**Supplemental information**

**Additional file 1.** Number of positive pigs/total pigs per group (group mean ± SEM) for log10 L. intracellularis DNA in rectal swabs at different days post *L. intracellularis* challenge [24]. Different superscripts (A,B,C) indicate significantly different group means on a certain day.

**Additional file 2.** Association of histopathology and shedding for each of the treatment groups.

**Additional file 3**. Taxonomic characteristics of ileal microbiota.OTUs clustered according to their phylogenetic relationship and colored by abundance, also called a heat-tree. The core microbes can be identified by the dark green backbone while the transient/accessory microbes compose the rest of the tree branches and change by treatment groups.

**Additional file 4.** Taxonomic association with shedding. The relationship between shedding and the abundance of individual families colored by treatment group is demonstrated.

**Additional file 5.** Taxonomic association with pathology (microscopic ileum score). The relationship between pathology and the abundance of individual families colored by treatment group is demonstrated.