

1 **Supplementary figure legends**



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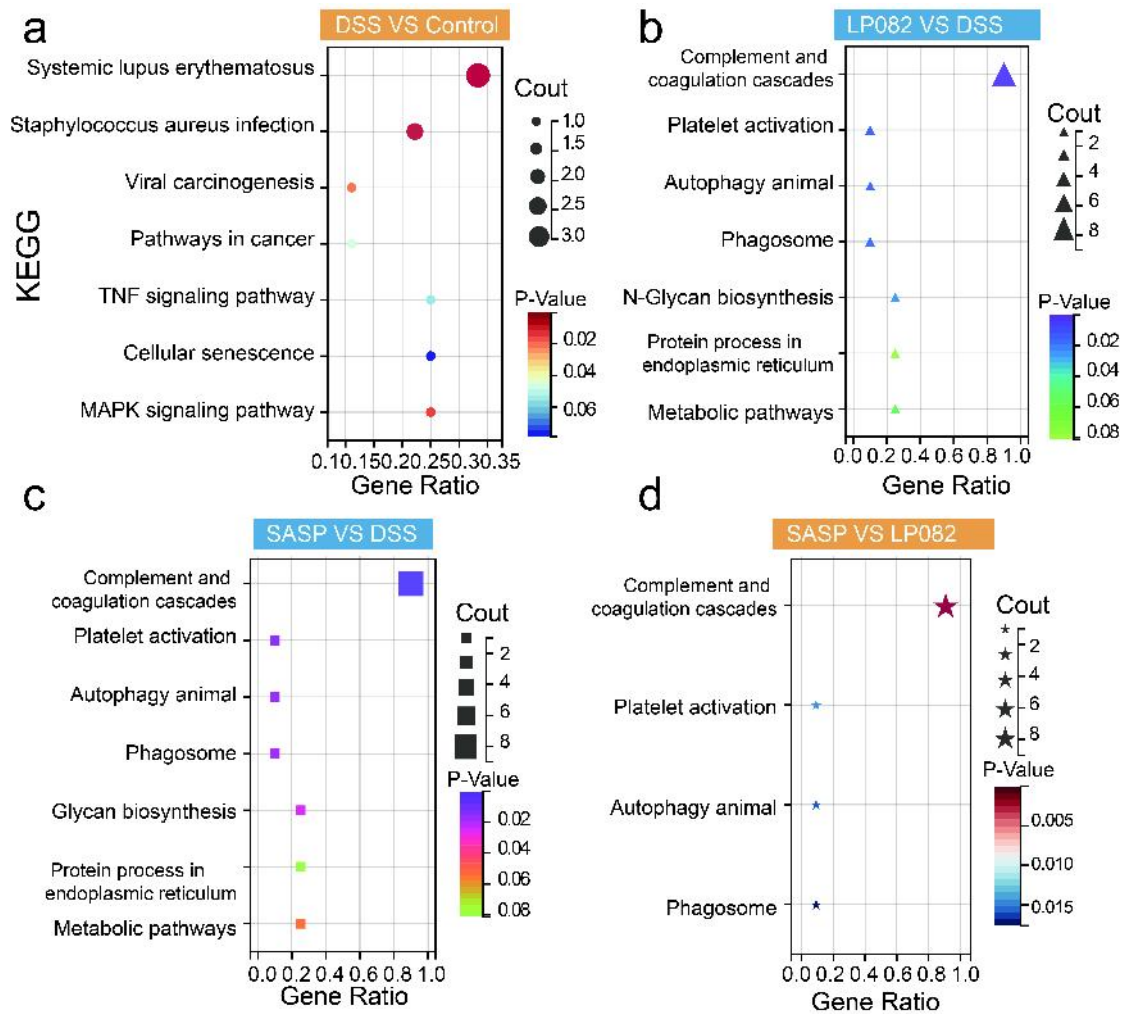
3 **Fig. S1.**

4 (a) Blood in the stool of experimental mice.

5 (b) Mental state of experimental mice.

6 (c) Spleen condition of experimental mice.

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9 **Fig. S2.**

10 (a) KEGG pathway enriched by differentially expressed genes between DSS and
 11 control groups.

12 (b) KEGG pathway enriched by differentially expressed genes between Lp082 and
 13 DSS groups.

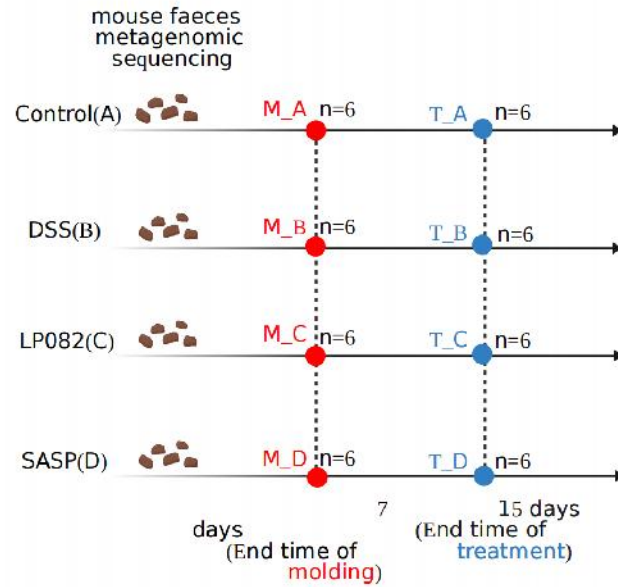
14 (c) KEGG pathway enriched by differentially expressed genes between SASP and
 15 DSS groups.

16 (d) KEGG pathway enriched by differentially expressed genes between SASP and
 17 Lp082 groups.

18 Wilcoxon signed-rank test is used here. Each group had at least 6 biological
 19 replicates.

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a



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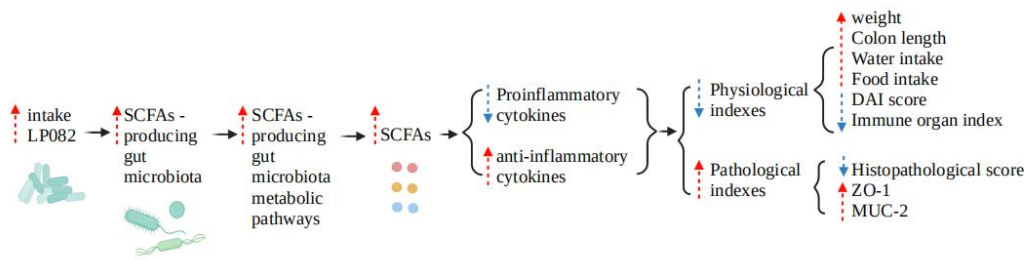
22 **Fig. S3 (a) Timepoints and grouping of mouse metagenomic sequencing**

23 M means the modeling period, T means the treatment period. Respectively, A, B, C
24 and D group mean 7 days normal water (ultrapure water), DSS, Lp082 and SASP
25 treatment after 7 days DSS gavage.

26 M-A means A group represents the control group on the 7th day of DSS modeling,
27 M-B represents the DSS group on the 7th day of DSS modeling, M-C represents the
28 Lp082 group on the 7th day of DSS modeling, M-D represents the SASP on the 7th
29 day of DSS treatment Group.

30 T-A means treating-A group represents the control group at the end of the treatment,
31 T-B represents the DSS group at the end of the treatment, T-C represents the Lp082
32 group at the end of the treatment, and T-D represents the SASP group at the end of the
33 treatment.

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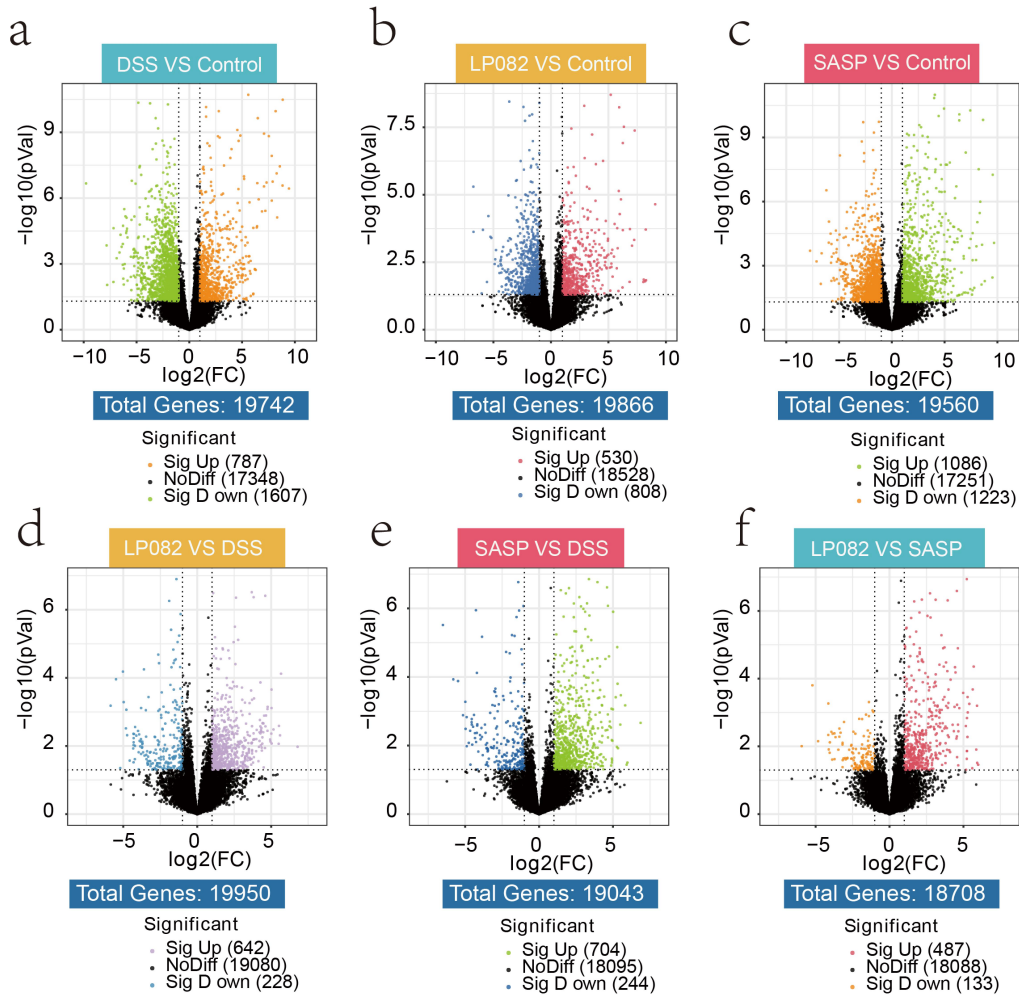


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36 **Fig. S4. The underlying mechanism by which Lp082 regulates SCFAs to alleviate**

37 **UC**

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40 **Fig. S5. Effects of Lp082 on gene expression distribution in mouse colon tissue.**

41 (a) Gene expression distribution in the DSS group compared with the control group.

42 (b) Gene expression distribution in the Lp082 group compared with the control group.

43 (c) Gene expression distribution in the SASP group compared with the control group.

44 (d) Gene expression distribution in the Lp082 group compared with the DSS group.

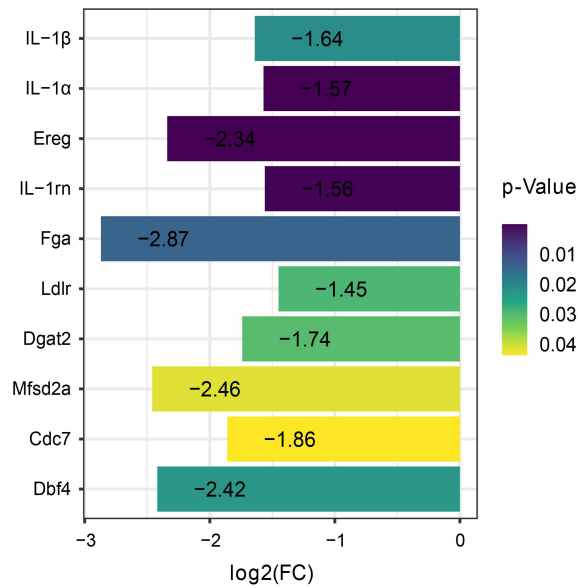
45 (e) Gene expression distribution in the SASP group compared with the DSS group.

46 (f) Gene expression distribution in the Lp082 group compared with the SASP group.

47 Wilcoxon signed-rank test is used here. Each group had at least 6 biological

48 replicates.

49



50

51 **Fig. S6. The effect of Lp082 treatment on up-regulated inflammatory genes in the**
 52 **DSS group in Fig. 6d.**

53 The 13 inflammatory genes or oncogenes that were up-regulated and enriched in
 54 the inflammatory pathway in the DSS group, the following 10 genes were
 55 significantly down-regulated in the Lp082 group: IL-1β, IL-1α, Ereg, IL -1rn, Fga,
 56 Ldlr, Dgat2, Mfsd2a, Cdc7, Dbf4.

57 Wilcoxon signed-rank test is used here. Each group had at least 6 biological
 58 replicates.

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63 **Supplementary table legends**

Score	Weight loss (%)	Stool consistency	Visible blood in faeces
0	0	Normal	Normal
1	1~5	Loose state, which is pasty and semi-formed stool that does not adhere to anus	Positive for FOBT
2	6~10	Obvious loose state, which is a pasty and basically unformed stool that does not adhere to the anus	Strongly positive for FOBT
3	11~15	Dilute stool is a watery stool that can adhere to the anus	Visible blood in faeces
4	≥16	The degree of loose stool is more obvious, and the thin water sample is more clear and long	Obvious visible blood in faeces

64

65 **Table S1.**

66 Disease activity index (DAI) scoring system of dextran sodium sulfate-induced colitis.

67 The DAI scoring system consists of three parts: weight loss, stool consistency, and

68 visible blood in feces. Each part has 5 grades from 0 to 4. A score of 0 means that the

69 three indicators are normal, and the closer the score is to 4, the more serious

70 inflammation it is.

71

Project	Degree	Score
Inflammation	None	0
	Mild or few	1
	Moderate	2
	Severe massive	3
	Extremely severe and massive	4
Depth of inflammation	None	0
	Submucosal layer	1
	muscular layer	2
	Serous layer	3
	Transmural	4
Range of inflammation (%)	0	0
	1~25	1
	26~50	2
	51~75	3
	76~100	4
Cryp damage	None	0
	1/3 crypt of basement was destroyed	1
	2/3 crypt of basement was destroyed	2
	Only intact surface epithelium	3
	All crypts and epithelium were destroyed	4
Goblet cell loss	None	0
	1~25%	1
	26~50%	2
	51~75%	3
	75~100%	4

The degree of	None	0
neutrophil infiltration		
	Crypt base infiltration	1
	Muscularis mucosae infiltrate	2
	Muscularis mucosae severity	3
	infiltrate	
	Mucosal thickening and edema	
	Submucosal infiltration	4

73

74 **Table S2.**

75 Histopathology scoring system of dextran sodium sulfate-induced colitis. The
76 Histopathology scoring system was modified from previous studies [70]. The
77 modified scoring system consists of six parts, namely, depth of Inflammation, range of
78 inflammation (%), crypt damage, goblet cell loss, and the degree of neutrophil
79 Infiltration. Each component was rated on a scale of 0 to 4, a score of 0 means that the
80 three indicators are normal, and the closer the score is to 4, the more serious
81 inflammation it is.

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