Supplementary Materials

Table S1. The list of mouse samples used in the gut microbiota analysis.

| | Week 0 | | Week 8 | | | |
| | (Before Dietary Intervention) | | CD | | HFD | |
Strain	Male	Female	Male	Female	Male	Female
B6-mt^ALR	8	11	3	3	5	8
B6-mt^BPL	8	11	3	3	5	8

Table S2. The list of KEGG pathways involved in differently abundant bacteria between B6-mt^BPL and B6-mt^ALR mice.

Separate excel file.

Table S3. The list of mutations in the mtDNA in B6-mt^BPL and B6-mt^ALR mice.

Position *	4738	11,902
Strain|Gene	*mt-Nd2*	*mt-Nd5*
C57BL/6J-mt^BPL/1J	C	C
C57BL/6J-mt^ALR/LtJ	A	T
AA change	Leu-Met	Phe-Leu

* Each mutation is unique for respective conplastic mouse strain, and not observed in other mouse strains to date.
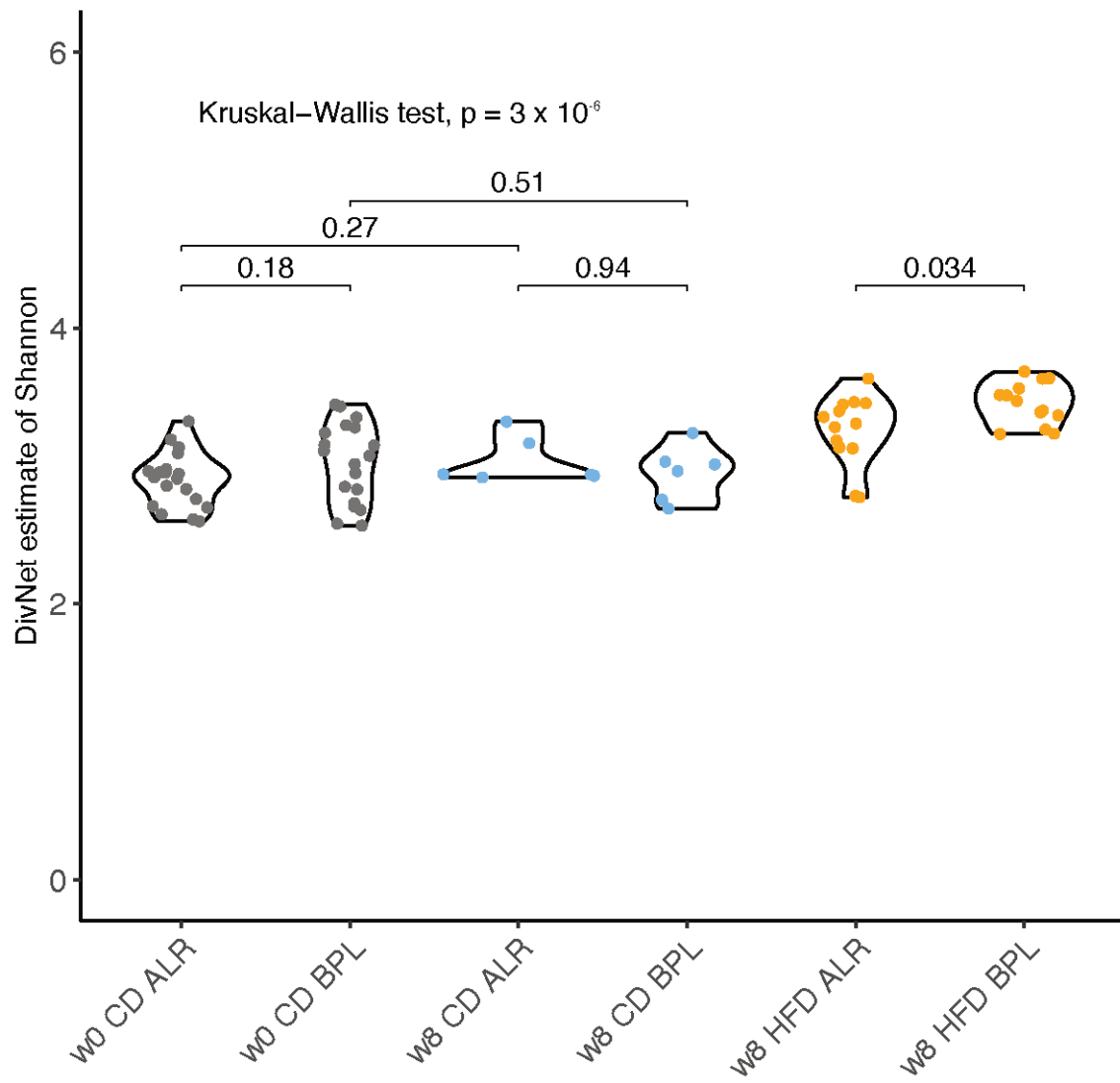
Figure S1

Figure S1: Data related to Figure 1. Alpha diversity plot depicting an estimate of Shannon. w0: week 0, w8: week 8, CD: control diet, HFD: high-fat diet, ALR: B6-mt[ALR], BPL: B6-mt[BPL].
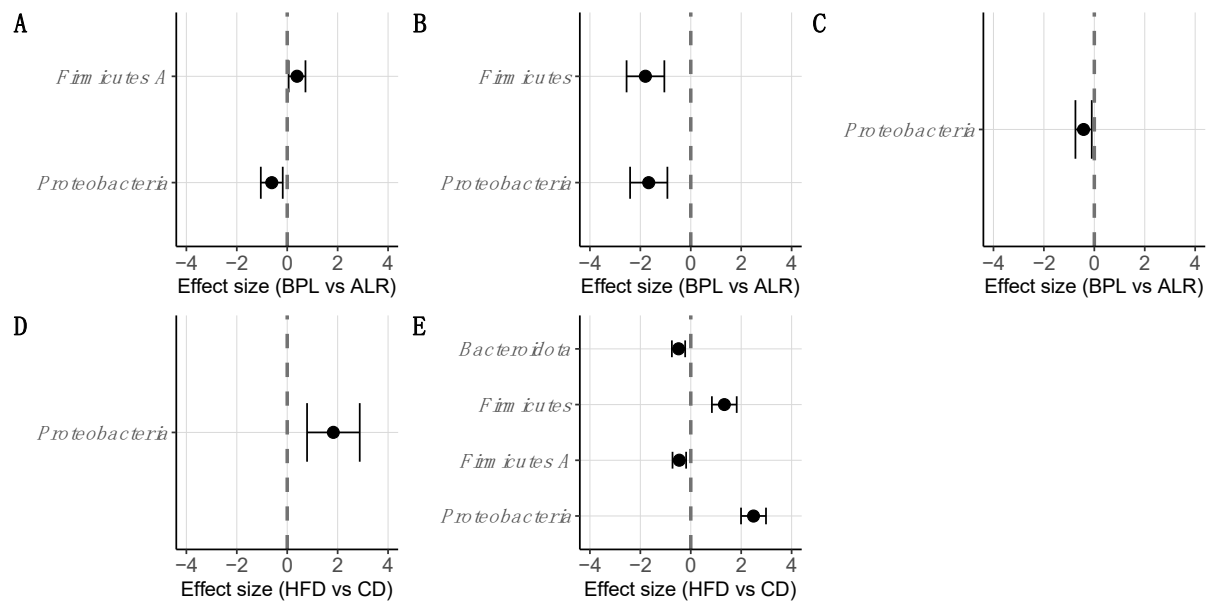
Figure S2

Figure S2: Data related to Figure 2. Bacterial phyla, which were significantly differentially abundant between B6-mt[BPL] and B6-mt[ALR] before dietary intervention (week 0; (**A**)), at 8 weeks after CD feeding (**B**), and at 8 weeks after HFD feeding (**C**) are presented. Similarly, those between HFD-fed group and CD-fed group in B6-mt[ALR] mice (**D**) and in B6-mt[BPL] mice (**E**) are shown.
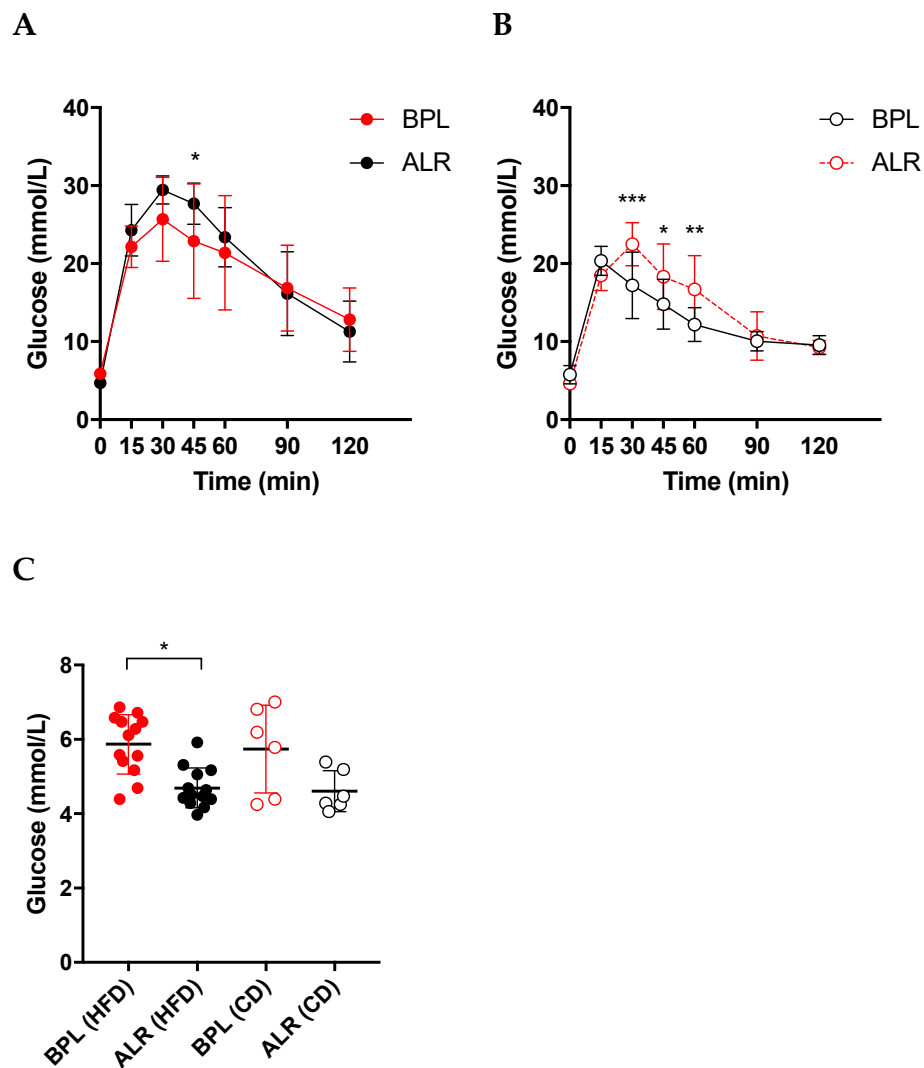
Figure S3

Figure S3: Metabolic phenotype observed in B6-mt[BPL] and B6-mt[ALR] mice published in reference 16. (**A**). ipGTT test conducted in HFD-fed mice. BPL = B6-mt[BPL], ALR = B6-mt[ALR], n = 13 (5 males and 8 females)/strain. * p = 0.0411, two-way ANOVA. (**B**). ipGTT test in CD-fed mice. N = 6 (3 males and 3 females)/strain. * p = 0.0223, ** p = 0.0022, *** p = 0.0003, two-way ANOVA. (**C**). Fasting glucose levels taken in (**A**,**B**). * p = 0.0120, Kruskal-Wallis test. All data is consisted with males and females.