

## Supplementary Materials for

***Bacteroides uniformis* regulates TH17 cell differentiation and alleviates chronic colitis by producing alpha-muricholic acid**

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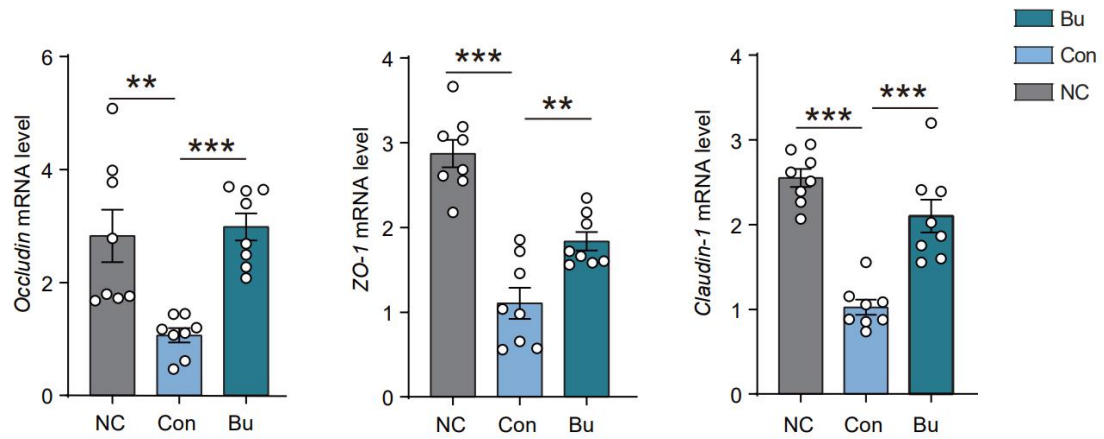
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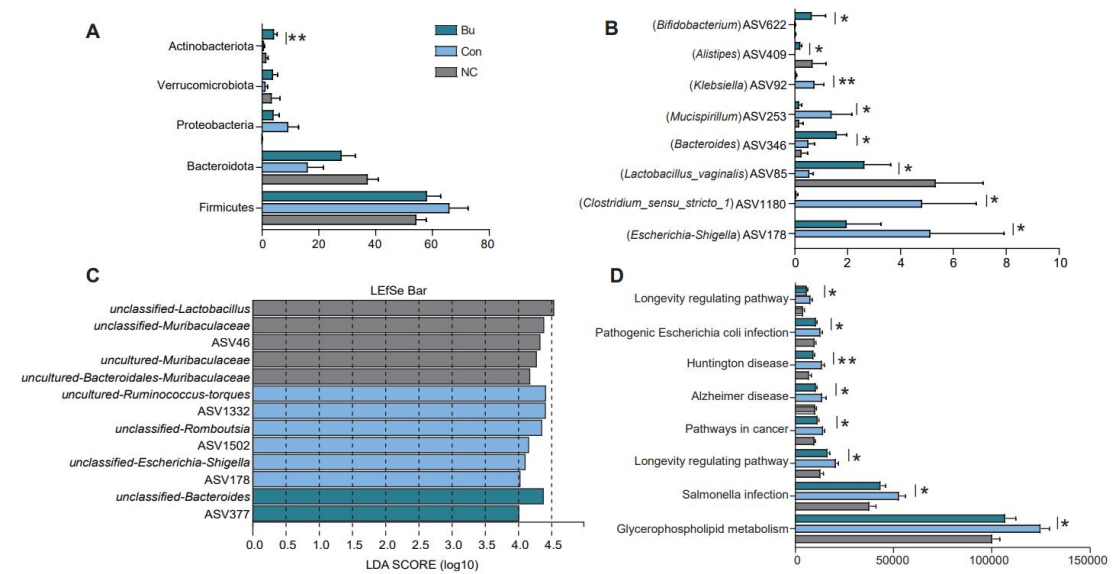
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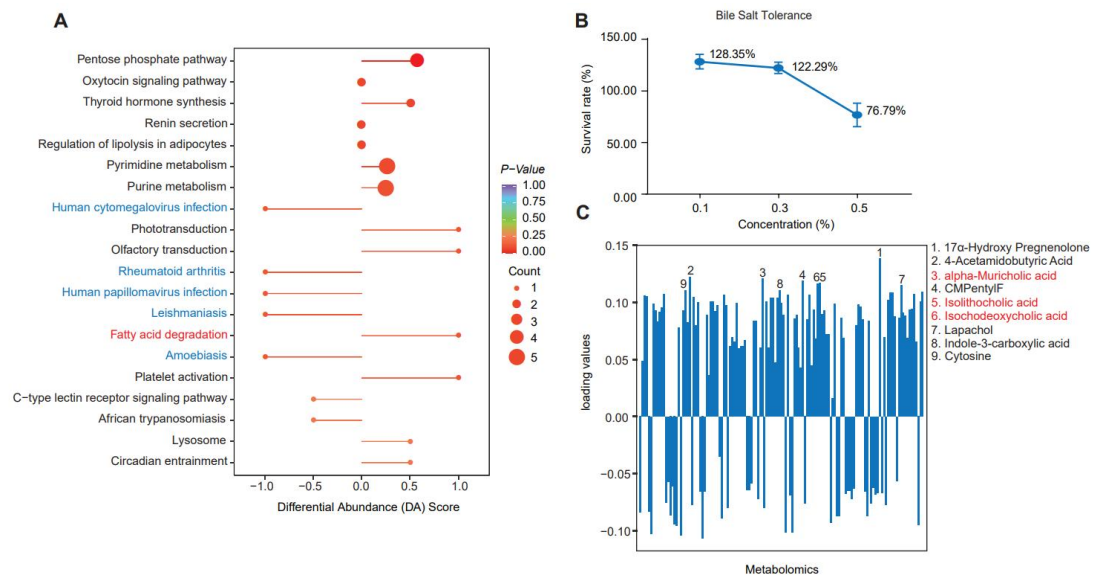
Figure S1 to S4



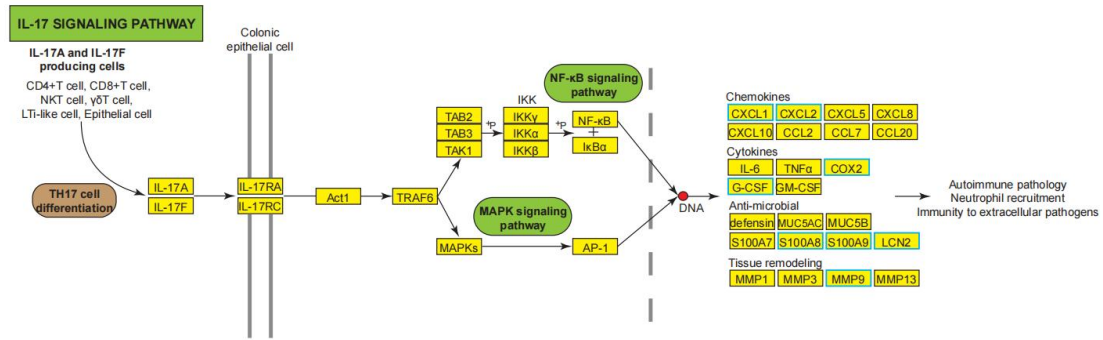
**Figure S1. *B. uniformis* JCM5828 supplementation restores colon immune barrier and increases the expression of barrier protein.** qPCR analysis showing the mRNA expression of Occludin, *ZO-1*, Claudin-1 in colon tissues. \*\* $p < 0.01$ , \*\*\* $p < 0.001$ . Data were analyzed using one-way ANOVA and expressed as means  $\pm$  SEM.



**Figure S2. *B. uniformis* JCM5828 ameliorates DSS-induced colitis by reshaping gut microbiota and potential function.** (A) Bacterial phyla (relative abundance in the top 5) showing significant differences in their relative abundance between the Con and Bu group. (B) Bacterial ASV (relative abundance in the top 60) showing significant differences in their relative abundance between the Con and Bu group. (C) Bacterial taxa identified as differentially abundant between groups according to linear discriminant analysis effect size (LEfSe). The bacterial taxa of the three groups were compared from species to ASV. (D) The potential functional pathways of colonic content microbiota based on PICRUST2. \* $p < 0.05$ , \*\* $p < 0.01$ . Data differences were assessed using the one-way ANOVA with Tukey's test.



**Figure S3. *B. uniformis* JCM5828 restores DSS-mediated reduction in colonic primary and secondary bile acid abundance.** (A) The Differential Abundance Score of Con vs. Bu group. The red and blue pathways represent up-regulated and downregulated expression of all identified metabolites in this pathway, respectively. (B) Survival rate of Bu at three bile salt concentrations, each value is expressed as mean  $\pm$  standard deviation (SD) of three replicates. (C) 2-way orthogonal partial least squares (O2PLS) model was established using all DEGs and DE. The important metabolites affecting the transcriptome were screened out, and the red numbers represent bile acid metabolites that have a greater influence on colonic epithelial gene expression.



**Figure S4. *B. uniformis* JCM5828 alleviates inflammation by inhibiting the IL-17 signaling pathway.** Bu binds to the IL-17 receptor (IL-17R) in colon epithelial cells and inhibits downstream NF-κB and mitogen-activated protein kinase (MAPK) signaling pathways through the signaling complex IL-17R-ACT1-TRAF6, thereby eliminating the transcription and expression of inflammatory factors in the nucleus. The blue box represents KEGG annotated differential genes down-regulated in the Bu group.