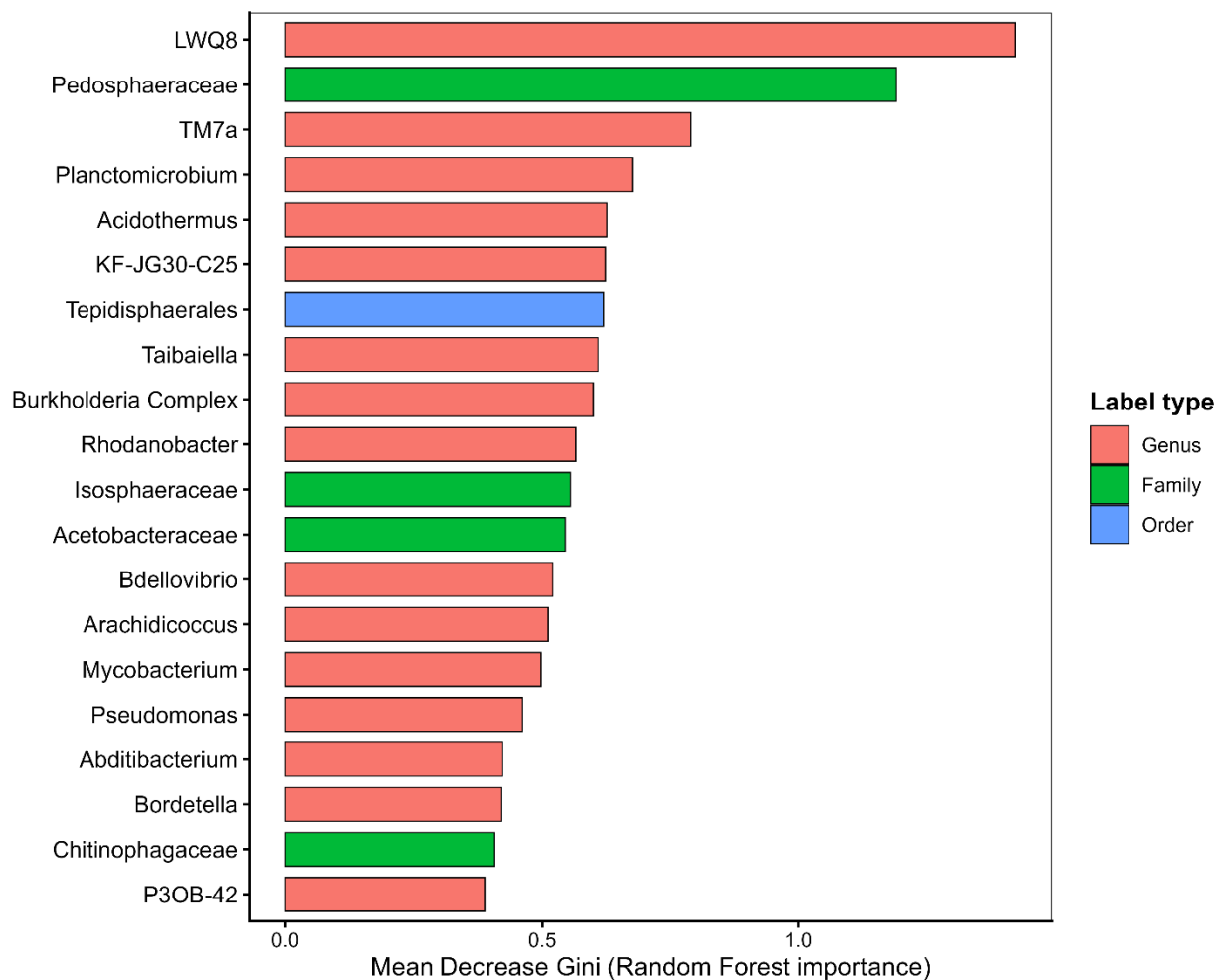
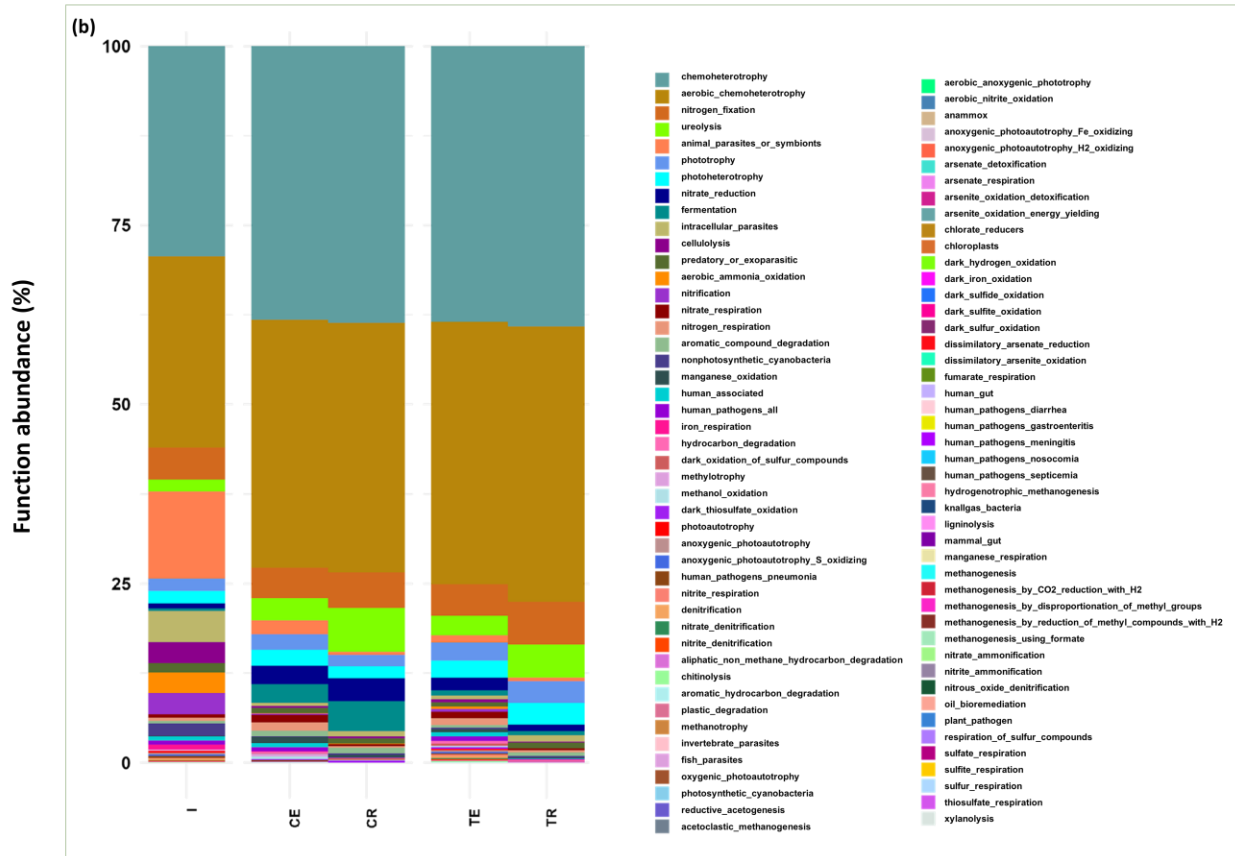
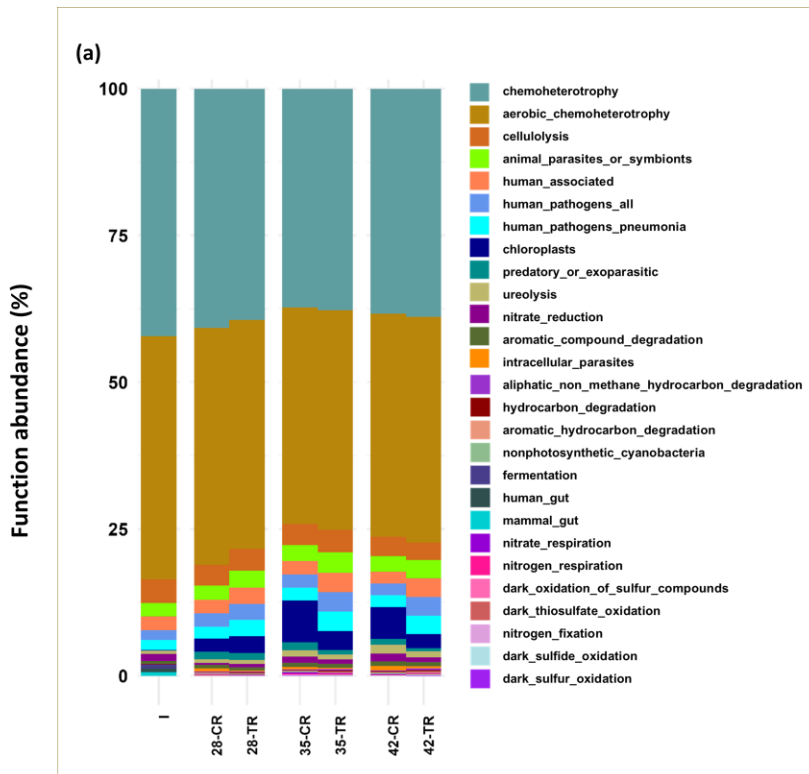


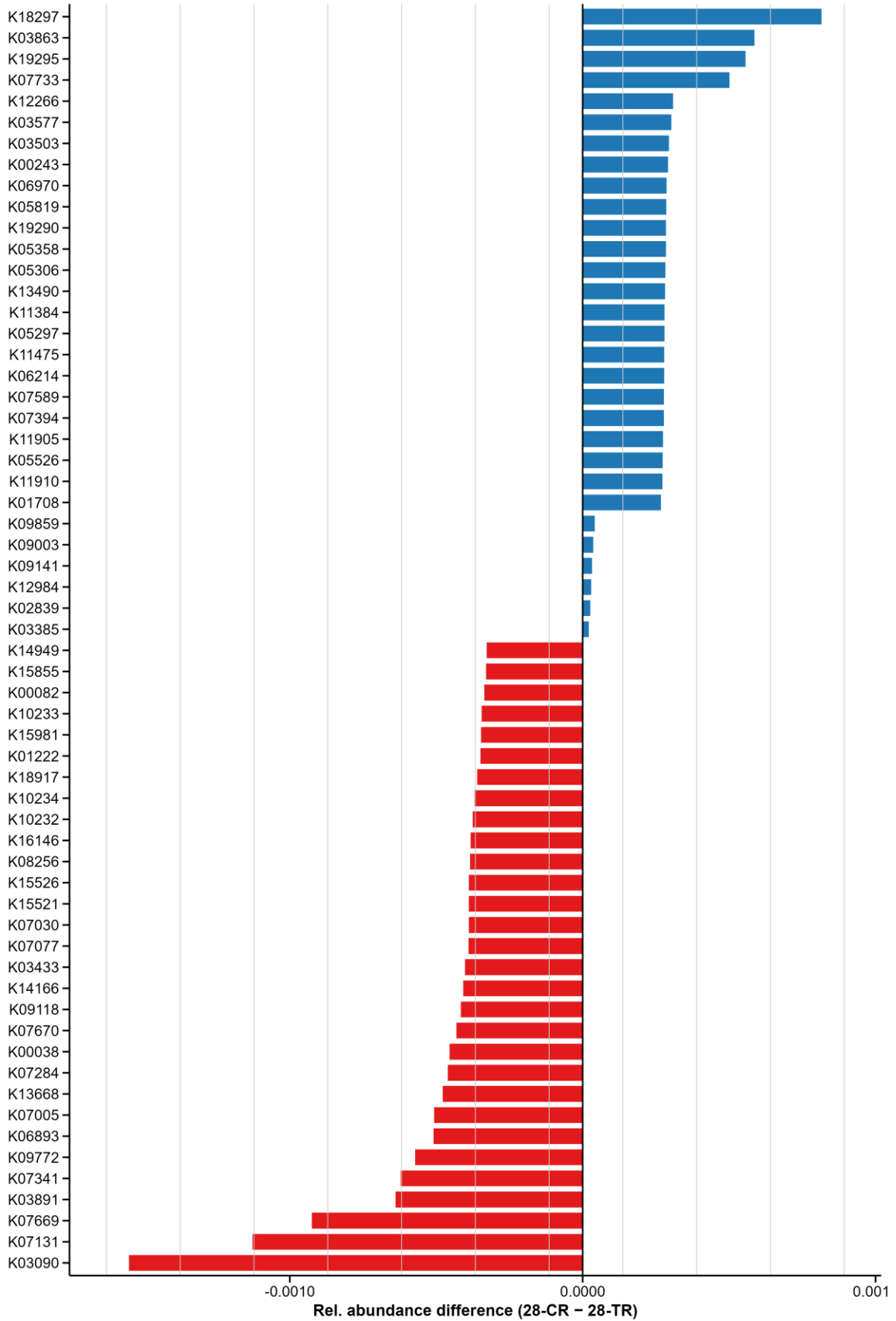
Supplementary Figures

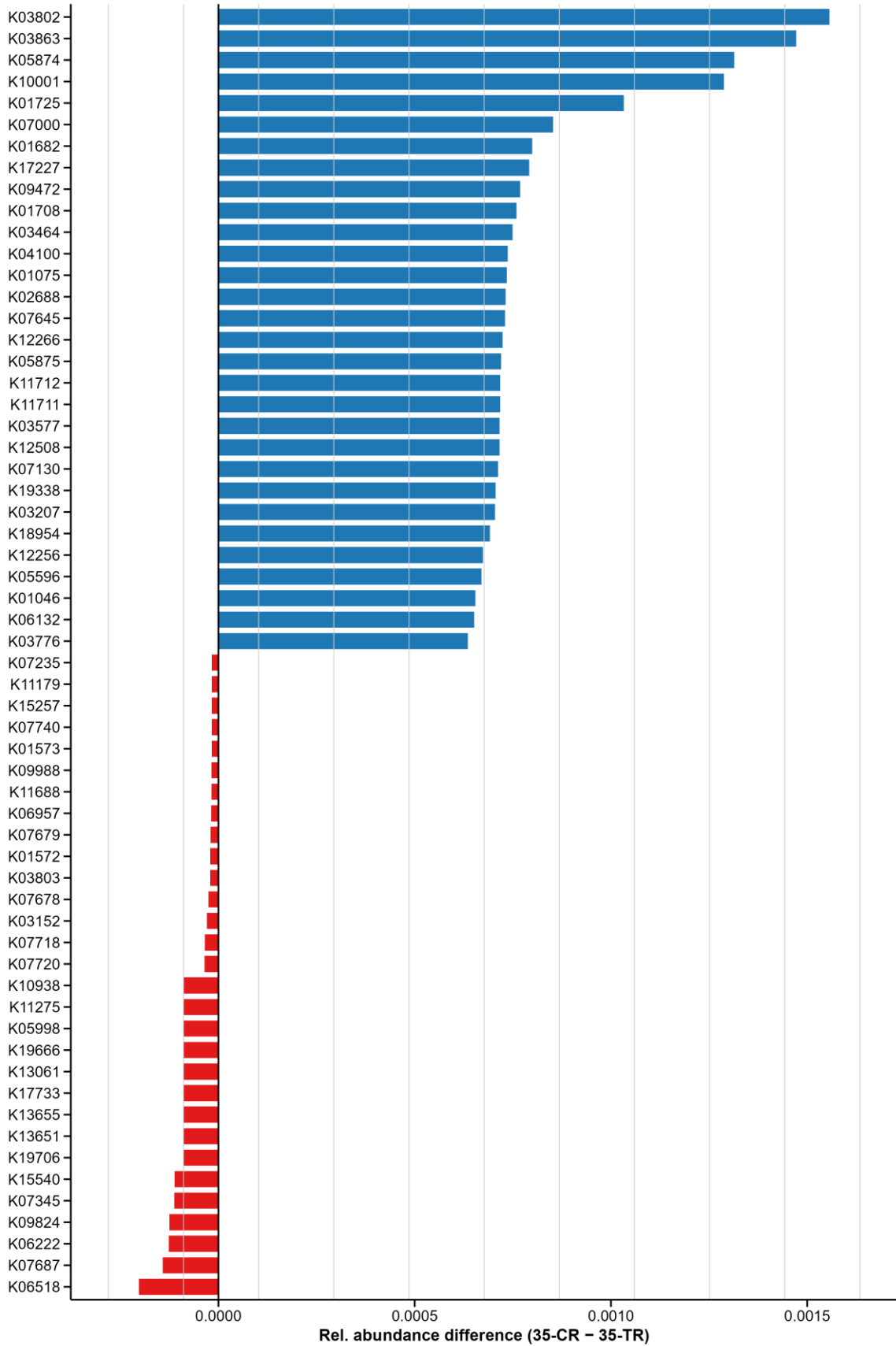


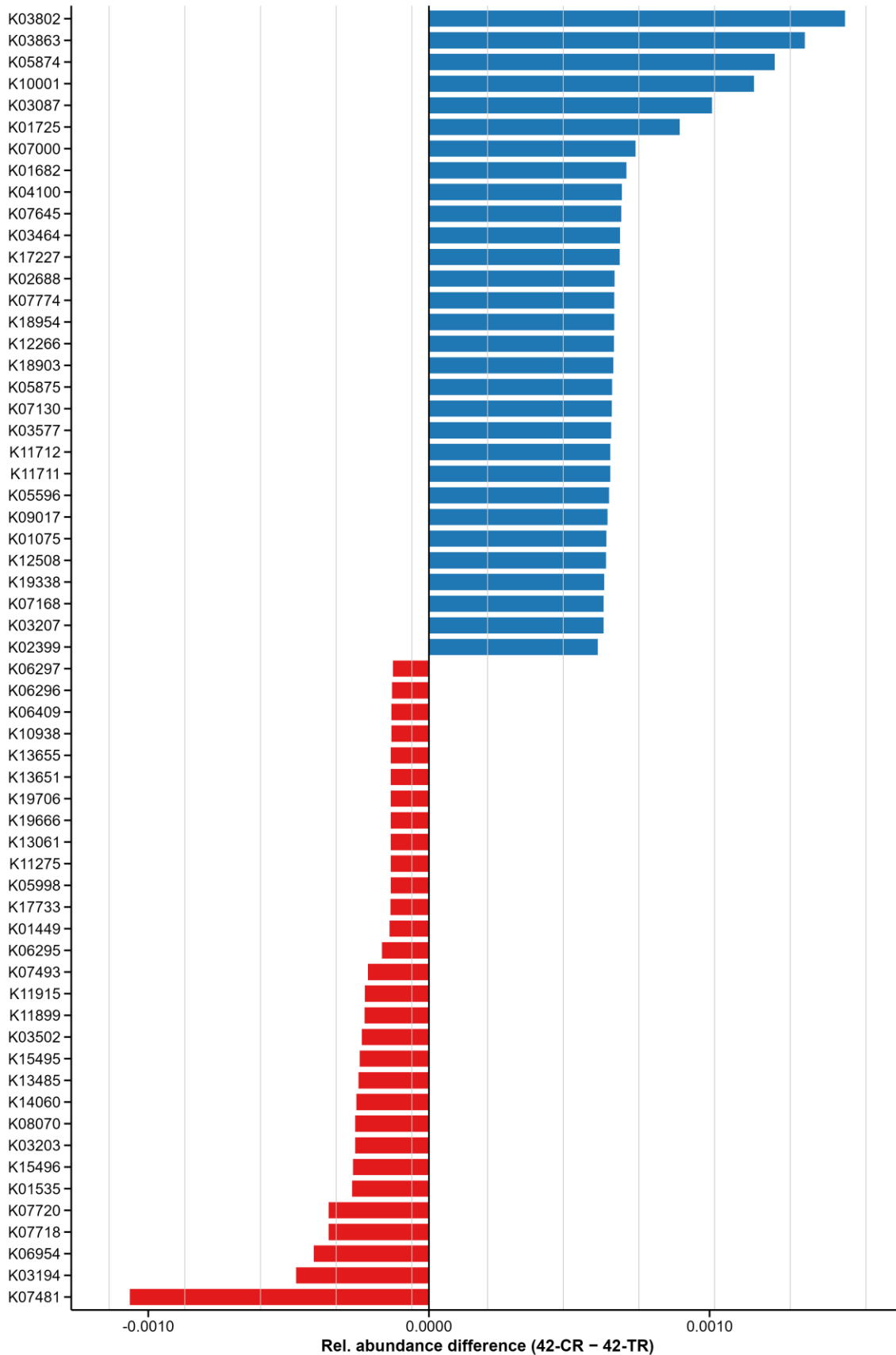
Supplementary Figure S1. Random Forest–derived importance of the top 20 discriminative bacterial taxa. Horizontal bars show the Mean Decrease Gini values from a Random Forest classifier trained on microbial community profiles. Taxa are ranked from top to bottom according to their contribution to model performance. Taxonomic labels are shown primarily at the genus level when confidently assigned. For taxa lacking reliable genus-level annotation, the lowest available taxonomic rank (family or order) was used. Bar colors indicate the taxonomic rank used for labeling (genus, family, or order). These top-ranked taxa were subsequently used for temporal and treatment-wise abundance analyses (see corresponding boxplot panels).

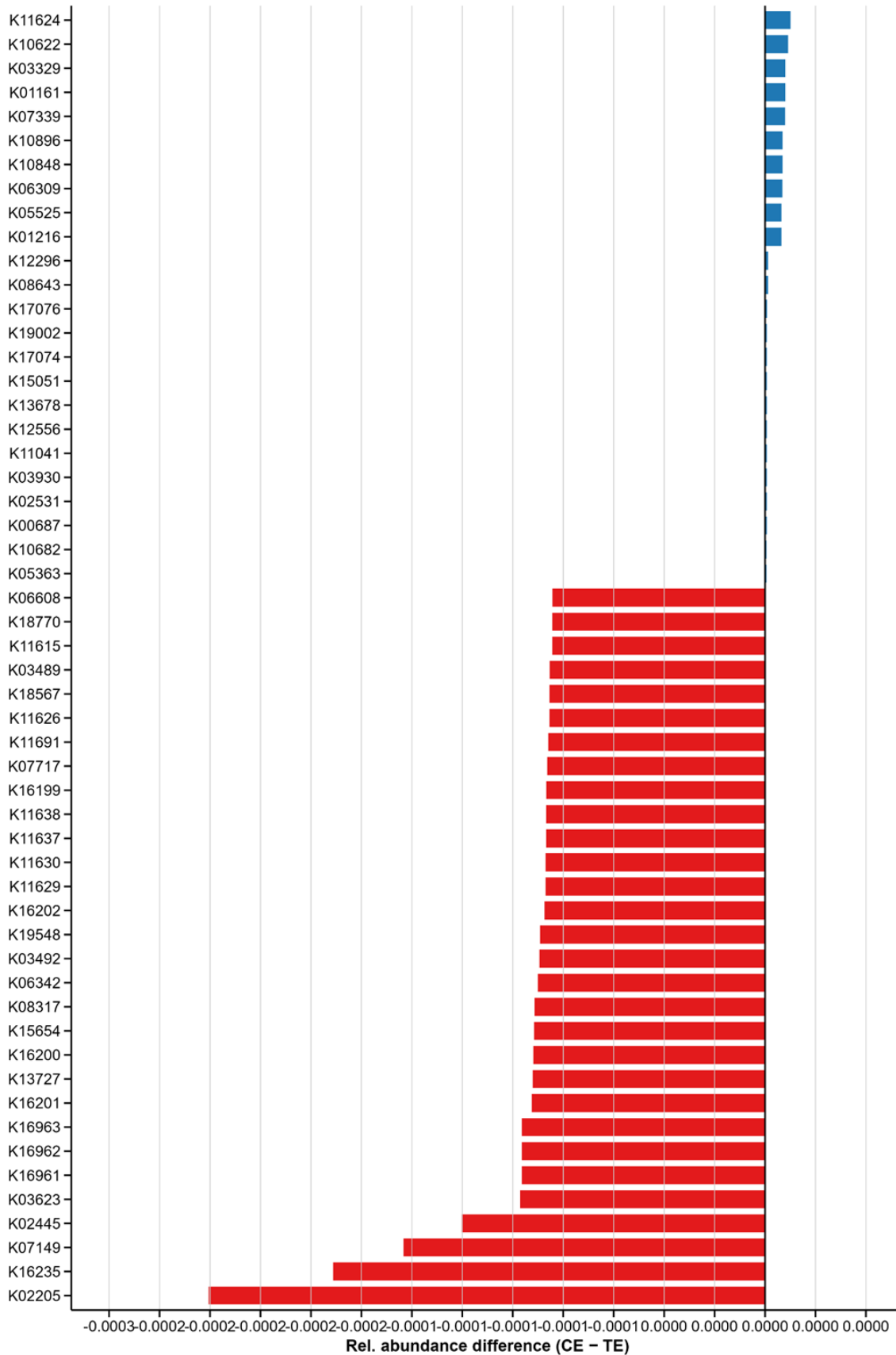


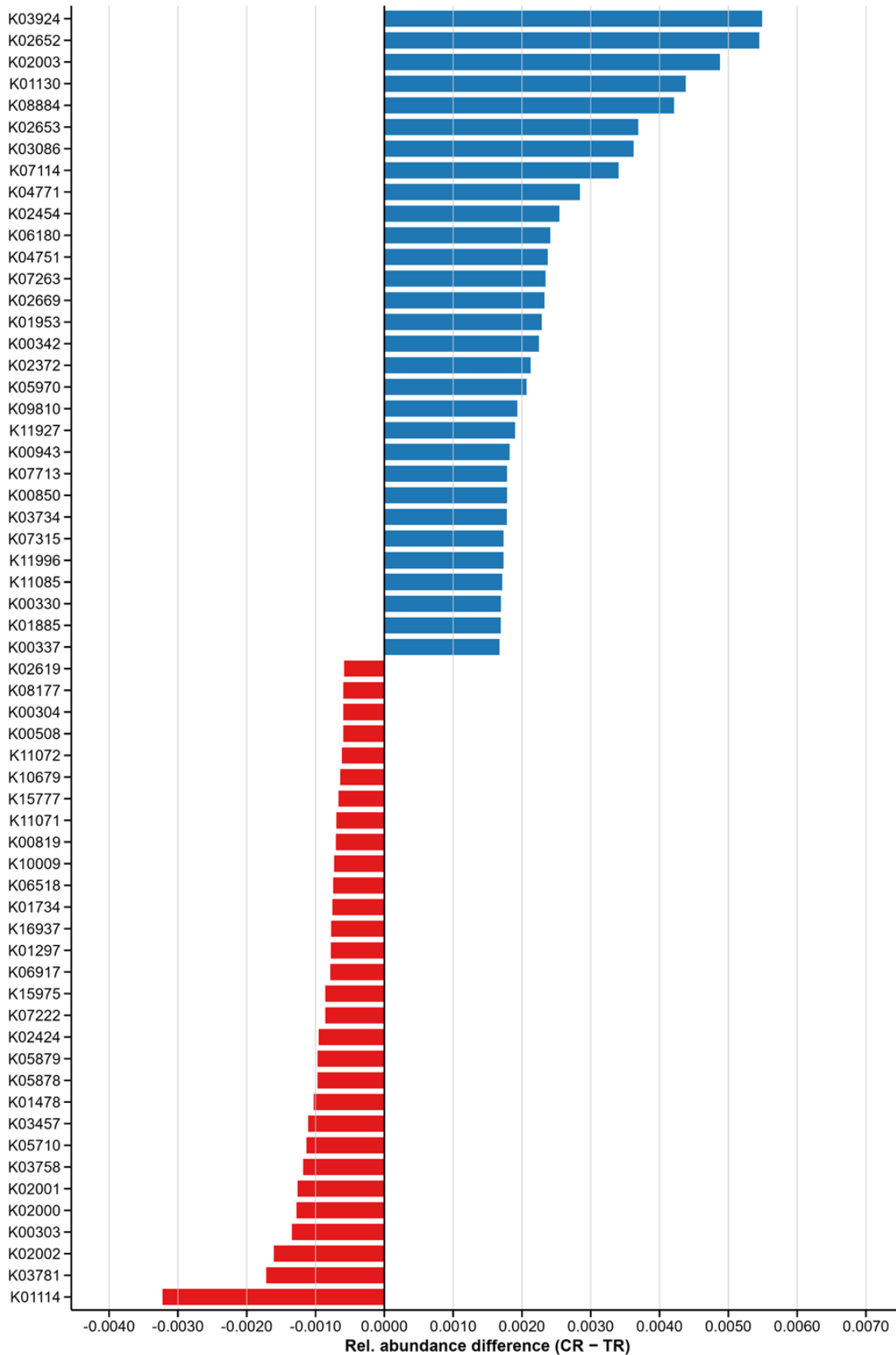
Supplementary Figure S2. FAPROTAX-predicted functional shifts in tomato-associated microbiomes under KP treatment. (a) Temporal and treatment effects on predicted functional profiles of rhizosphere communities. (b) Functional differences between KP-treated and control samples across rhizosphere and endosphere compartments.



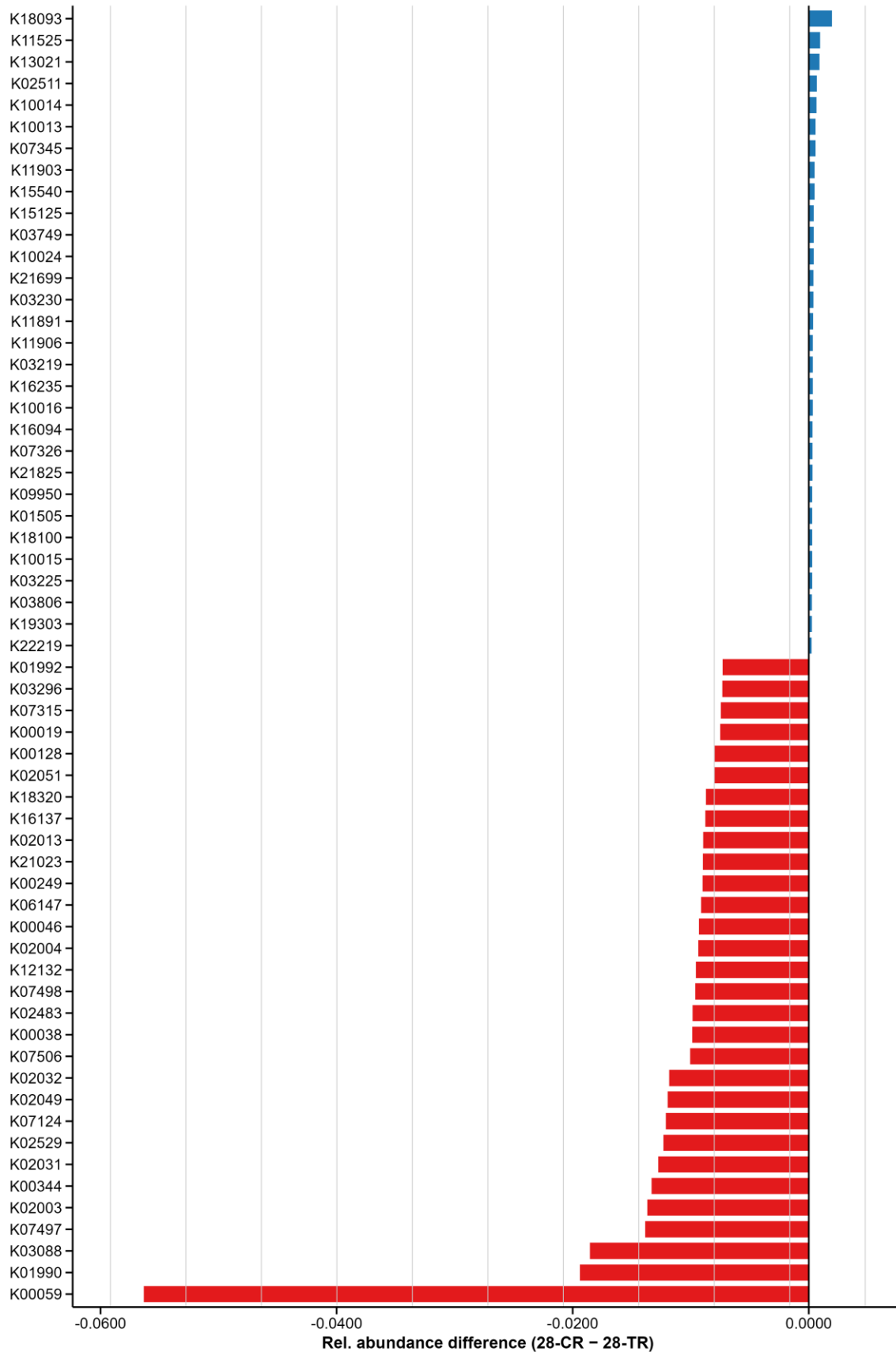


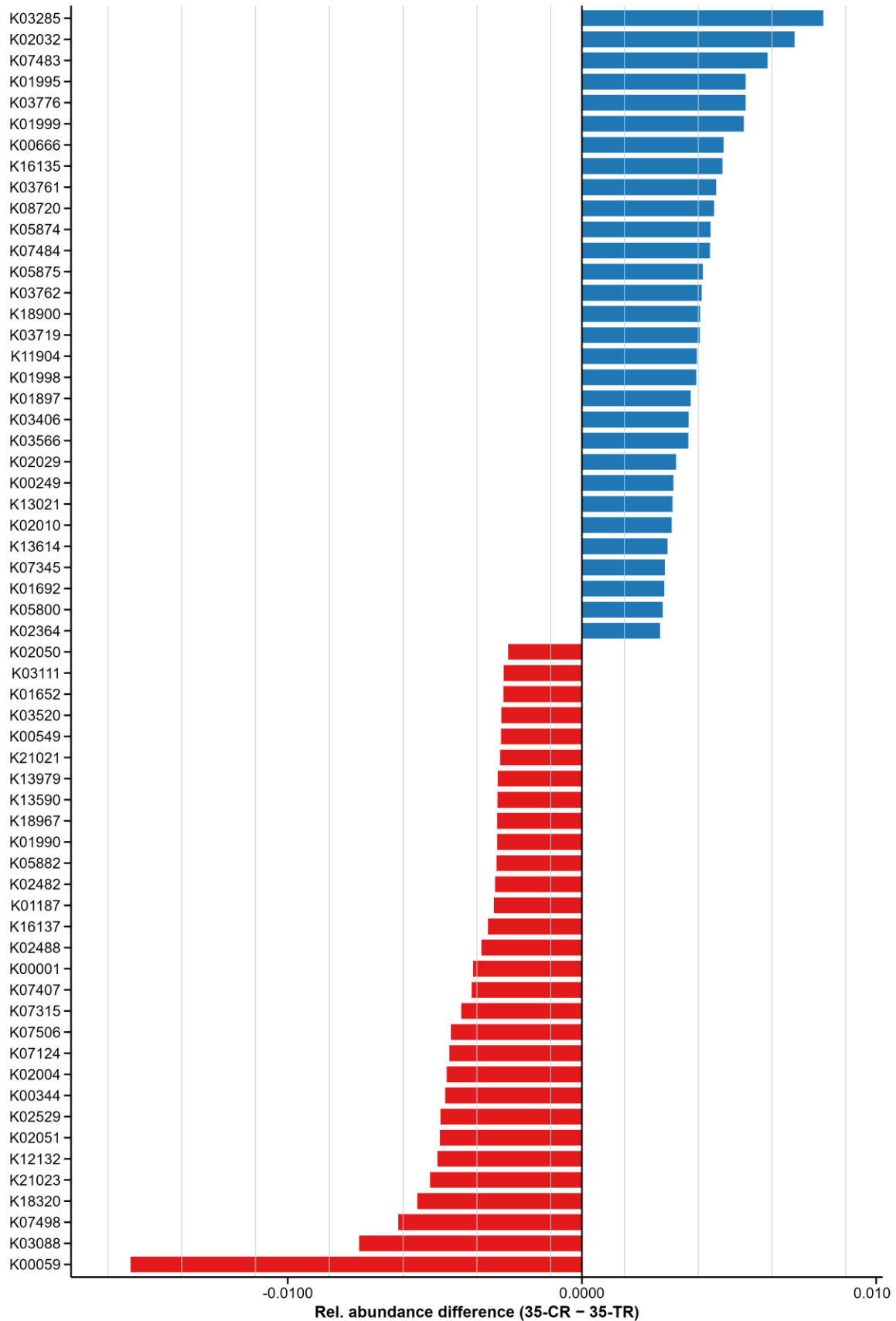


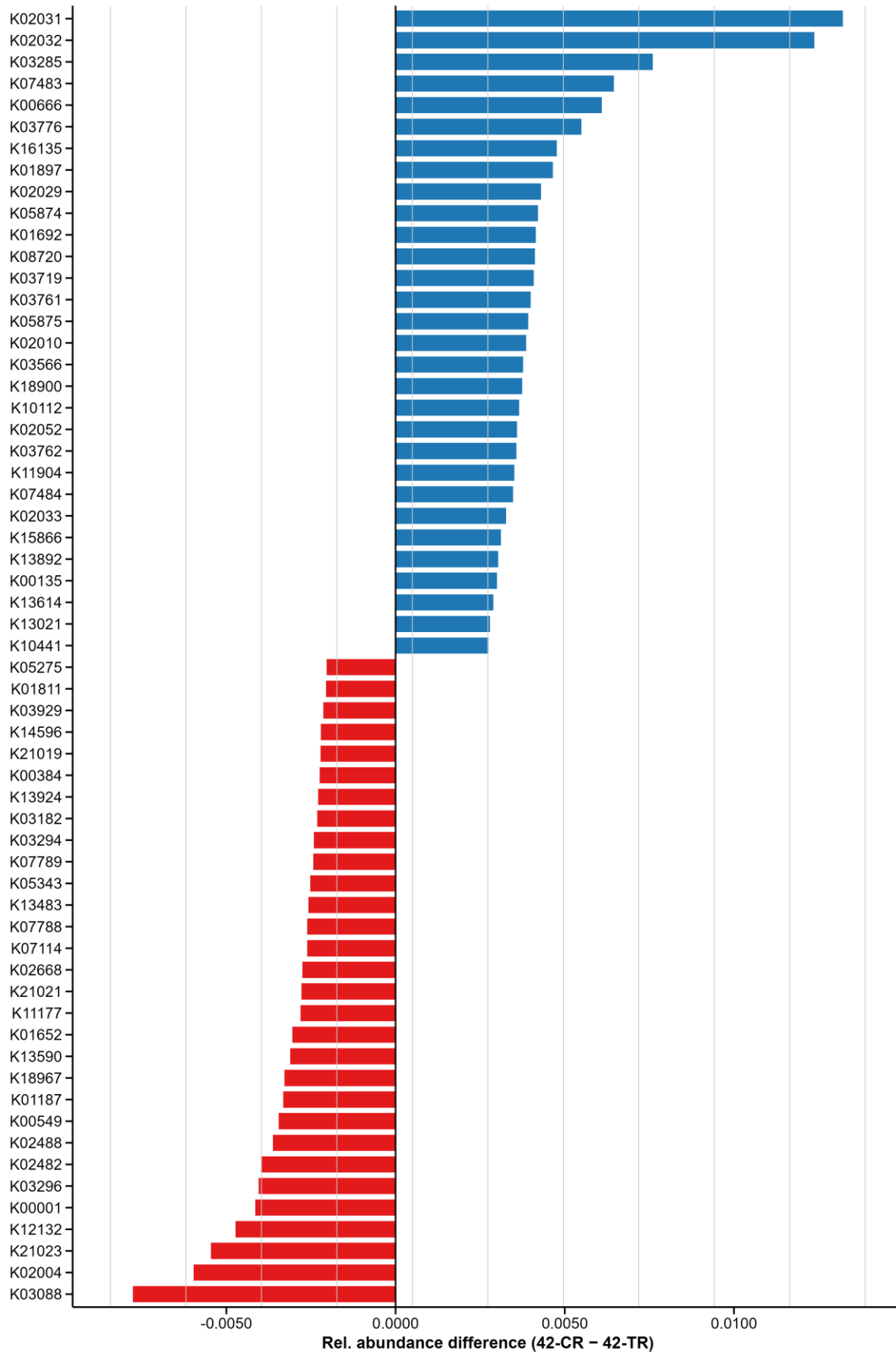


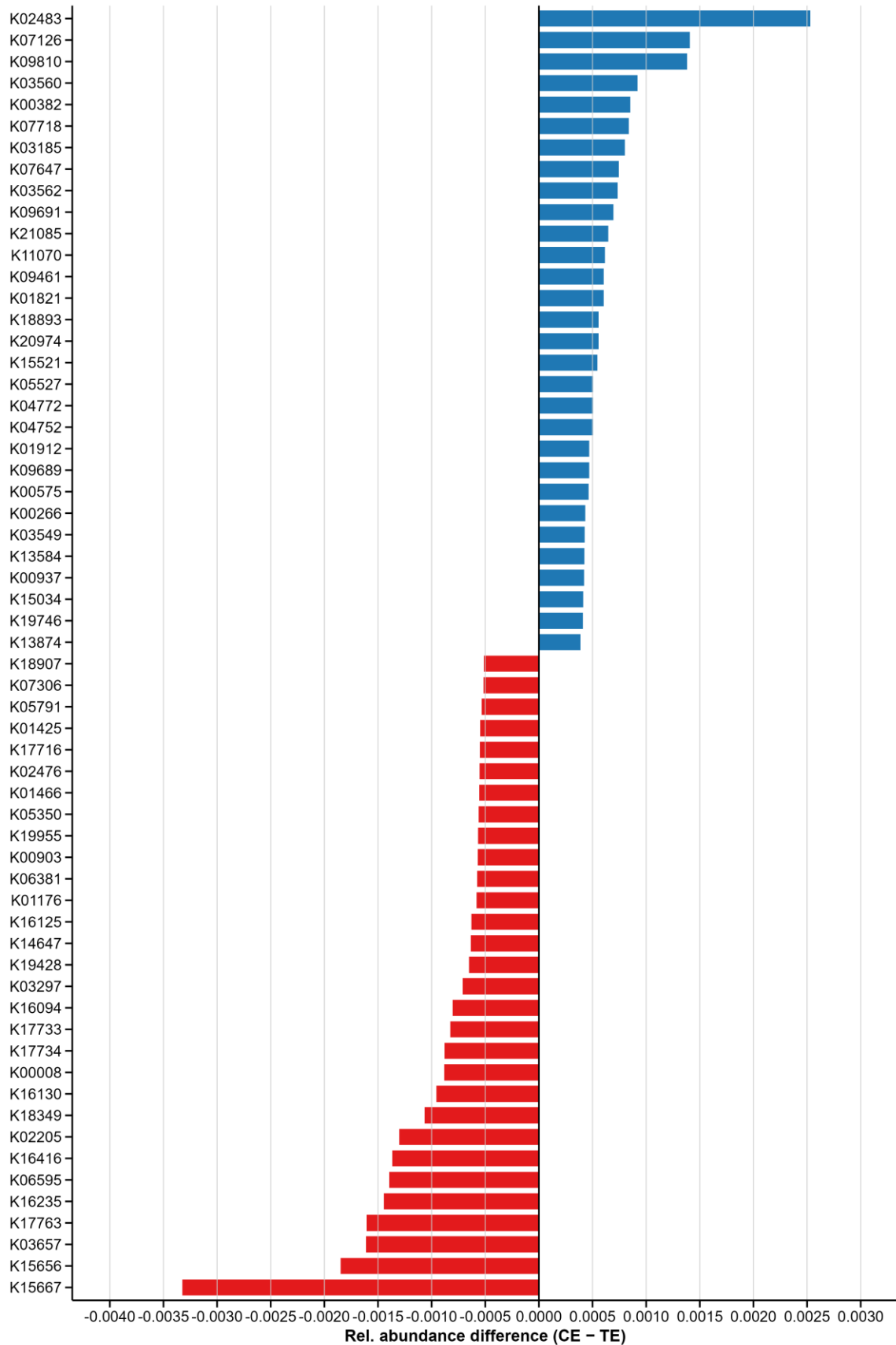


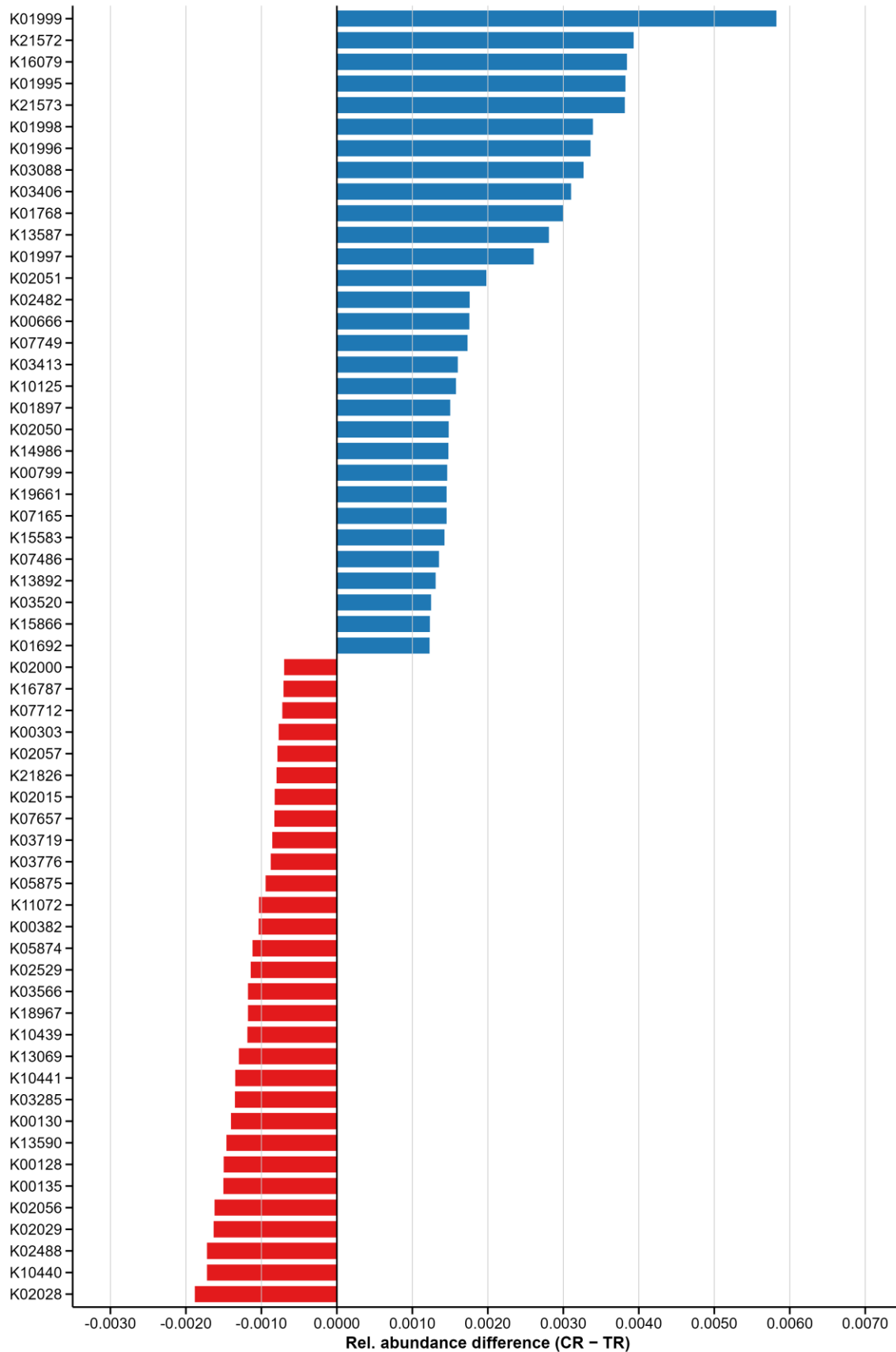
Supplementary Figure S3. Differentially enriched KEGG Orthologs (KOs) predicted by PICRUSt2 under KP treatment. (a) Temporal and treatment effects in the rhizosphere at 28, 35, and 42 days after germination (KP vs Control at each timepoint). (b) Functional differences between rhizosphere (KP vs Control) and endosphere (KP vs Control). Bar plots show the top 30 KOs enriched in KP and the top 30 in controls. Negative values indicate higher abundance in KP; positive values indicate enrichment in controls (FDR-adjusted $p < 0.05$).











Supplementary Figure S4. Differentially enriched KEGG Orthologs (KOs) predicted by Tax4Fun2 under KP treatment. (a) Temporal and treatment effects in the rhizosphere at 28, 35, and 42 days after germination (KP vs Control at each timepoint). (b) Functional differences between rhizosphere (KP vs Control) and endosphere (KP vs Control). Bar plots show the top 30 KOs enriched in KP and the top 30 in controls. Negative values indicate enrichment in KP; positive values indicate enrichment in controls (FDR-adjusted $p < 0.05$).