Supplementary Information

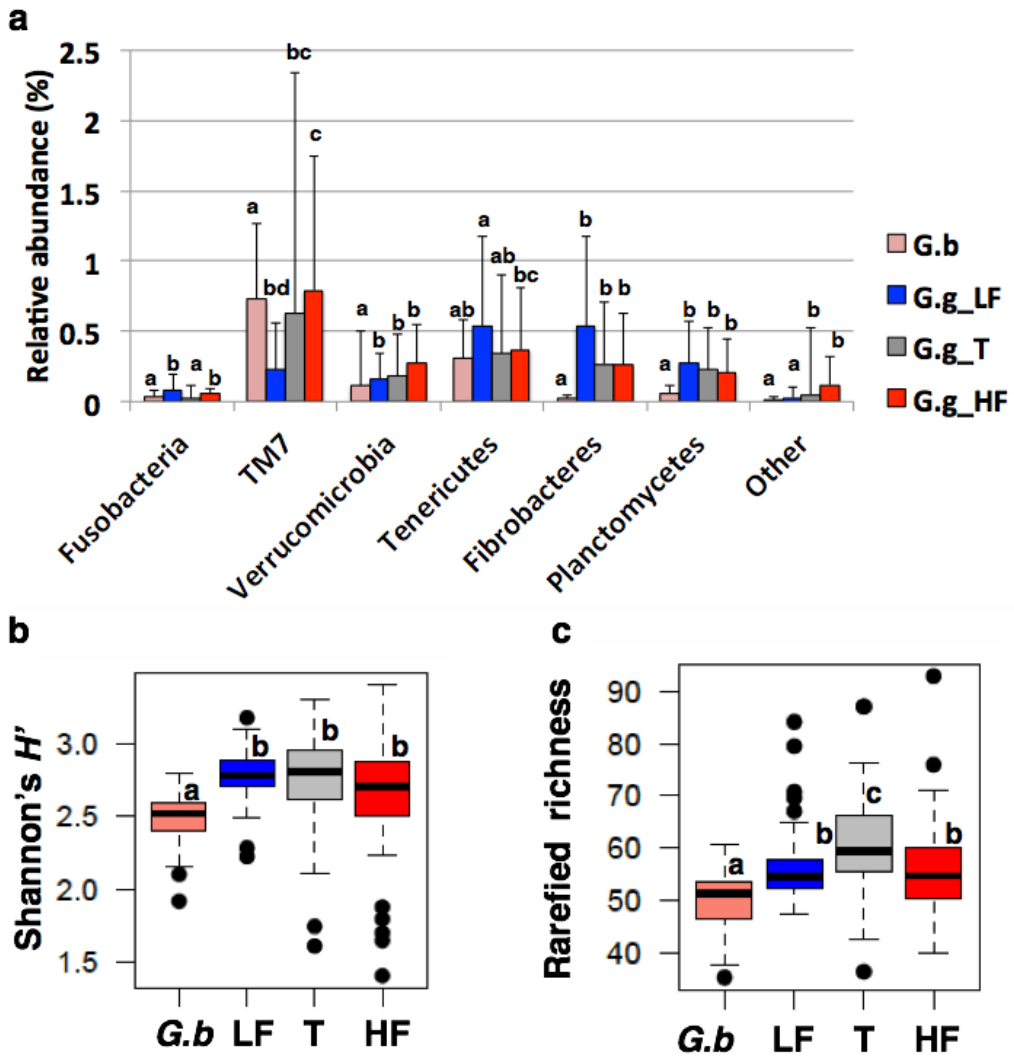


Figure S1. Gut microbiome composition in mountain and lowland gorillas. **(a)** Relative abundance diffenecs in minor phyla between the microbiomes of mountain gorillas (G.b) and lowland gorilla (G.g) in the low fruit (LF), transition (T) and high fruit (HF) seasons (b) **(b)** Shannon diversity index (*H'*) and rarefied richness (2 184 reads, the minimum obtained for a given sample) at genus level are significantly higher in lowland gorillas regardless of season. Different letters in denote significant differences ($P<0.05$, Wilcoxon rank sum test adjusted for multiple comparisons)

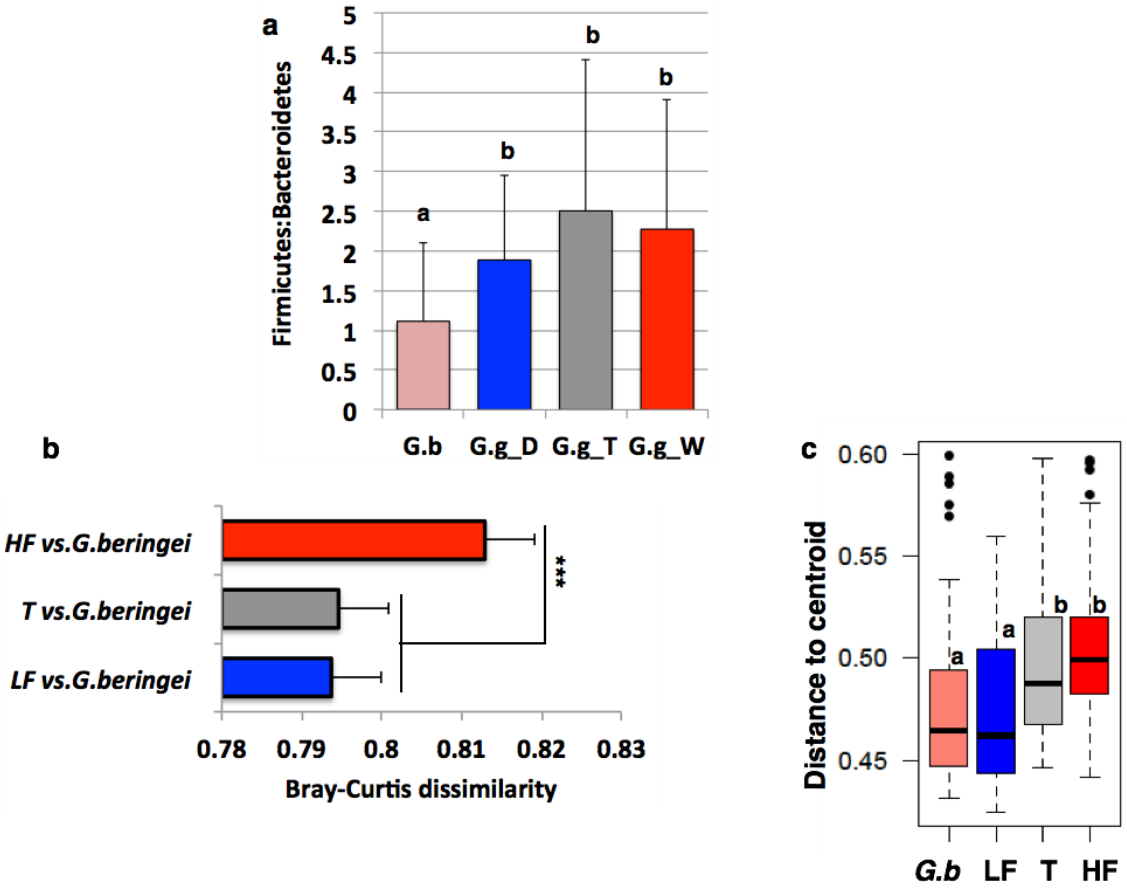
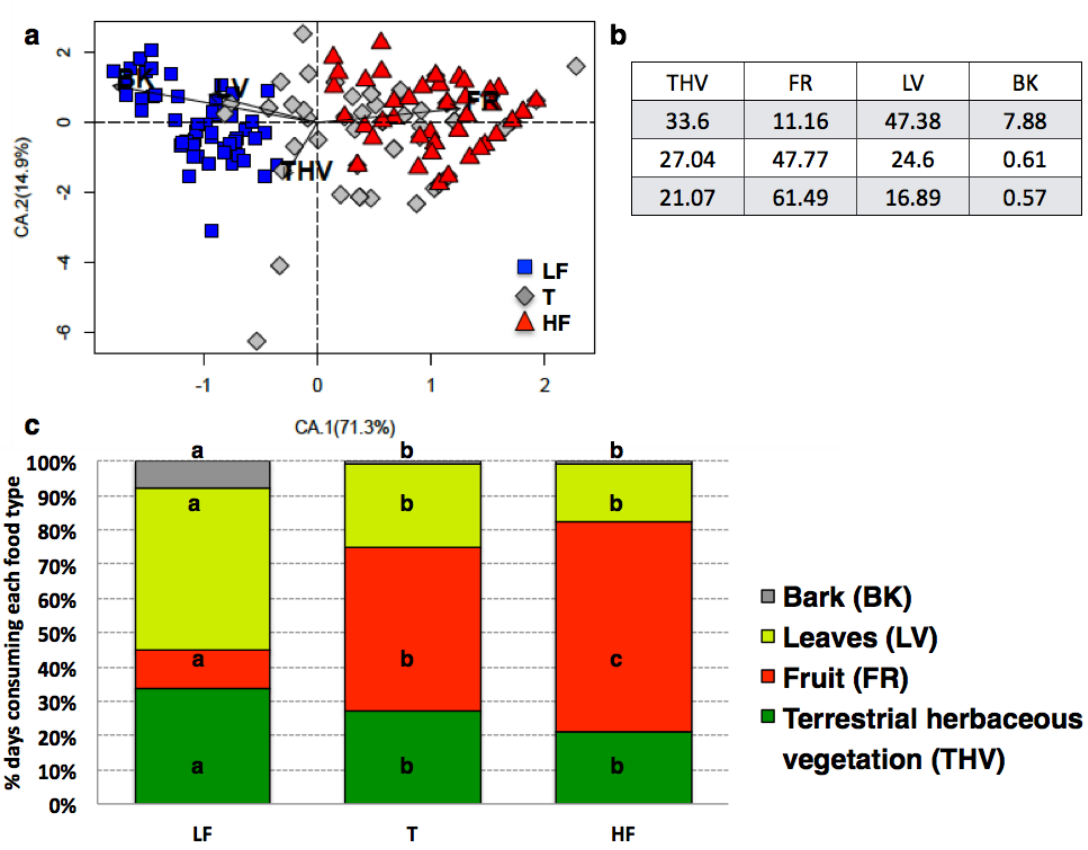


Figure S2. Comparison of seasonal gut microbiome traits in lowland and mountain gorillas. (a) Firmicutes:Bacteroidetes ratios in the gut microbiome of G.b and G.g during LF, T and HF seasons. **(b)** Mean Bray-Curtis dissimilarity indexes (OTUs=97% 16S rRNA sequence similarity) show that low fruit (LF) lowland gorilla (*G.g.gorilla*) microbiomes are similar to those of the mountain subspecies (*G.b.beringei*). Gut microbiomes of lowland gorillas during high fruit (HF) season are the most dissimilar to those of the mountain subspecies. Asterisks denote significant differences (***P<0.001, Wilcoxon ranks sum tests adjusted for multiple comparisons). **(c)** Multivariate dispersion analysis shows that mountain gorillas and lowland gorilla microbiomes in the low fruit season were significantly more homogeneous than those seen during the transition or high fruit seasons in lowland gorillas. Different letters in denote significant differences (P<0.05, Wilcoxon rank sum test adjusted for multiple comparisons).



THV	FR	LV	BK
33.6	11.16	47.38	7.88
27.04	47.77	24.6	0.61
21.07	61.49	16.89	0.57

Figure S3. Feeding behavior of habituated lowland gorilla groups during the sample collection period. (a) Correspondence analysis (CA) based on the number of observation days habituated gorillas were seen foraging on different food types (FR=Fruit, THV=Terrestrial herbaceous vegetation, LV=Leaves, BK= Bark) during the low fruit (LF), transition (T) and high fruit (HF) seasons (61, 57 and 55 days respectively). **(b and c)** Percent of time gorillas were observed feeding on each specific food type. Different letters in denote significant differences ($P<0.05$, Wilcoxon rank sum test adjusted for multiple comparisons).

Table S1. Relative abundance (%) of indicator genera characterizing the gut microbiomes of mountain (*G.b.beringei*) and lowland (*G.g.gorilla*) gorillas during the low fruit (LF), transition (T) and high fruit (HF) seasons. Prob.=permutation test for indicator value. Different letters (a,b,c,d) denote statistical significance (P<0.05) as determined by Kruskal-Wallis tests adjusted for multiple comparisons. SD=standard deviation.

Table S2 Variables (metabolites) with influence on the PLS-DA projections (VIP) and normalized metabolite concentrations in the metabolomes of mountain and lowland gorillas in samples collected during the low fruit (LF) and high fruit (HF) seasons (Figure 3).