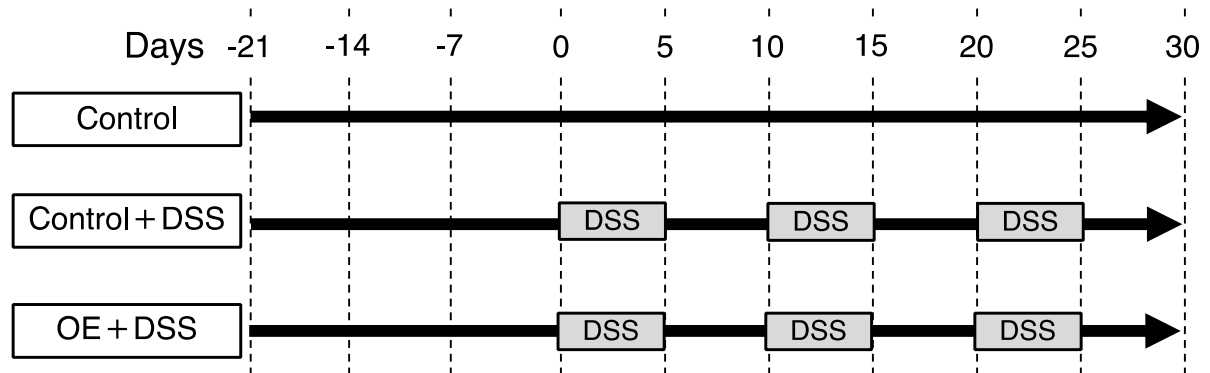
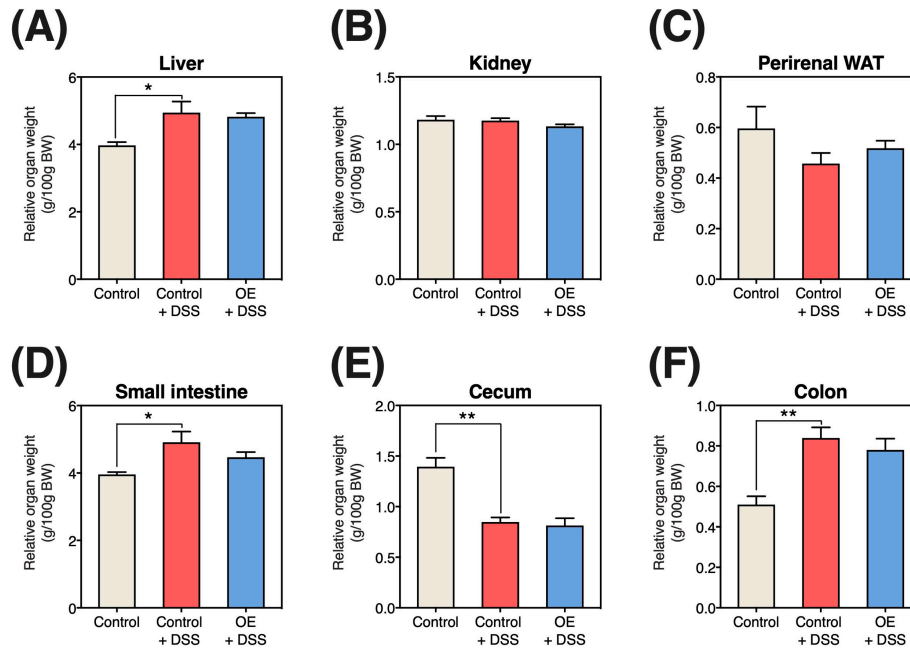


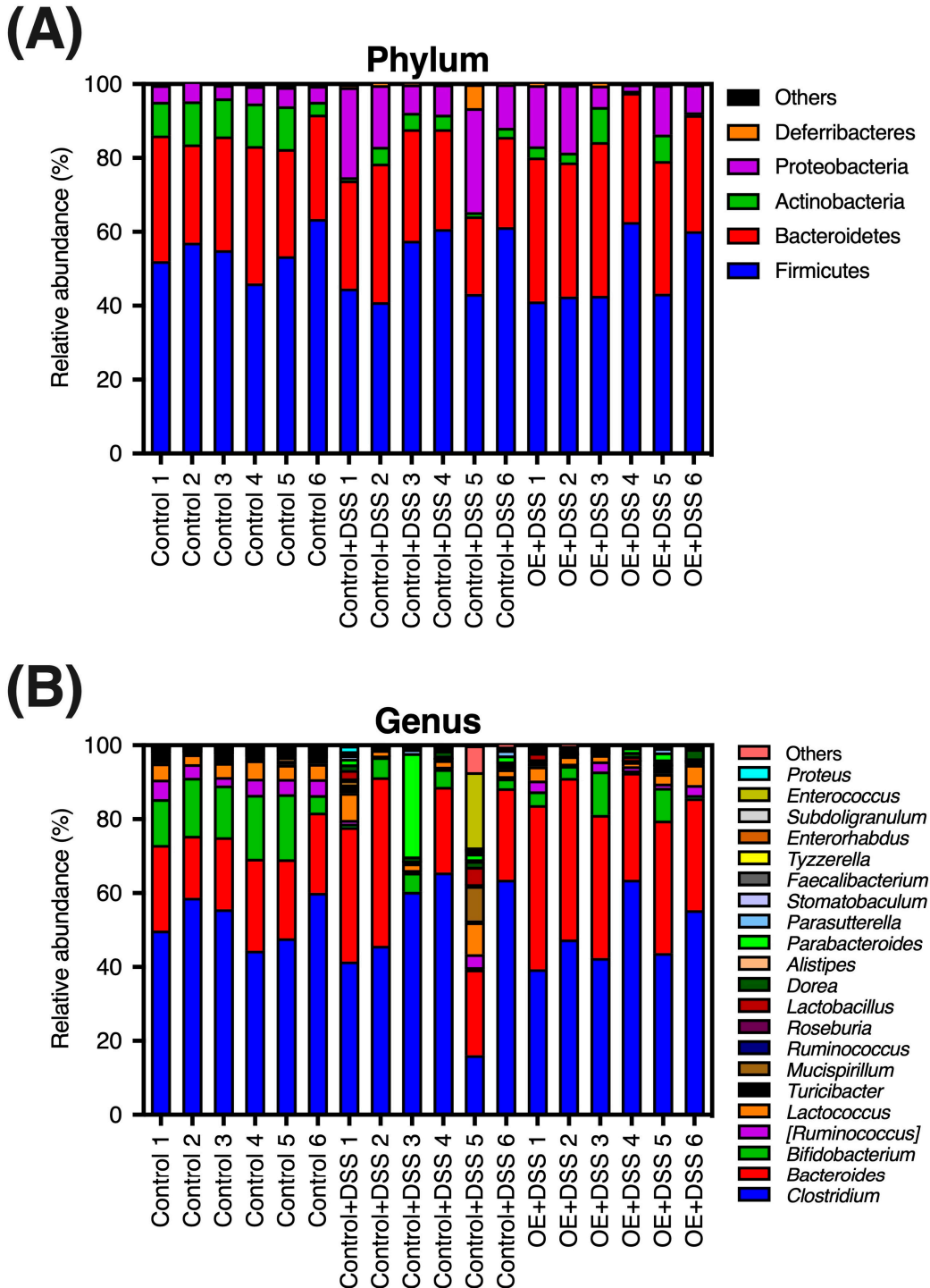
## Supplementary Materials



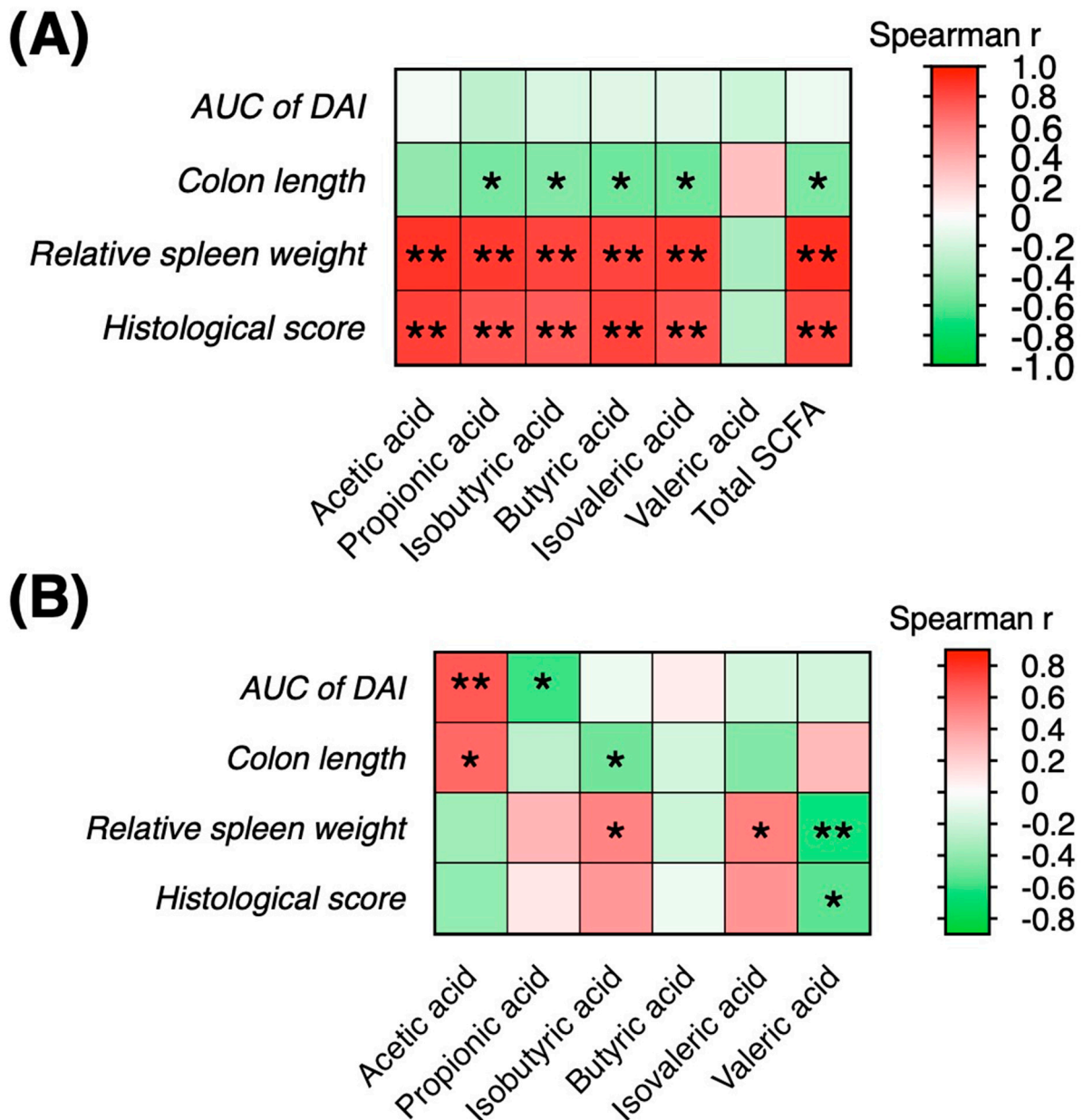
**Figure S1.** Schematic diagram illustrating the induction of chronic experimental colitis symptoms. DSS, dextran sulfate sodium; OE, oyster extract.



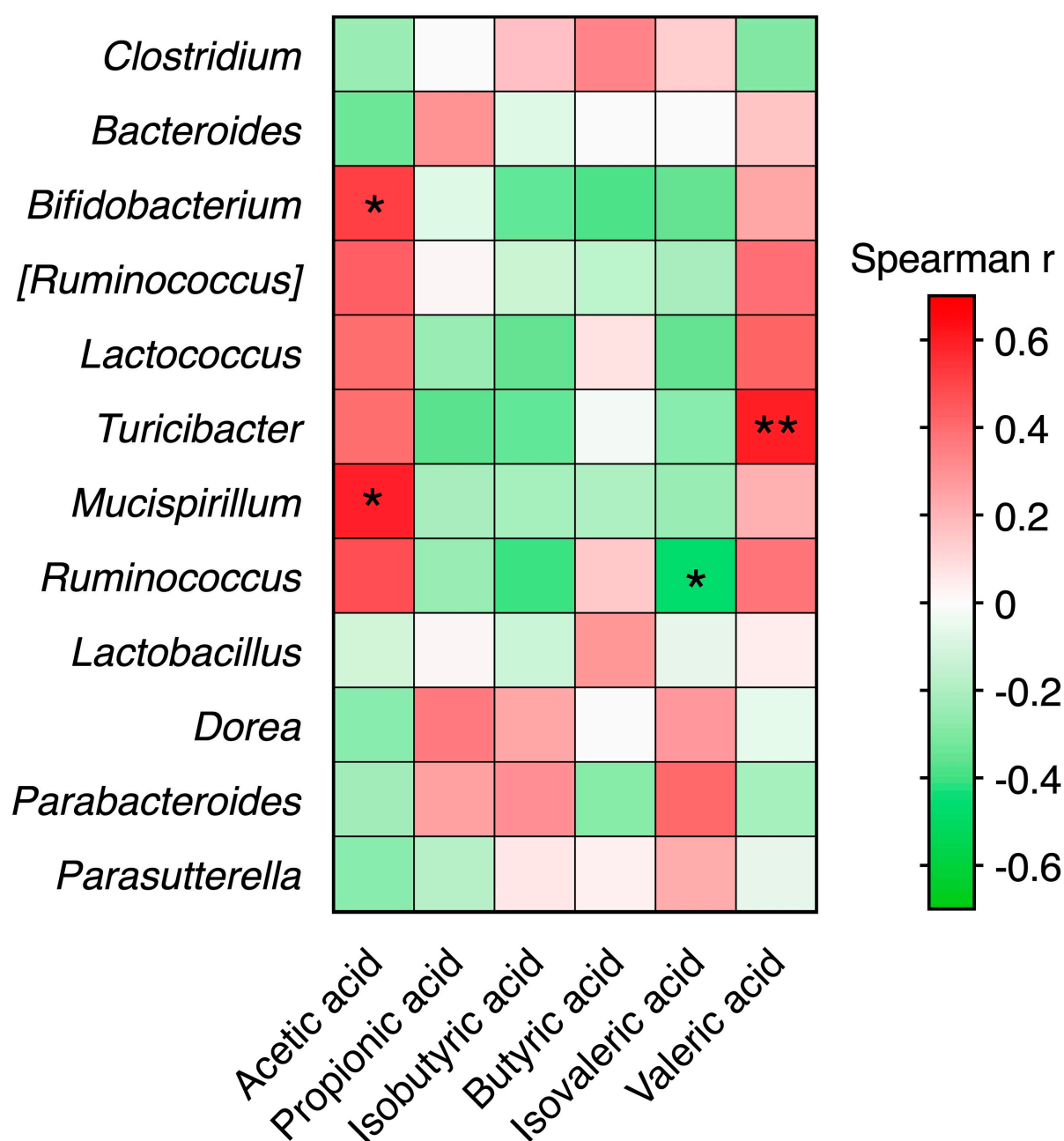
**Figure S2.** Relative weights of organs. Relative weights of (A) liver, (B) kidney, (C) perirenal white adipose tissue (WAT), (D) small intestine, (E) cecum, and (F) colon on day 30 of dextran sulfate sodium (DSS) administration. The weights of the small intestine, cecum, and colon includes their contents. Results are presented as mean  $\pm$  standard error of the mean ( $n = 6$  for the control group and  $n = 8$  for groups the control + DSS and oyster extract (OE) + DSS groups). \*  $p < 0.05$  and \*\*  $p < 0.01$ . OE, oyster extract.



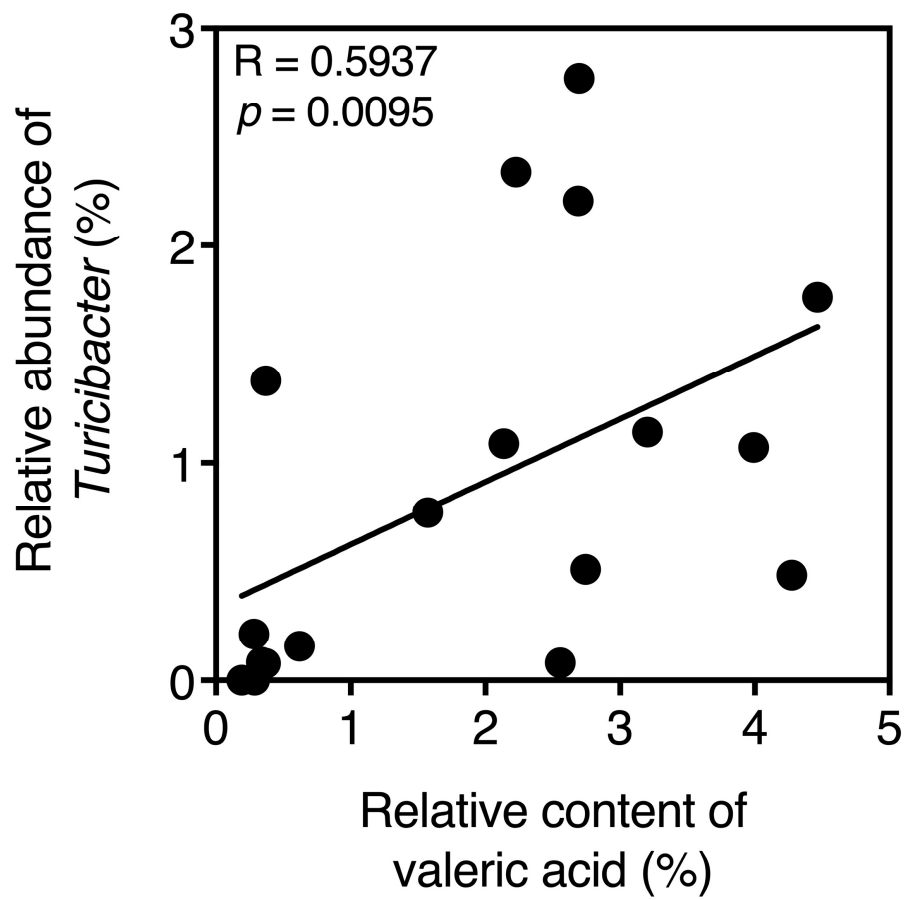
**Figure S3.** Relative abundance of fecal bacterial phyla and genera. **(A)** Relative fecal bacterial abundance at the phylum level. **(B)** Relative fecal bacterial abundance at the genus level. The relative fecal bacteria abundance was sorted from the highest relative abundance in the control group, and those with a relative abundance of less than 0.5% were grouped as “others”. DSS, dextran sulfate sodium; OE, oyster extract.



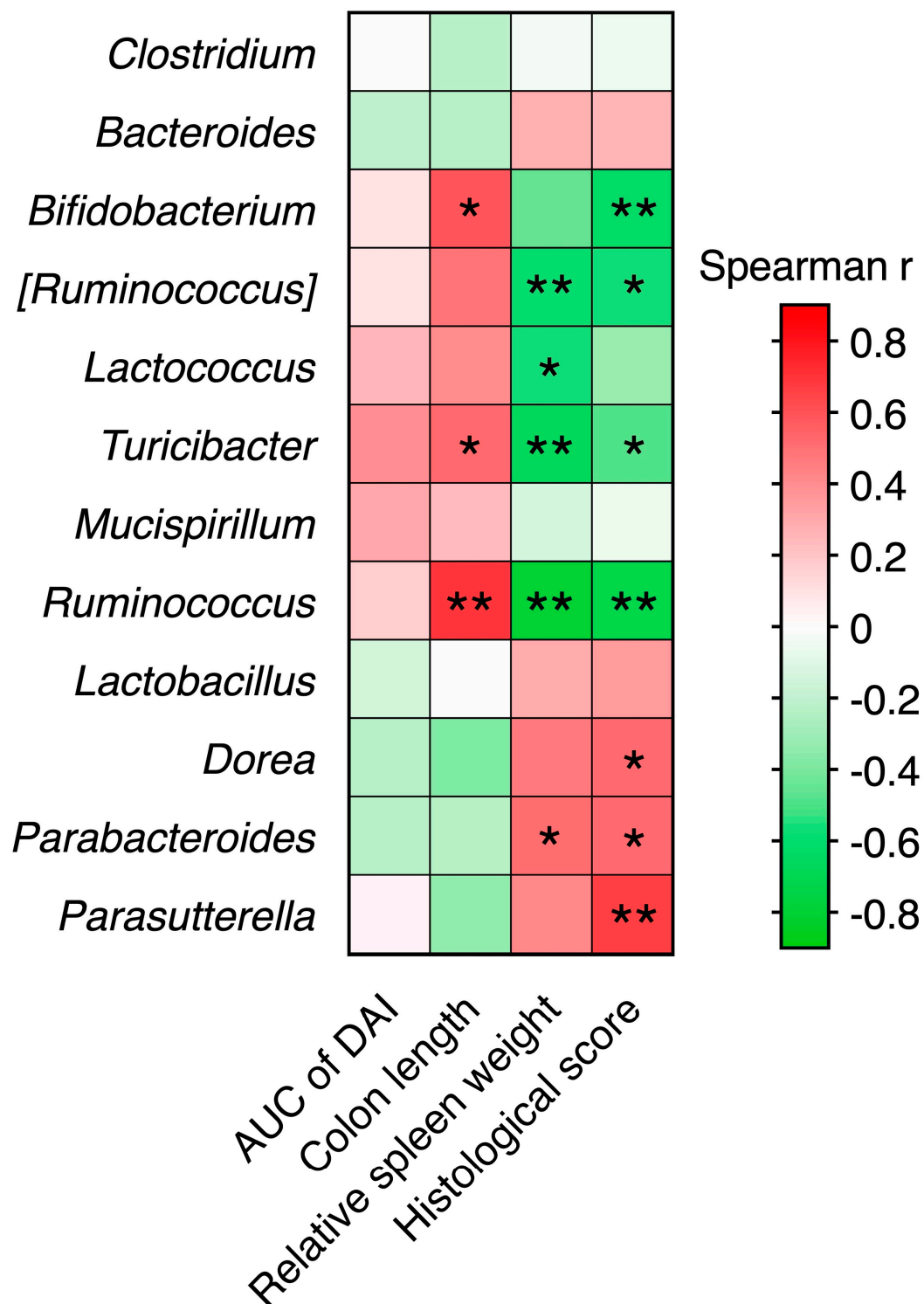
**Figure S4.** Heatmap with Spearman's correlation coefficient between indicators of chronic experimental colitis severity and fecal short-chain fatty acids (SCFA). **(A)** Indicators of chronic experimental colitis severity induced by dextran sulfate sodium (DSS) and fecal SCFA contents. **(B)** Indicators of chronic experimental colitis severity induced by DSS and relative content of each SCFA. Red: positive correlations; green: negative correlations. \*  $p < 0.05$  and \*\*  $p < 0.01$ . AUC, area under the curve; DAI, disease activity index.



**Figure S5.** Heatmap with Spearman's correlation coefficient between the relative content of each short-chain fatty acids (SCFA) and bacteria in feces. Red: positive correlations; green: negative correlations. \*  $p < 0.05$  and \*\*  $p < 0.01$ .



**Figure S6.** Relationship between the relative fecal content of valeric acid and relative abundance of *Turicibacter*.



**Figure S7.** Heatmap with Spearman's correlation coefficient between the indicators of chronic experimental colitis severity and relative abundance of bacteria in feces. Red: positive correlations; green: negative correlations. \*  $p < 0.05$  and \*\*  $p < 0.01$ . AUC, area under the curve; DAI, disease activity index.

**Table S1.** Experimental diet composition.

	Experimental diets <sup>1</sup>	
	Control	OE
Casein	200	182.3
Dextrinized corn starch	132	132
Corn starch	397.486	366.486
Sucrose	98.47	100
Cellulose	50	50
L-Cystine	3	3
Choline bitartrate	2.5	2.5
AIN-93G mineral mixture	35	
Sodium chloride-free AIN-93G mineral mixture		35
Sodium chloride	1.53	
AIN-93 vitamin mixture	10	10
Soybean oil	70	68.7
<i>tert</i> -Butylhydroquinone	0.014	0.014
OE		50

<sup>1</sup>Based on the AIN-93G formula. The amounts of sodium chloride in the control and OE diets were equal. The diet ingredients required to prepare AIN-93G were purchased from Fujifilm Wako Pure Chemical Co. (Osaka, Japan) and Oriental Yeast Co., Ltd. (Tokyo, Japan). AIN, American Institute of Nutrition; OE, oyster extract.



**Table S2.** Growth parameters.

	Experimental groups		
	Control	Control + DSS	OE + DSS
Growth parameters			
Food intake (g/day)	2.95 ± 0.02	2.93 ± 0.07	2.87 ± 0.03
Water intake (g/day)	5.82 ± 0.13	6.58 ± 0.13	6.62 ± 0.10
DSS solution intake (g/day)	-	7.33 ± 0.14	7.24 ± 0.10

Results are presented as mean ± standard error of the mean (n = 6 for the control group and n = 8 for the control + DSS and OE + DSS groups). DSS, dextran sulfate sodium; OE, oyster extract.

**Table S3.** Serum biochemical parameters.

	Experimental groups		
	Control	Control + DSS	OE + DSS
Total protein (g/dL)	4.42 ± 0.08	4.40 ± 0.10	4.31 ± 0.12
Albumin (g/dL)	2.43 ± 0.14	2.40 ± 0.08	2.30 ± 0.11
Alanine aminotransferase (IU/L)	36.8 ± 1.3	38.4 ± 2.0	37.1 ± 1.3
Aspartate aminotransferase (IU/L)	10.0 ± 0.9	11.9 ± 0.7	11.0 ± 0.7
Creatine phosphokinase (IU/L)	32.2 ± 4.5	38.5 ± 4.7	31.8 ± 1.9
Lactate dehydrogenase (IU/L)	187 ± 5	187 ± 4	171 ± 11
Urea nitrogen (mg/dL)	28.2 ± 1.0	29.0 ± 1.2	27.5 ± 1.8
Creatinine (mg/dL)	0.14 ± 0.01	0.13 ± 0.01	0.14 ± 0.01
Triglyceride (mg/dL)	41.7 ± 7.6	58.3 ± 7.3	61.4 ± 11.6
Total cholesterol (mg/dL)	117 ± 4	114 ± 4	110 ± 4
High-density lipoprotein cholesterol (mg/dL)	93.3 ± 1.8	87.9 ± 3.7	84.3 ± 2.8
Phospholipids (mg/dL)	266 ± 6	267 ± 6	249 ± 6

Results are presented as mean ± standard error of the mean (n = 6 for the control group and n = 8 for the control + DSS and OE + DSS groups). DSS, dextran sulfate sodium; OE, oyster extract.