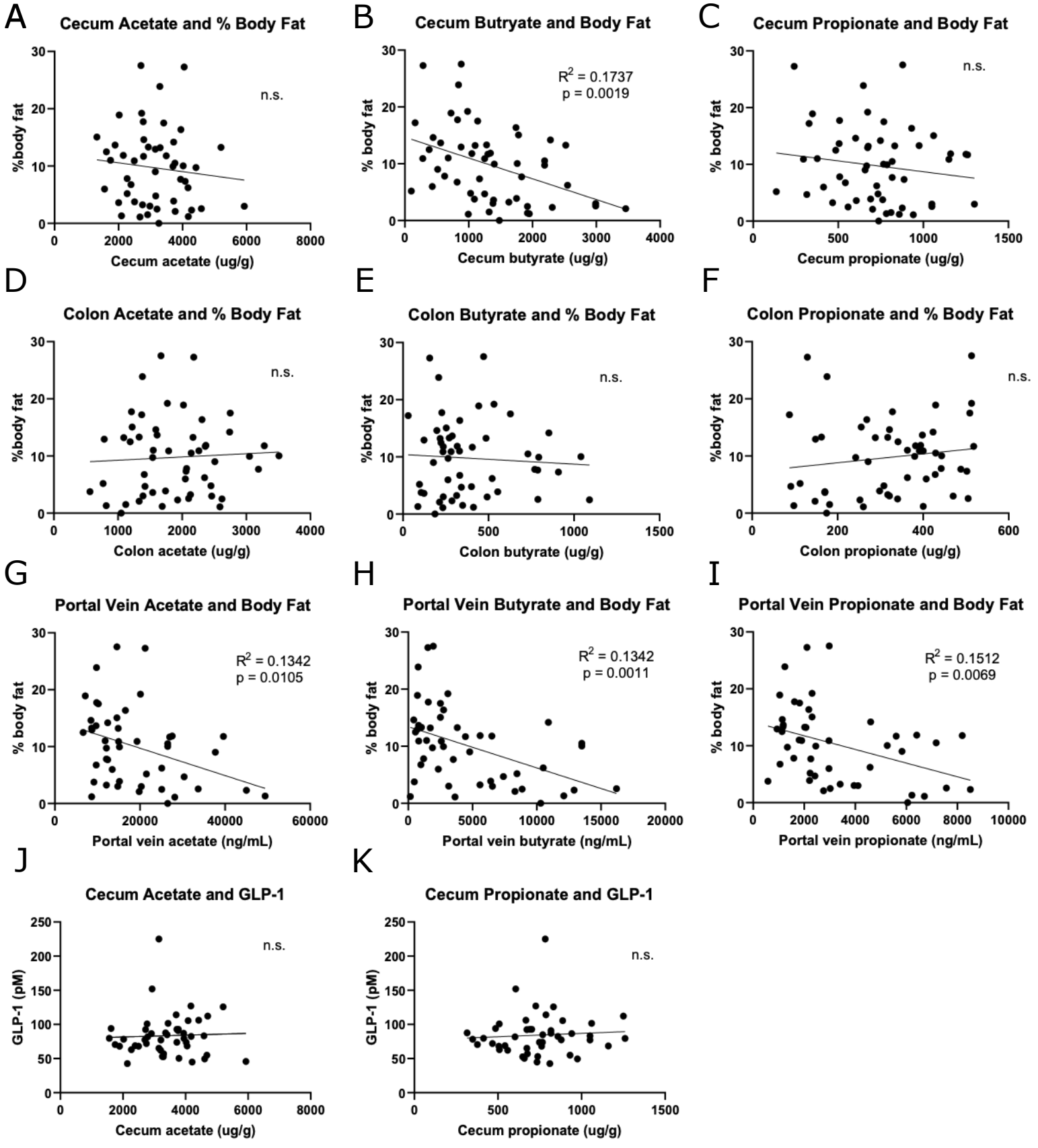
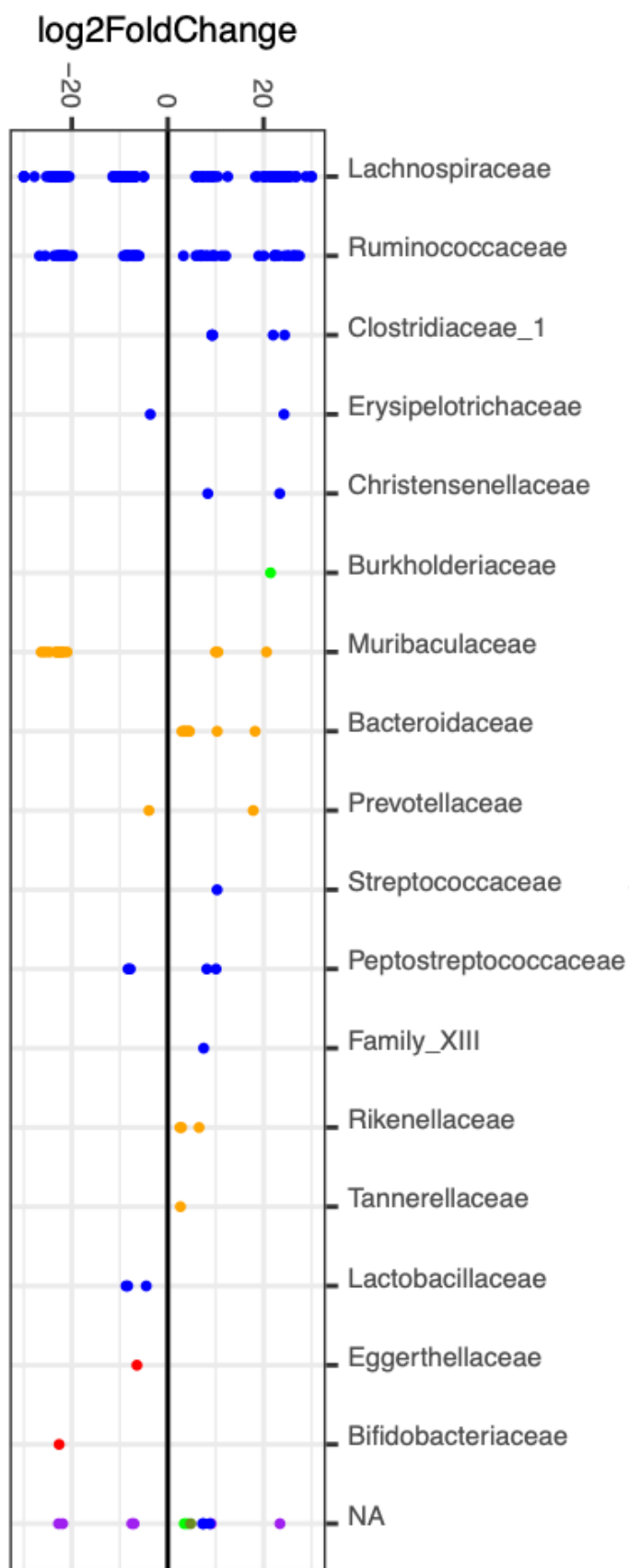


**Figure S1. The effect of HFD and OFS supplementation on postprandial gut microbiota diversity and bacterial profile.** (A) Alpha diversity measured as an ASV species richness of the gut microbiota from the cecum of chow, HFD, and HFD+OFS rats (n=4-6 per group at each timepoint) 0-8h following a meal. \*p<0.05 compared to HFD. (B) Bray-Curtis dissimilarity based NMDS of chow, HFD, and HFD+OFS rats (n=4-6 per group at each timepoint) PERMANOVA (ADONIS, permutations = 999) for diet p<0.001, for time p=0.925, for diet:time p<0.001. (C) Average relative abundance of bacterial families from chow, HFD, and HFD+OFS rats (n=4-6 per group at each timepoint) 0-8h postprandially. (D) Average relative abundance of bacterial genera from chow, HFD, and HFD+OFS rats (n=4-6 per group at each timepoint) 0-8h postprandially.

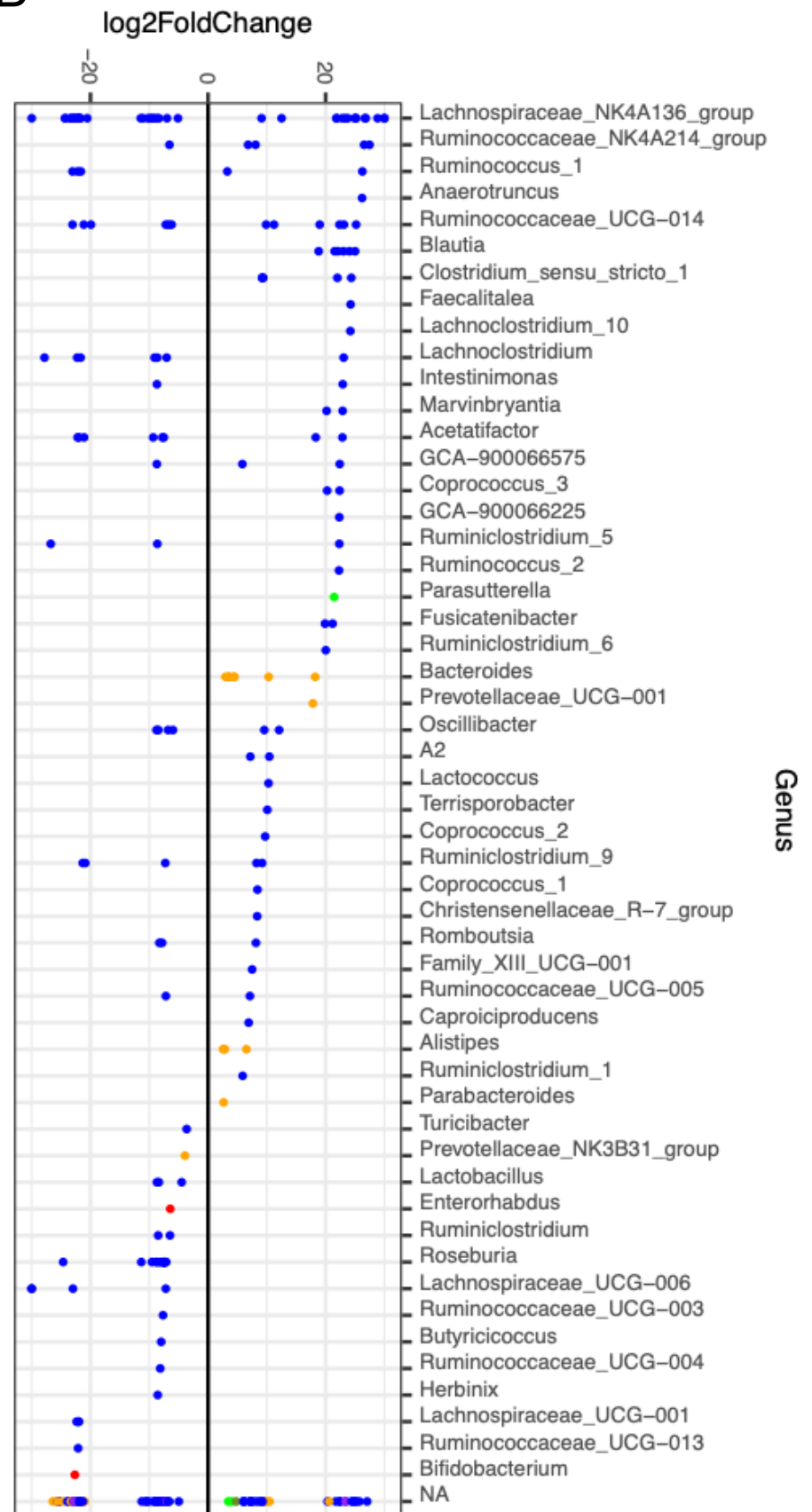


**Figure S2. Correlation of short chain fatty acids with body fat and glucagon-like peptide 1.** Association (simple linear regression) between percent body fat and cecum acetate (A), butyrate (B), and propionate (C) 4-8h postprandially, colon acetate (D), butyrate (E), and proionate (F) 4-8h postprandially, and portal vein acetate (G), butyrate (H), and propionate (I) 4-8h postprandially. Association between portal vein glucagon-like peptide 1 (GLP-1) and cecum acetate (J) and propionate (K) 4-8h postprandially. Significance and coefficient of determination ( $R^2$ ) values presented on graphs with  $p < 0.05$ .

A



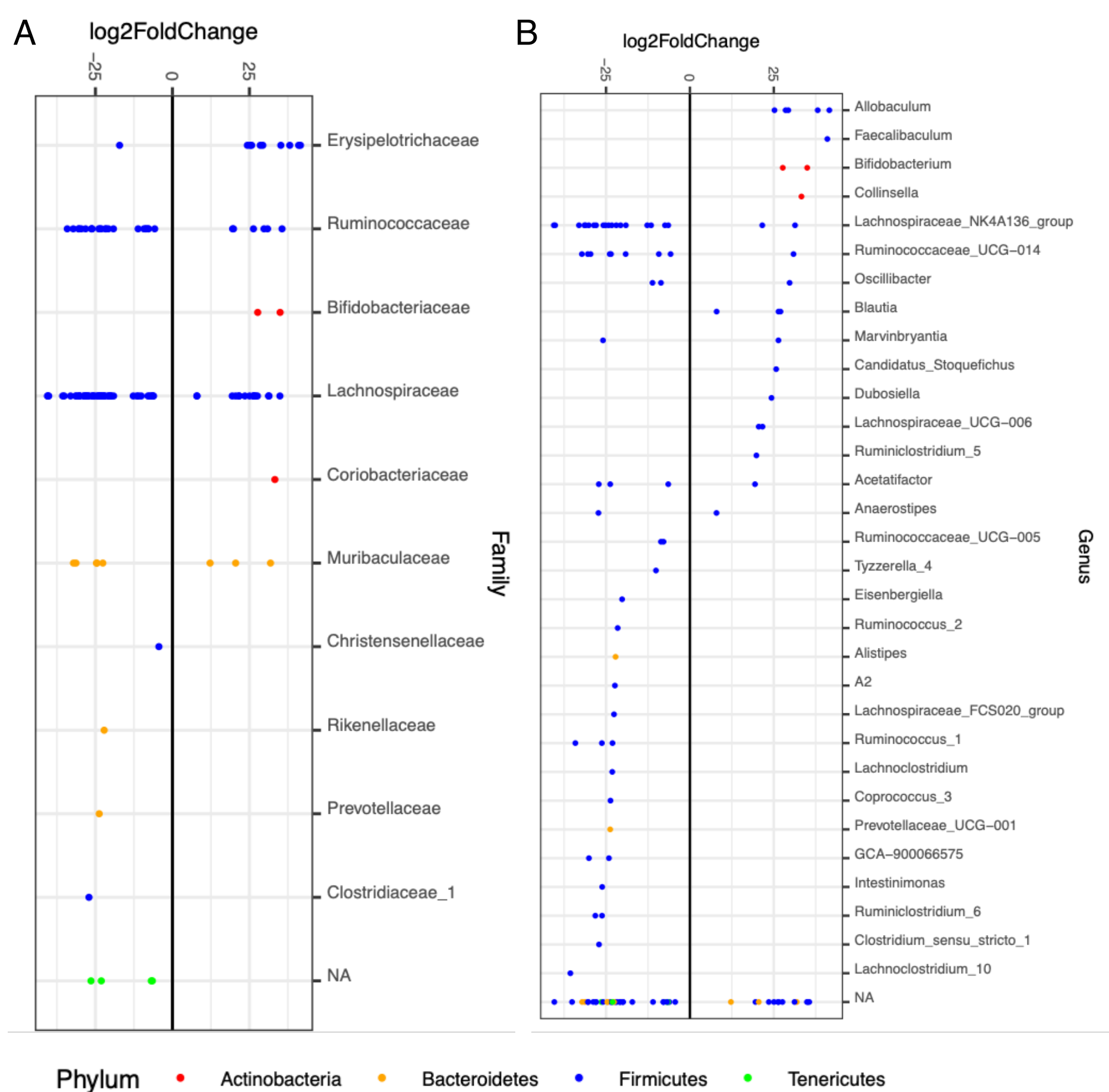
B



Phylum

Actinobacteria   Cyanobacteria   Proteobacteria  
Bacteroidetes   Firmicutes   Tenericutes

**Figure S3. Comparison of the cecal microbiota between healthy chow and obese HFD-fed rats.** Significant (corrected  $p < 0.05$ , Wald test) microbiota differences at the family (A) and genus (B) level in HFD-fed rats compared to chow determined by DESeq2 analysis.



**Figure S4. Comparison of the cecal microbiota between obese HFD-fed and OFS supplemented rats.** Significant (corrected  $p < 0.05$ , Wald test) microbiota differences at the family (A) and genus (B) level in HFD-fed rats supplemented with OFS compared to HFD determined by DESeq2 analysis.