

Table S4. **Taxonomic ranks of each bacterial identified in the HFD and HFD EE groups**

TAXA ABBREVIATION	TAXA ID
g_SMB53	k__Bacteria;p__Firmicutes;c__Clostridia;o__Clostridiales; f__Clostridiaceae;g__SMB53
s_C21_c20	k__Bacteria;p__Proteobacteria;c__Deltaproteobacteria;o__Desulfovibrionales; f__Desulfovibrionaceae;g__Desulfovibrio;s__C21_c20
g_AF12	k__Bacteria;p__Bacteroidetes;c__Bacteroidia;o__Bacteroidales;f__Rikenellaceae;g__AF12

p_: Phylum; c_: Class; o_: Order; f_:Family; g_: Genus; s_: Specie

Experimental groups: mice fed with a high fat diet for 12 weeks in standard housing conditions (HFD); mice fed for 24 weeks with a high fat diet and maintained in environmental enrichment conditions (HFD EE).