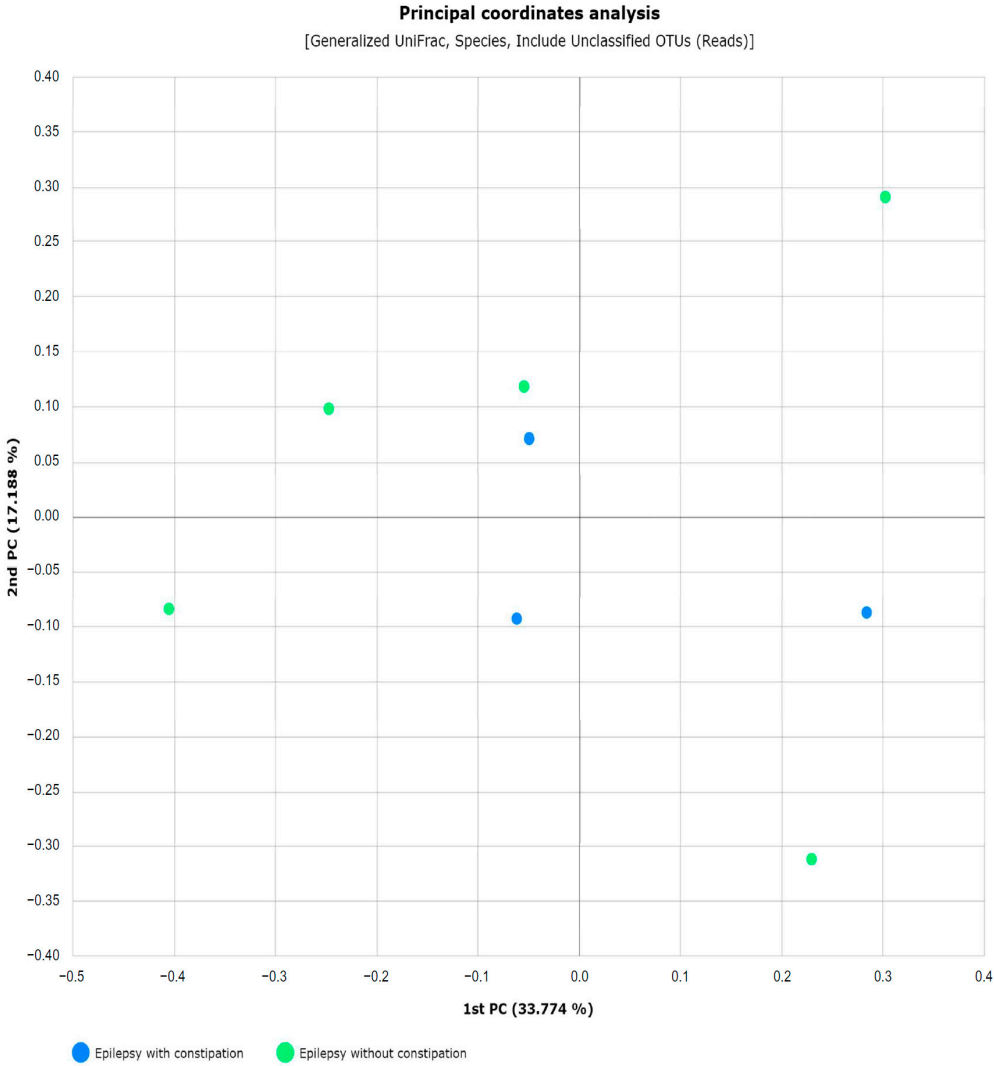
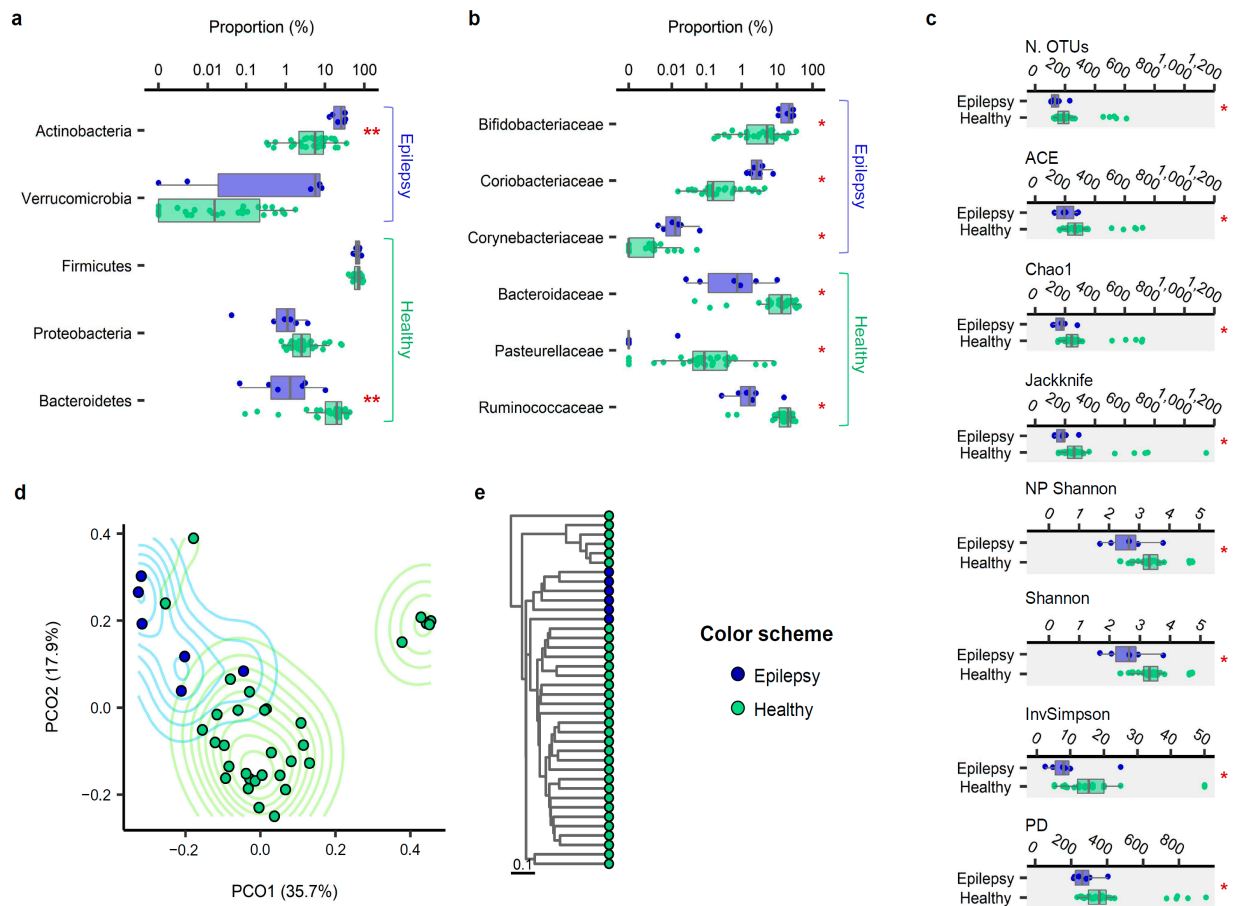


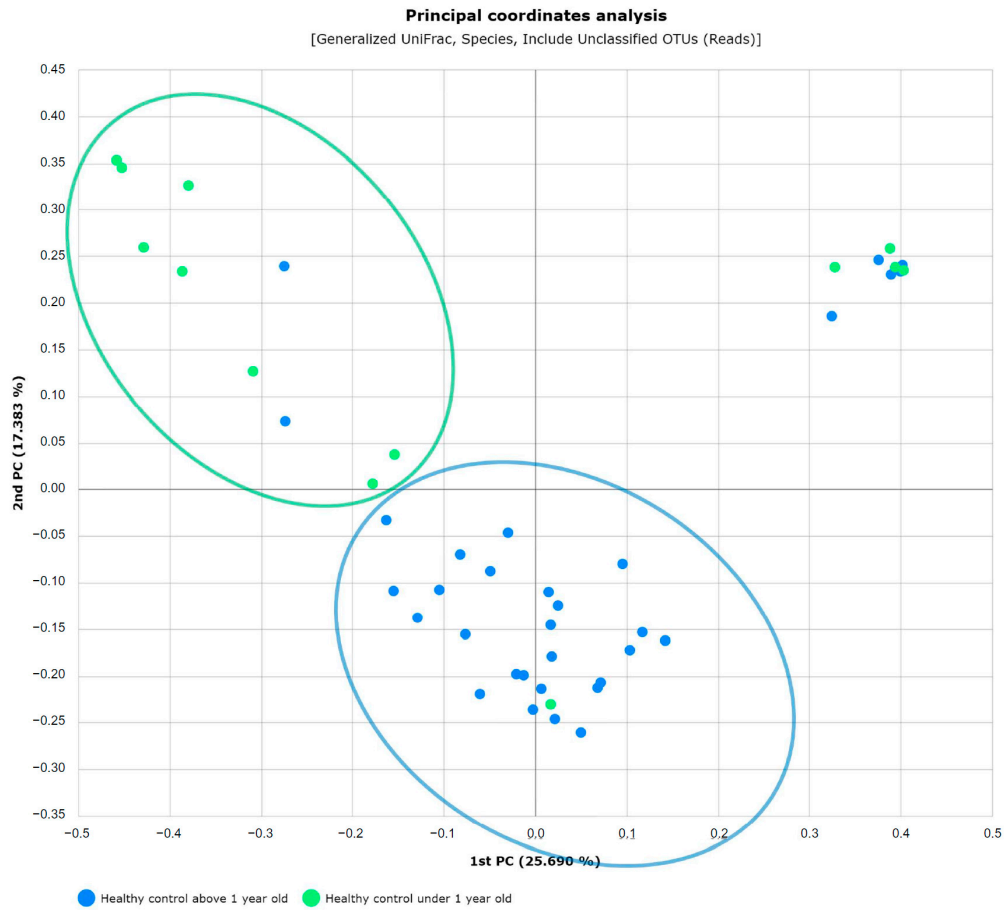
# Supplementary Materials



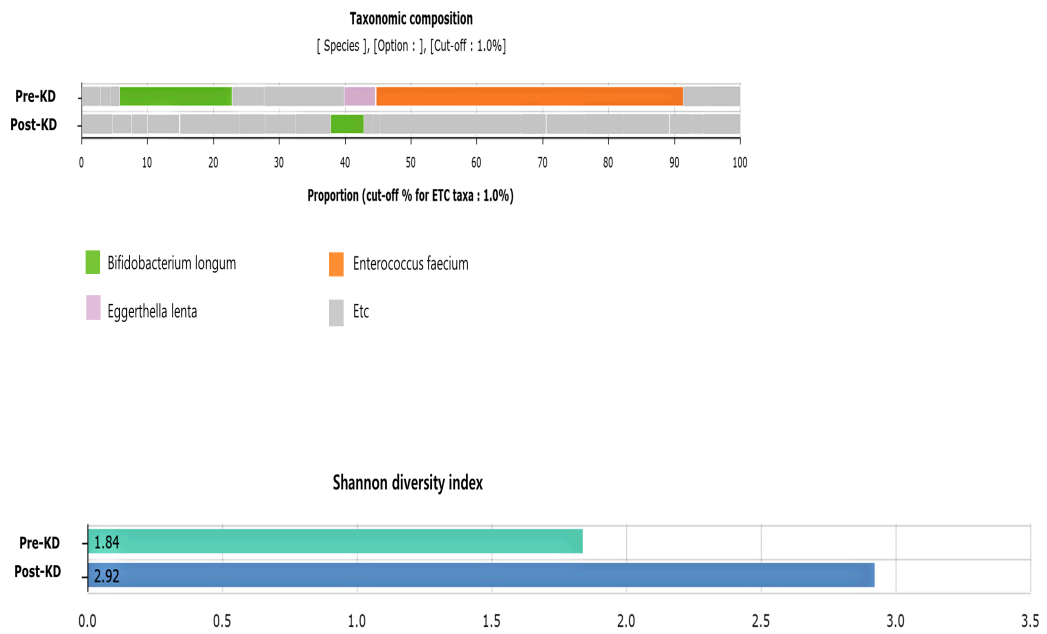
**Figure S1.** Comparison of gut bacterial taxonomic compositions of the patients with or without constipation. Principal coordinates were derived from the Unifrac distance among the subjects based on their species-level OTU compositions.



**Figure S2.** Community comparison repeated after excluding the subjects fed liquid diet. All the panels in the main Figure 1 were replicated here. **(a)** Phylum level compositions of gut microbiota compared between patients with intractable epilepsy and healthy controls, taxa displaying significant differences highlighted; **(b)** Comparison at family level; **(c)** Species richness and diversity index compared between patients with intractable epilepsy and healthy controls; **(d)** Principal coordinate analysis plot of the inter-subject variation of bacterial species-level OTU compositions based on UniFrac distance metric; **(e)** UPGMA dendrogram representing the species-level compositional distances among the subjects. \* labeled to the comparisons with FDR < 0.05, \*\* labeled to  $p < 0.01$ , based on Mann-Whitney test and Benjamini-Hochberg adjustment for multiple comparisons.



**Figure S3.** Gut bacterial community comparison between the subjects before and after 1 year of age. Principal coordinates were derived from the UniFrac distance among the species-level OTU composition of the subjects.



**Figure S4.** Changes in the gut microbiota after implementation of the ketogenic diet. A single patient was examined. In the taxonomic composition panel (upper) the epilepsy group-associated biomarkers discovered at species level were highlighted.

**Table 1.** Taxonomic differences depending on the presence of constipation in patients with epilepsy.

	Epilepsy with constipation	Epilepsy without constipation	Total	<i>p</i>
	( <i>n</i> = 3)	( <i>n</i> = 5)	( <i>n</i> = 8)	
ACE	147.7 ± 36.9	184.9 ± 63.7	171.0 ± 55.5	0.400
Chao 1	147.3 ± 32.4	178.1 ± 64.1	166.5 ± 53.8	0.476
Jack knife	156.5 ± 34.2	192.1 ± 66.3	178.7 ± 56.5	0.430
NP Shannon	2.4 ± 0.5	2.3 ± 1.0	2.4 ± 0.8	0.944
Shannon	2.4 ± 0.5	2.3 ± 1.0	2.3 ± 0.8	0.942
Simpson	0.2 ± 0.1	0.2 ± 0.2	0.2 ± 0.2	0.554
Phylogenetic Diversity	252.7 ± 60.7	288.4 ± 99.2	275.0 ± 83.8	0.599

Abbreviations: ACE, abundance-based coverage estimator.