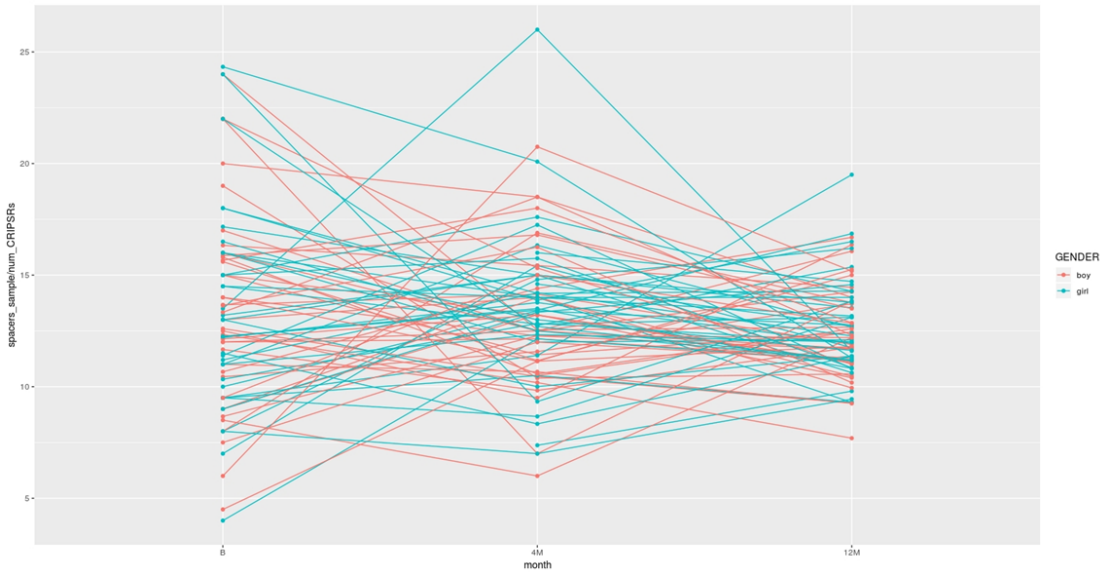
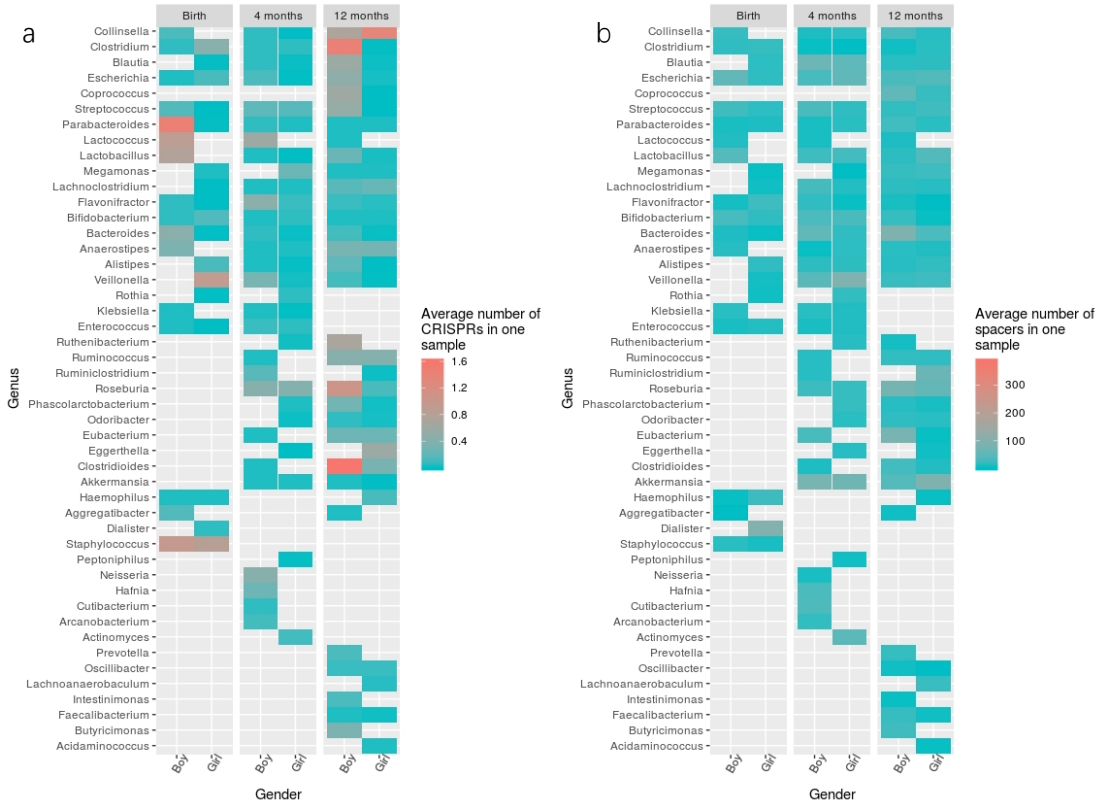
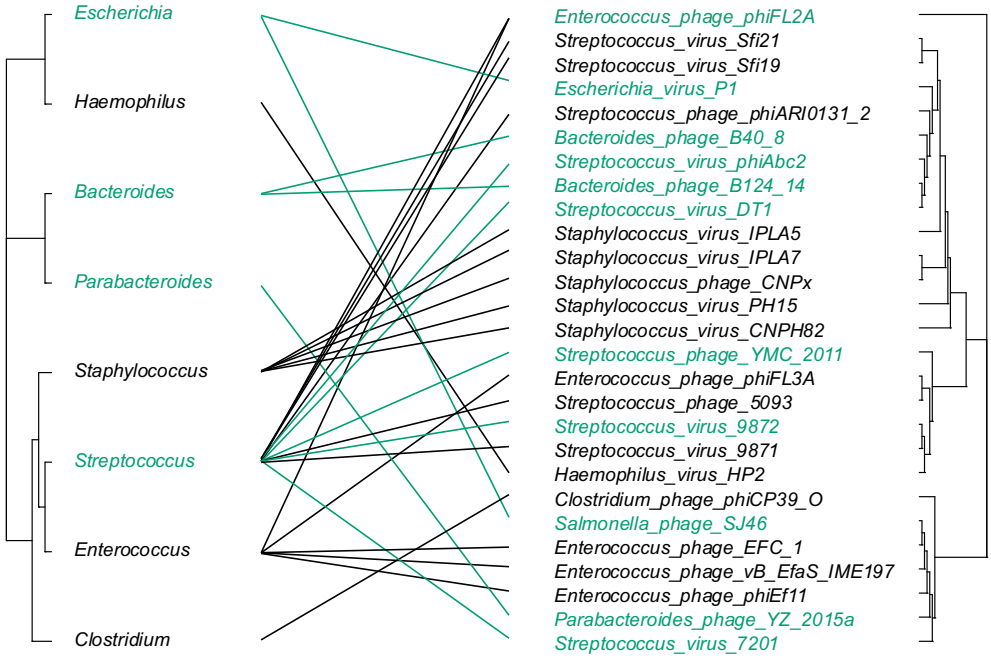



**Supplementary Fig 1 | The number of spacers in one CRISPR kept constant during the first year of life.** The points showed the average number of spacers in one CRISPR for one infant. The lines indicated the same infants. Red represented boys and green represented girls.

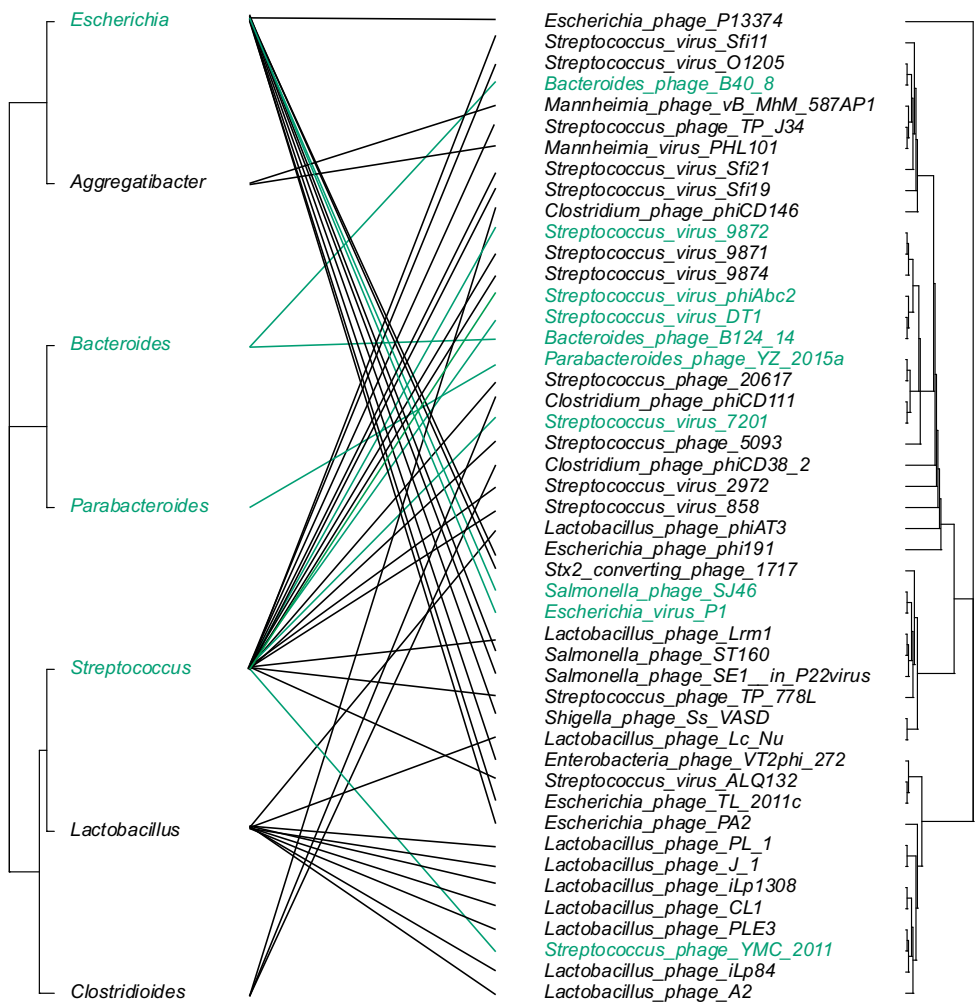



**Supplementary Fig 2 | Boys contained more CRISPRs and spacers than girls in their gut communities.** This heatmap showed the average number of CRISPRs (a) and spacers (b) in these representative bacteria in one sample. Overall, boys had more CRISPRs and spacers, however, the significant different of average number of CRISPRs and spacers in one bacterial species and in one sample between boys and girls was not observed.

a


Escherichia
Haemophilus
Bacteroides
Parabacteroides
Staphylococcus
Streptococcus
Enterococcus
Clostridium
Enterococcus_phage_phiFL2A
Streptococcus_virus_Sfi21
Streptococcus_virus_Sfi19
Escherichia_virus_P1
Streptococcus_phage_phiARI0131_2
Bacteroides_phage_B40_8
Streptococcus_virus_phiAbc2
Bacteroides_phage_B124_14
Streptococcus_virus_DT1
Staphylococcus_virus_IPLA5
Staphylococcus_virus_IPLA7
Staphylococcus_phage_CNPx
Staphylococcus_virus_PH15
Staphylococcus_virus_CNPH82
Streptococcus_phage_YMC_2011
Enterococcus_phage_phiFL3A
Streptococcus_phage_5093
Streptococcus_virus_9872
Streptococcus_virus_9871
Haemophilus_virus_HP2
Clostridium_phage_phiCP39_O
Salmonella_phage_SJ46
Enterococcus_phage_EFC_1
Enterococcus_phage_vB_EfaS_IME197
Enterococcus_phage_phiEf11
Parabacteroides_phage_YZ_2015a
Streptococcus_virus_7201

b


Escherichia
Aggregatibacter
Bacteroides
Parabacteroides
Streptococcus
Lactobacillus
Clostridioides
Escherichia_phage_P13374
Streptococcus_virus_Sfi11
Streptococcus_virus_O1205
Bacteroides_phage_B40_8
Mannheimia_phage_vB_MhM_587AP1
Streptococcus_phage_TP_J34
Mannheimia_virus_PHL101
Streptococcus_virus_Sfi21
Streptococcus_virus_Sfi19
Clostridium_phage_phiCD146
Streptococcus_virus_9872
Streptococcus_virus_9871
Streptococcus_virus_9874
Streptococcus_virus_phiAbc2
Streptococcus_virus_DT1
Bacteroides_phage_B124_14
Parabacteroides_phage_YZ_2015a
Streptococcus_phage_20617
Clostridium_phage_phiCD111
Streptococcus_virus_7201
Streptococcus_phage_5093
Clostridium_phage_phiCD38_2
Streptococcus_virus_2972
Streptococcus_virus_858
Lactobacillus_phage_phiAT3
Escherichia_phage_phi191
Stx2_converting_phage_1717
Salmonella_phage_SJ46
Escherichia_virus_P1
Lactobacillus_phage_Lrm1
Salmonella_phage_ST160
Salmonella_phage_SE1__in_P22virus
Streptococcus_phage_TP_778L
Shigella_phage_Ss_VASD
Lactobacillus_phage_Lc_Nu
Enterobacteria_phage_VT2phi_272
Streptococcus_virus_ALQ132
Escherichia_phage_TL_2011c
Escherichia_phage_PA2
Lactobacillus_phage_PL_1
Lactobacillus_phage_J_1
Lactobacillus_phage_iLp1308
Lactobacillus_phage_CL1
Lactobacillus_phage_PLE3
Streptococcus_phage_YMC_2011
Lactobacillus_phage_iLp84
Lactobacillus_phage_A2

**Supplementary Fig 3 | Spacers targeted distinct phages at different time.** The interaction tree between bacteria and bacteriophages at birth (a) and 12 months old (b). The left and the right were the phylogenetic trees of bacteria and bacteriophages, respectively. The line reflected the interaction, and green indicated the unique interaction at 4 months old.