

Figure S1 |Construction of recombinant plasmids pSIP409-pgsA'-FomA and pSIP409-FnBPA-pgsA'-FomA. (A) The synthesis of the FomA gene (1140bp) was verified by nucleic acid electrophoresis. (B) The expression of the FomA protein was examined by Western blot (C) Identification of the FomA insert in plasmids extracted from randomly picked pSIP409-pgsA'-FomA colonies. lane 1: plasmids digested with KpnI/XbaI; lane 2: pSIP409-pgsA'-FomA plasmid. (D) Identification of the FomA insert in plasmids extracted from randomly picked pSIP409-FnBPA-pgsA'-FomA colonies. lane 1: plasmids digested with HindIII/XbaI; lane 2: pSIP409-FnBPA-pgsA'-FomA plasmid. (E) A map of the plasmid pSIP409-pgsA'-FomA (F) a map of the plasmid pSIP409-FnBPA-pgsA'-FomA.

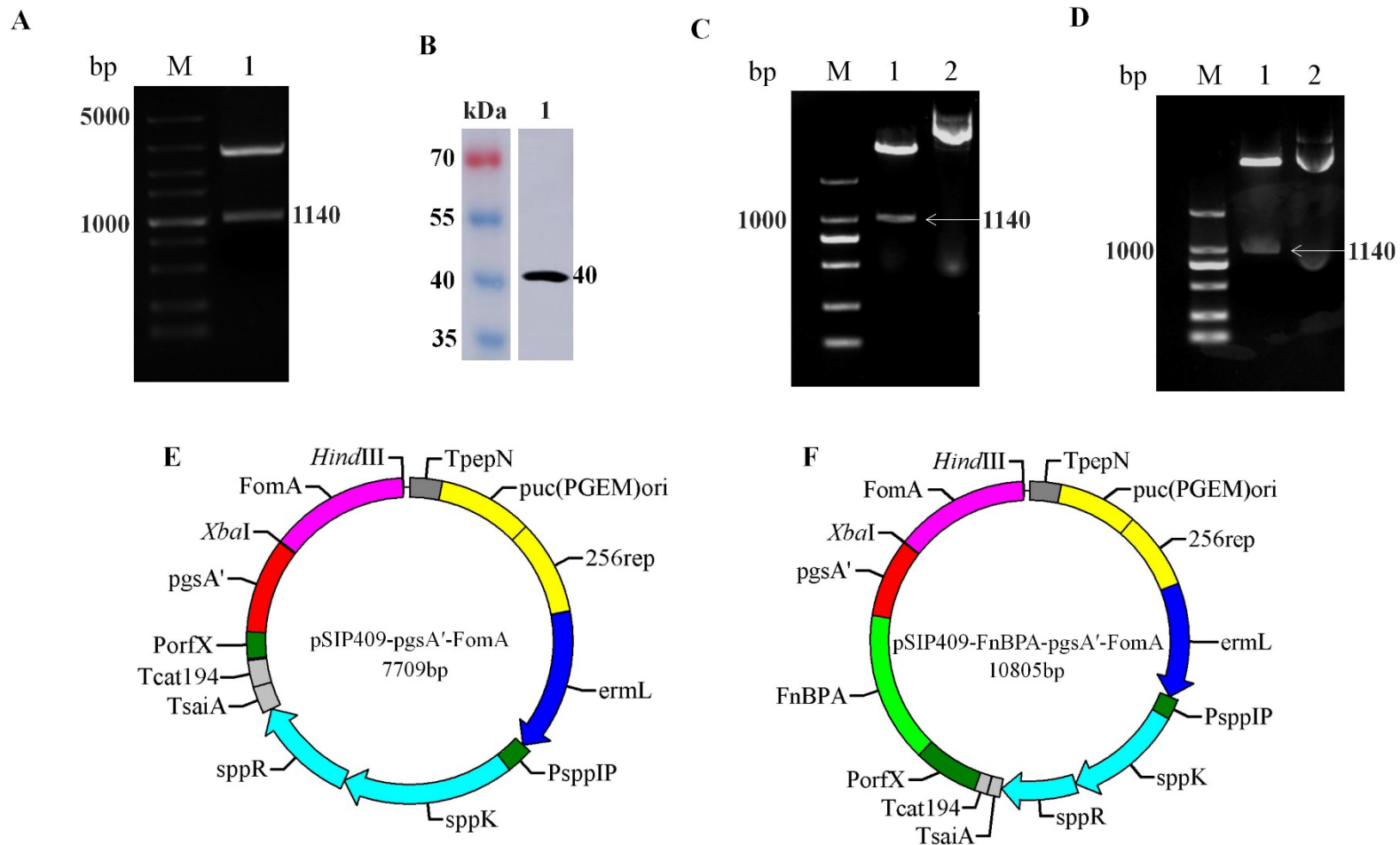


Figure S2 | Experimental design of mice. Mice were immunized with recombinant *L. plantarum* on days 1–3, 12–14 and 24–26. On day 36 using a combination of *F. nucleatum* and DSS. Mouse immune cells were harvested on day 36 for in vitro experiments. ELISA was performed on days 0, 12, 24, 36, and 44. Changes in mice were recorded after the combination of *F. nucleatum* and DSS treatment and pathological examination was performed on day 44. Final evaluation of the recombinant *L. plantarum* vaccine against coinfection with *F. nucleatum* and DSS.

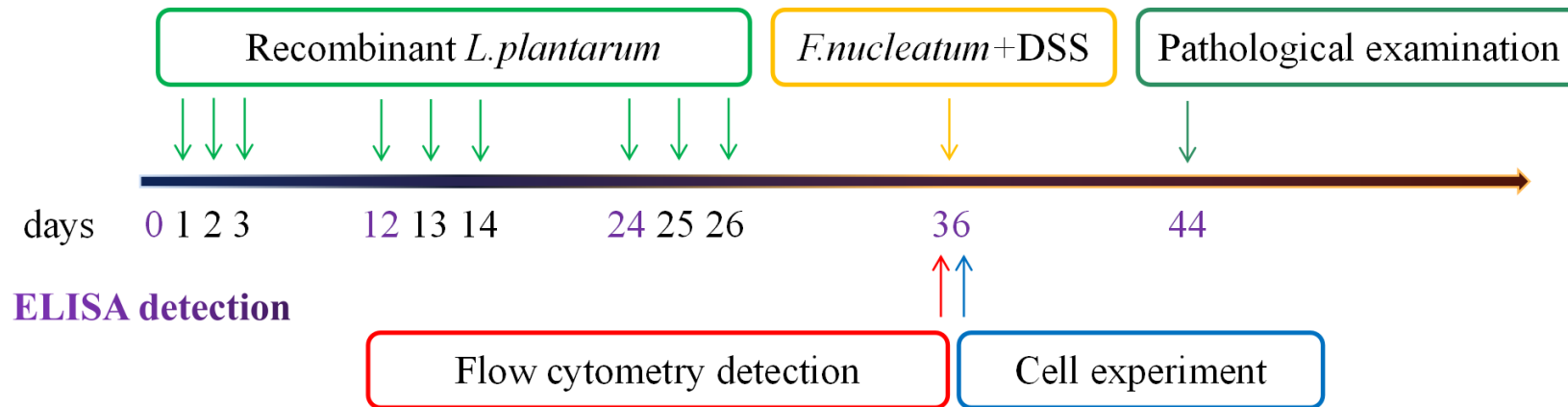


Figure S3 | Results of mouse model of inflammatory bowel disease (A) Production of anal blood stools in mice fed *F. nucleatum* and aqueous solution containing 2.5% DSS (left for day 5, right for day 7, a: DSS+*F. nucleatum* b: DSS) (B) Mouse survival curves for the four groups (C) Body weight change curves of the four groups (D) Colon length statistics for the four mouse groups

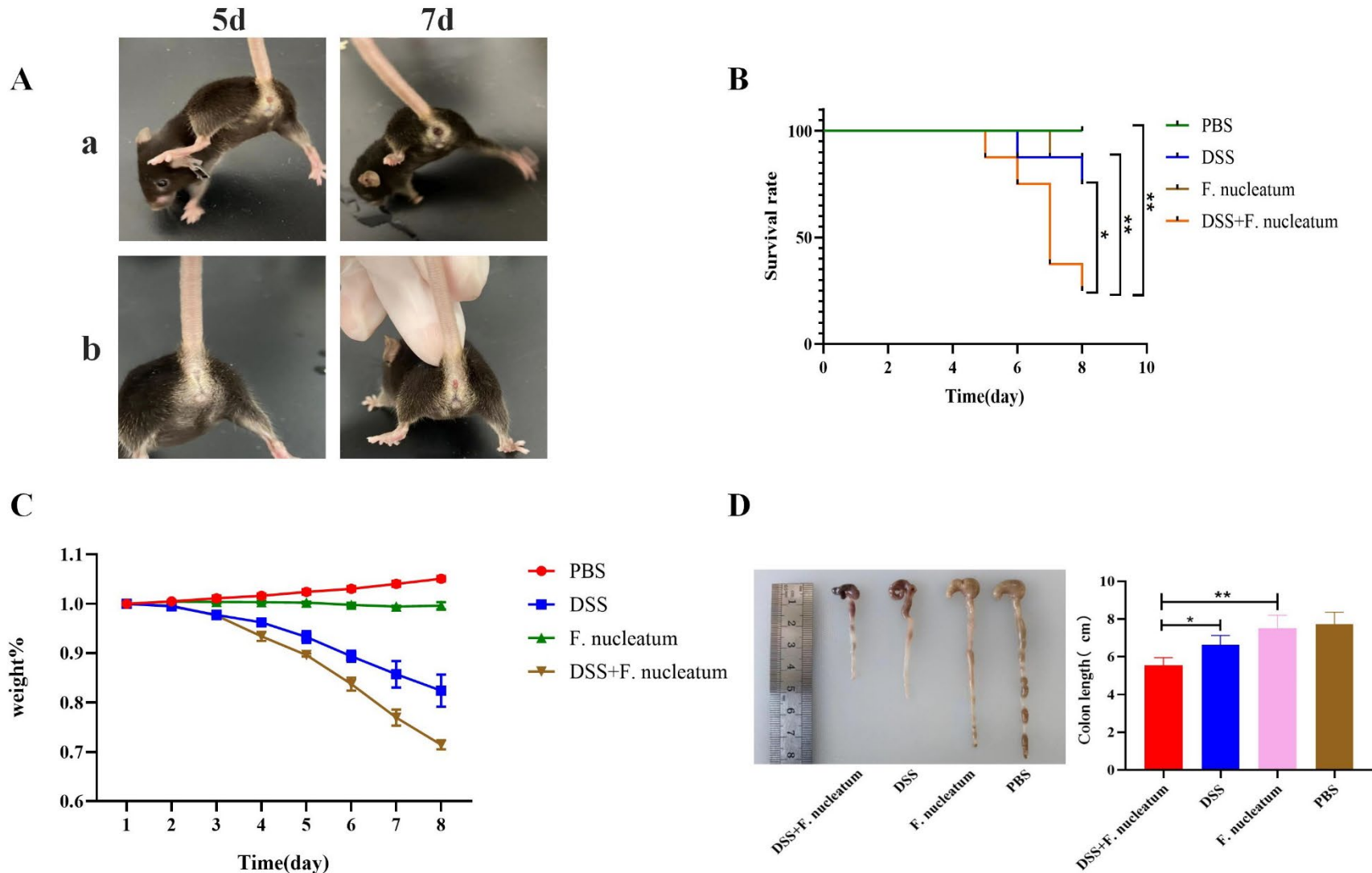


Figure S4 | Statistics of cytokine secretion in the colon and serum after day 8 of mouse infection. (A) Of the IgA in the serum. (B) Of the IgG in the serum. (C) Of the IgG in the serum. (D) Of the IL6 in the serum. (E) Of the IL1 β in the serum. (F) Of the TNF α in the colon. (G) Of the IgG in the colon. (H) Of the IgG in the colon.

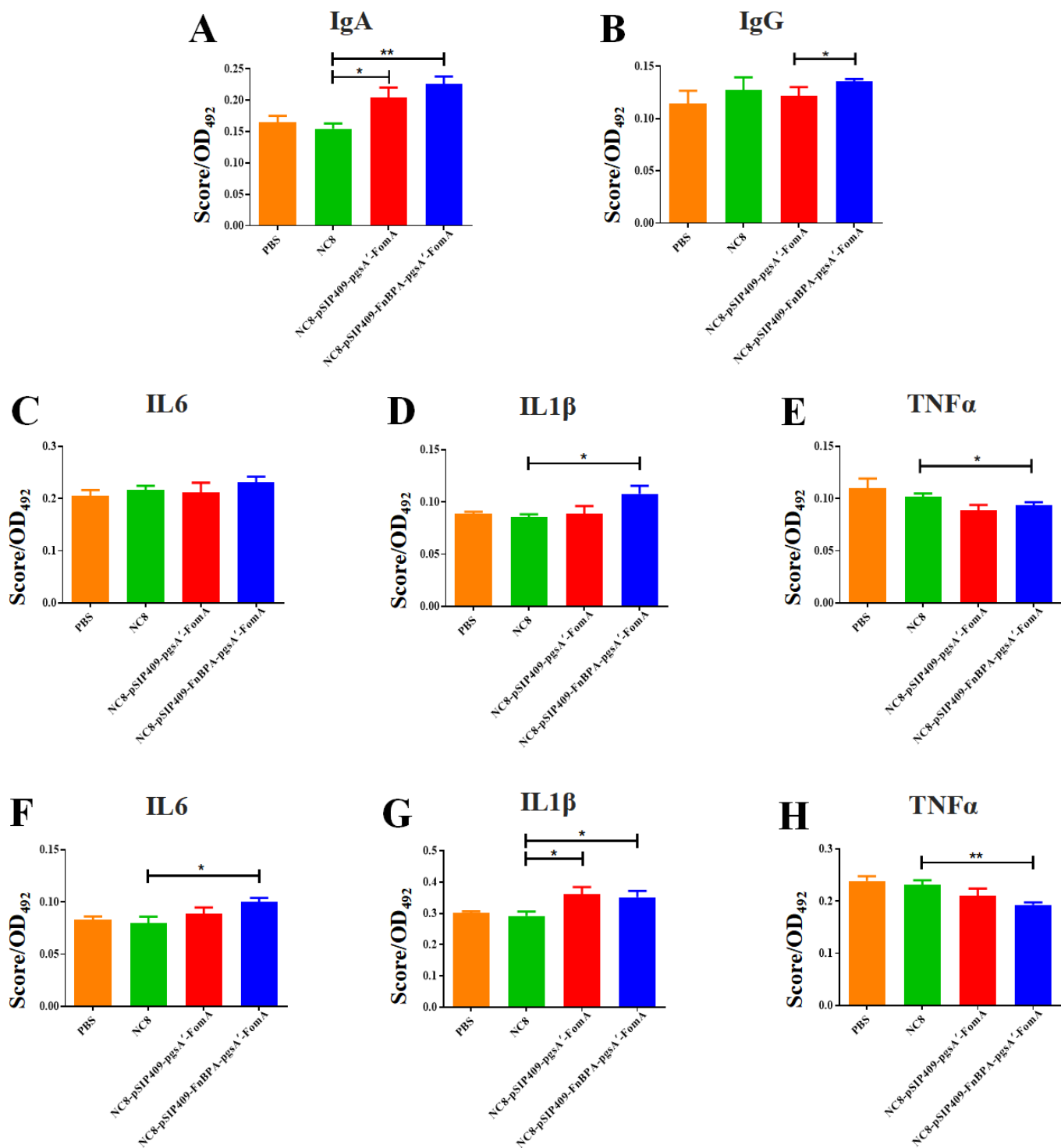


Figure S5 | The gating strategies for flow cytometry experiments. (A) The gating strategies of MLN; SP and PP. Lymphocytes were first selected and then removed by FSCA and FSCH before selection for B cell analysis / T cell analysis. (B) The gating strategies of LPL, Lymphocytes were first selected and then removed by FSCA and FSCH before selection for Macrophages/T cell analysis.

