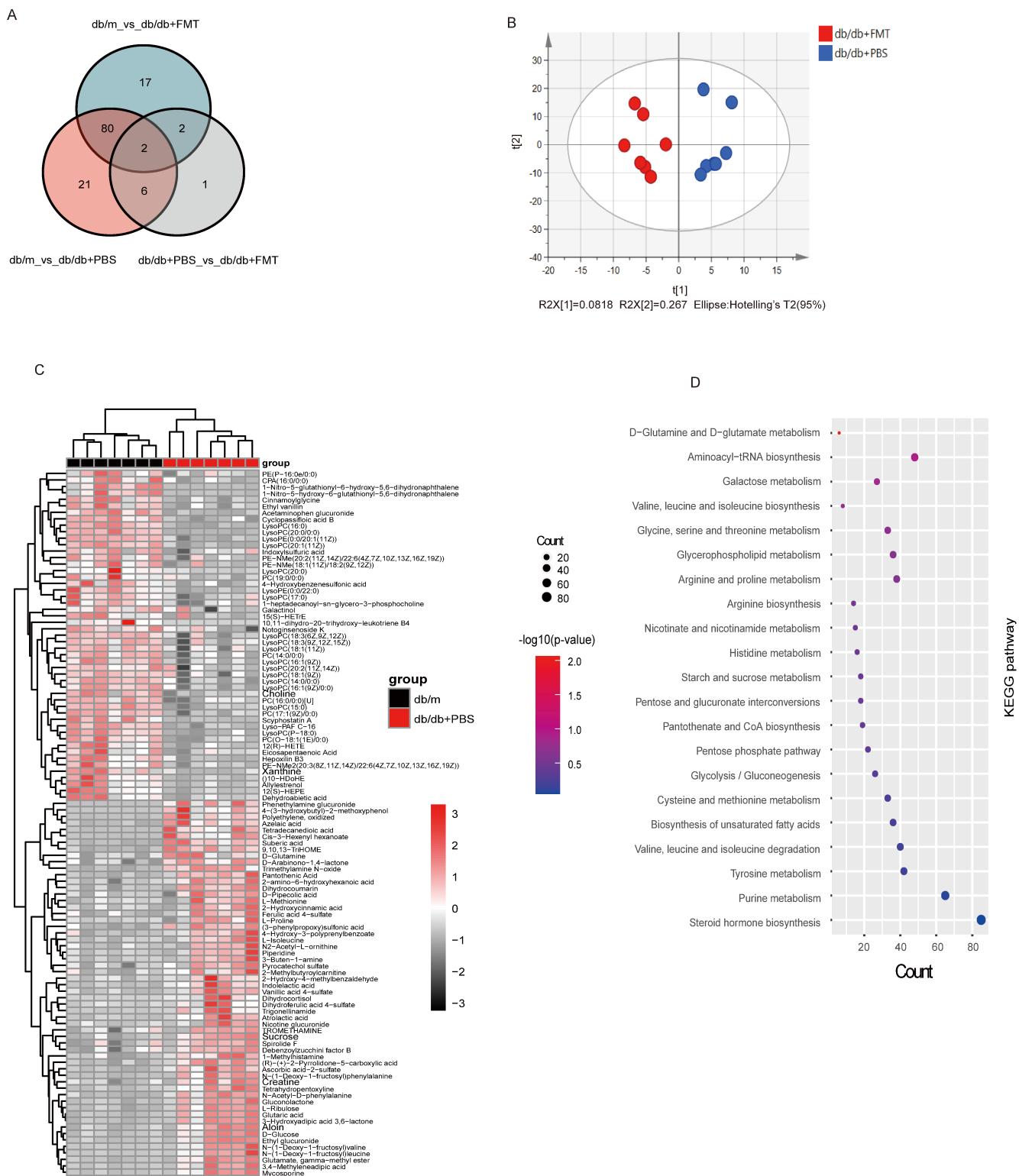
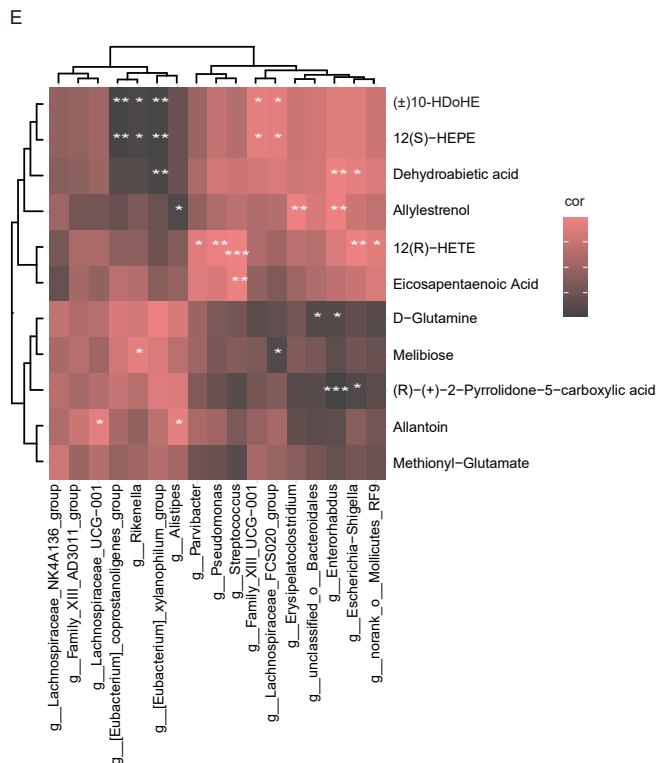
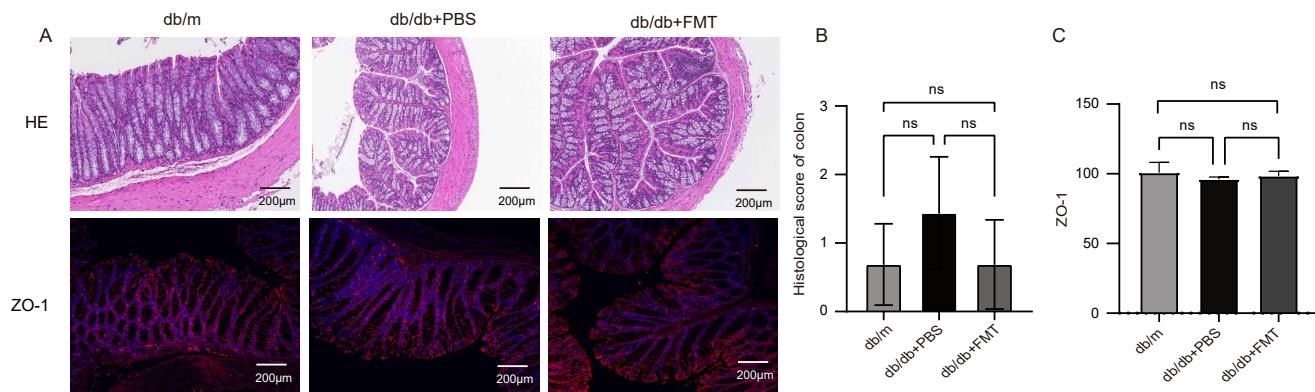


Supplementary Figure1 | Effects of FMT on microbiota community and diversity. **(A)** Rarefaction curves of detected bacterial species of the fecal microbiota reach the saturation stage with increasing number of samples, indicating that the fecal microbiota in our population capture most fecal bacteria members from each mice. **(B)** simpson index in the OTU and family levels. **(C)** PCA at the OTU and family levels.

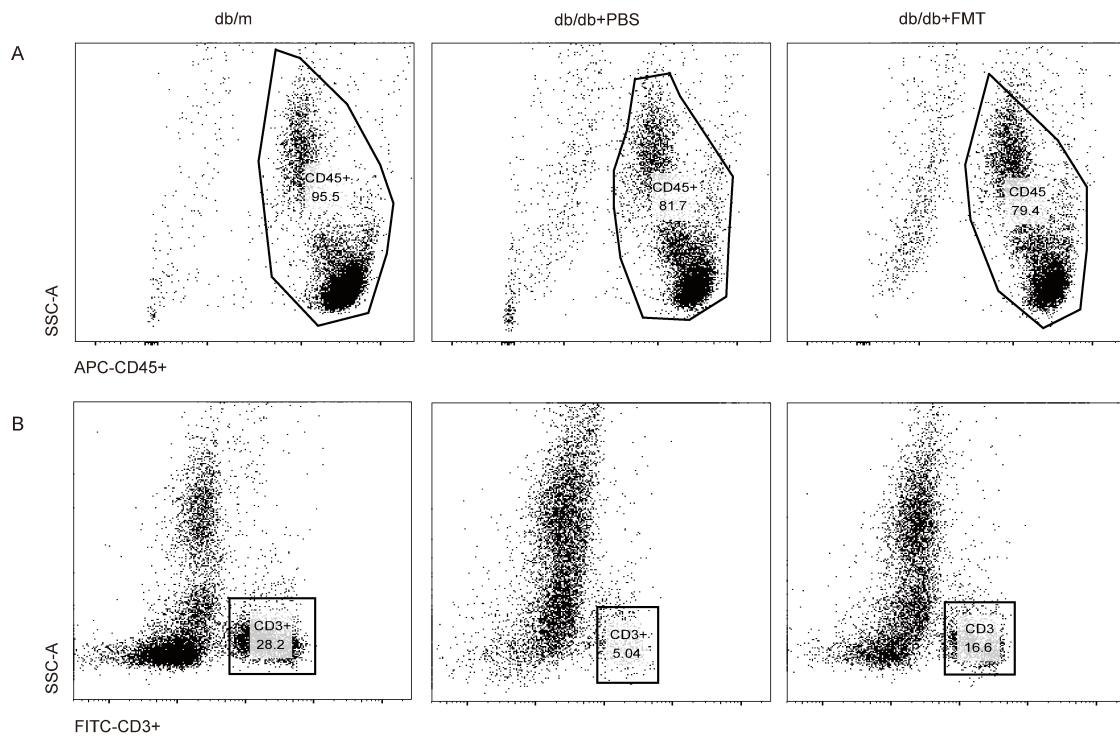




Supplementary Figure2 | FMT alter serum metabolites in db/db mice. (A) Venn diagram show 109,101 and 11 differential metabolites for the following comparisons: db/m vs. db/db+PBS, db/m vs. db/db+FMT and db/db+PBS vs. db/db+FMT, respectively; (B) OPLS- DA score plot; (C) Heatmap show 109 different metabolites between db/m and db/db mice; (D) The scatter plot shows KEGG pathway of 109 differential metabolites between db/m mice and db/db mice; (E) Heatmap of the Spearman's correlation between 11 discriminatory metabolites and key bacteria genus(db/db+PB vs db/db+FMT, ***p<0.001; **p<0.01; *0.01<p<0.05). The pink squares indicate positive correlations, wheras the grey squares indicate negative correlations.



Supplementary Figure3| Evaluation for colonic tissue of three cohorts. **(A)** Representative photomicrographs of H&E-stained small intestine sections and Photomicrographs of immunofluorescence for ZO-1 between three groups (Magnification: 200 \times). **(B)** Histological score of colon section. **(C)** Relative intensity of ZO-1 between three groups.



Supplementary Figure 4 | Immune composition in peripheral blood. (A) Representative flow cytometry plots of CD45+ cells in db/m, db/db+PBS and db/db+FMT mice. (B) Representative flow cytometry plots of CD45+CD3+ lymphocytes in db/m, db/db+PBS and db/db+FMT mice.