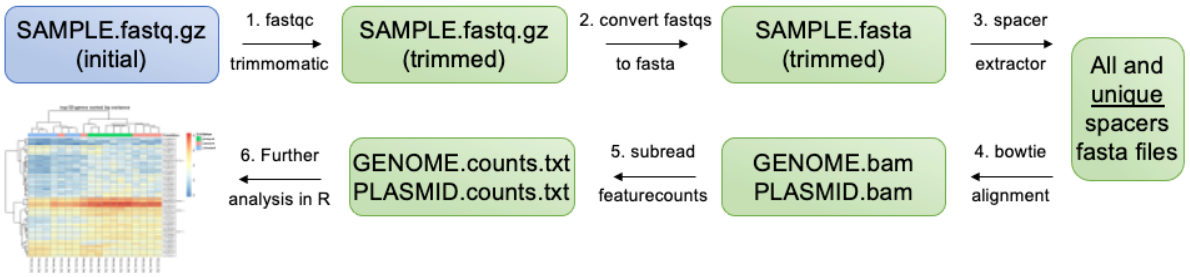
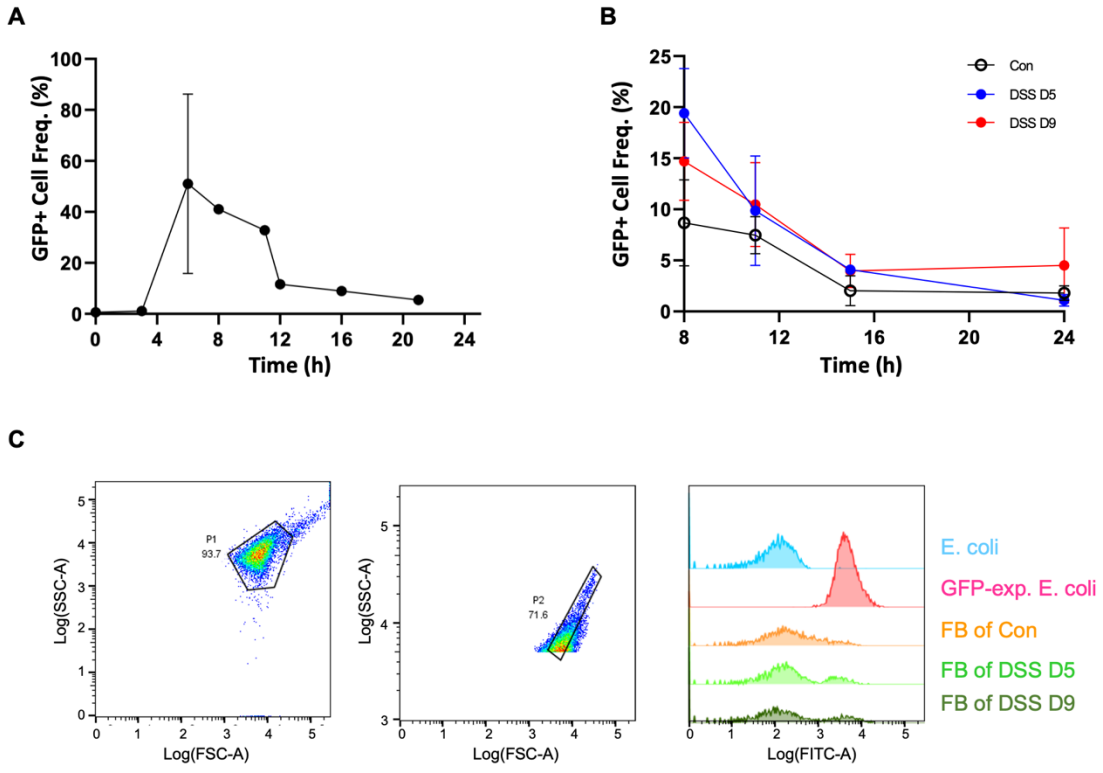
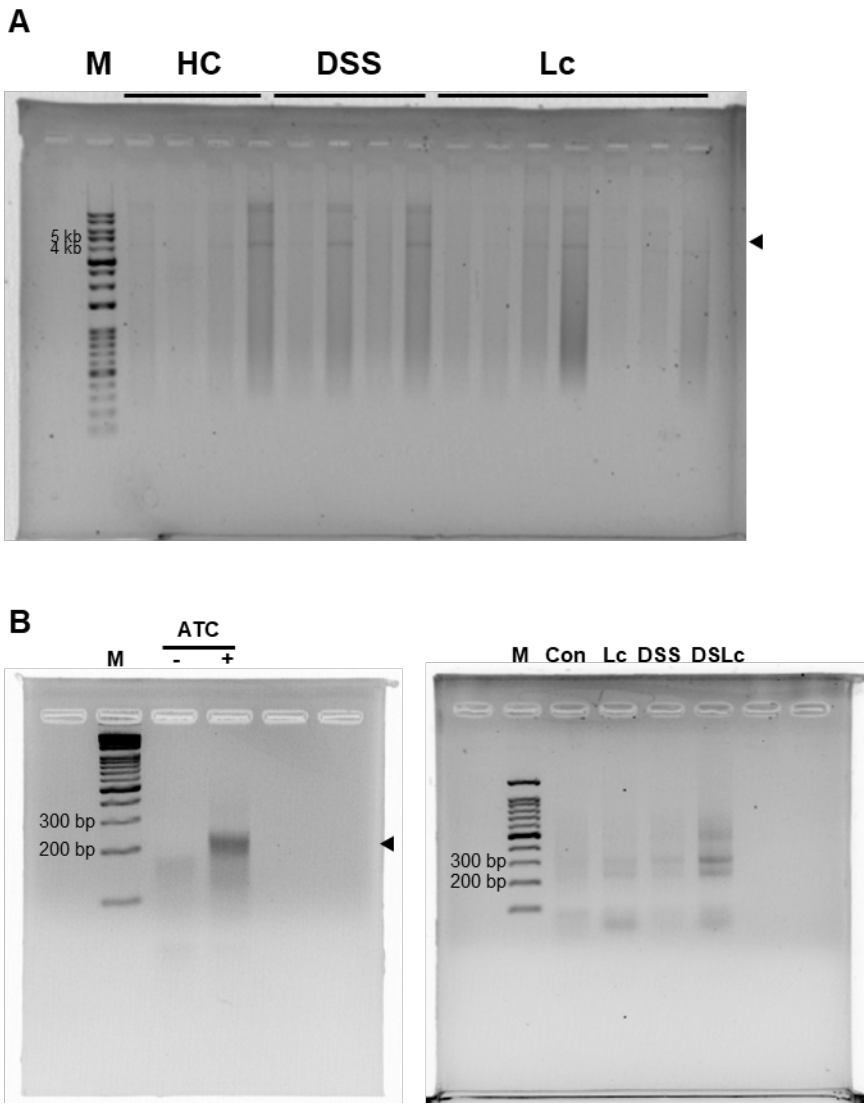
Supplementary Figures



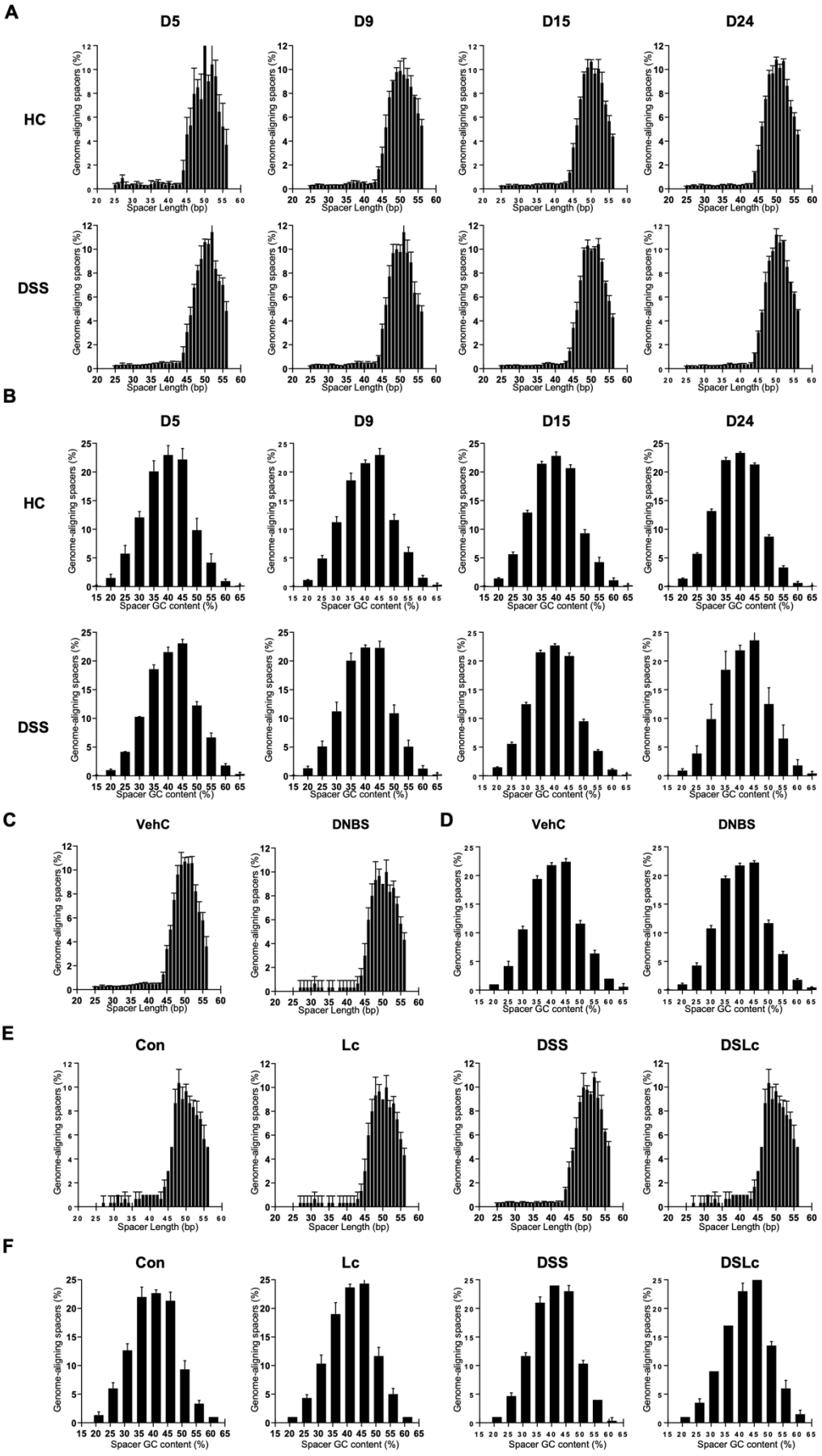
Suppl. Fig. 1 Schematic workflow of the computational pipeline.



Suppl. Fig. 2 Recovery of E. coli from the faeces of mice after oral gavage of E. coli expressing green fluorescent protein (GFP). The frequency of E. coli expressing GFP in faecal bacteria (FB) from mice that were orally administered E. coli was analysed using flow cytometry at the indicated time points. A. Histogram showing the kinetics of GFP+ E. coli in the faeces of normal mice (n=2). B. Plot showing the kinetics of the frequency of GFP+ E. coli in the faeces of healthy control mice (Con, n=3) and dss-induced IBD model mice on days 5 (DSS D5, n=3) and 9 (DSS D9, n=3). C. Representative dot plots and histograms after eight hours.



Suppl. Fig. 3 Purification of plasmids and amplification of spacers in plasmids. A. Representative agarose gel image showing the plasmid purified from faeces collected 11 h after oral gavage of mice with reporter *E. coli* transformed with pFs0453_RT-Cas1_Cas2. HC: healthy control mice; DSS: dss-induced IBD mouse model. The arrowhead indicates a plasmid of the expected size. B. *In vitro* spacer acquisition (left). *E. coli* transformed with pFs0453_RT-Cas1_Cas2 were cultured in the presence of ATC or not, and then the spacers on the purified plasmid were amplified. Representative gel image showing the in vivo spacer acquisition (right). The spacers on pFs0453_RT-Cas1_Cas2, purified from the faeces of mice in the indicated groups, were amplified as described in the Methods section. PCR products of 210-240 bp and approximately 310 bp indicated the single and double acquisition of a spacer, respectively. Con, control group; Lc, group treated with *Lactobacillus crispatus*; DSS, group treated with dss; DSLc, group treated with dss and gavaged with *L. crispatus*.


A
D5
D9
D15
D24
HC
DSS
Genome-aligning spacers (%)
Spacer Length (bp)
B
Spacer GC content (%)
C
VehC
DNBS
D
E
Con
Lc
DSS
DSLc
F

Suppl. Fig. 4 Spacer length and GC content distribution. A, C, and E. Spacer length distributions in samples from the indicated mouse groups. B, D, and F. Distribution of spacer GC content in samples from the indicated mouse groups. Data represent mean + standard deviation. HC, healthy control group; DSS, dss-treated group; VehC, vehicle-treated group; DNBS, dnbs-treated group; Con, control group; Lc, group treated with *L. crispatus*; DSS, group treated with dss; DSLc, group treated with dss and gavaged with *L. crispatus*.