

## Supporting information

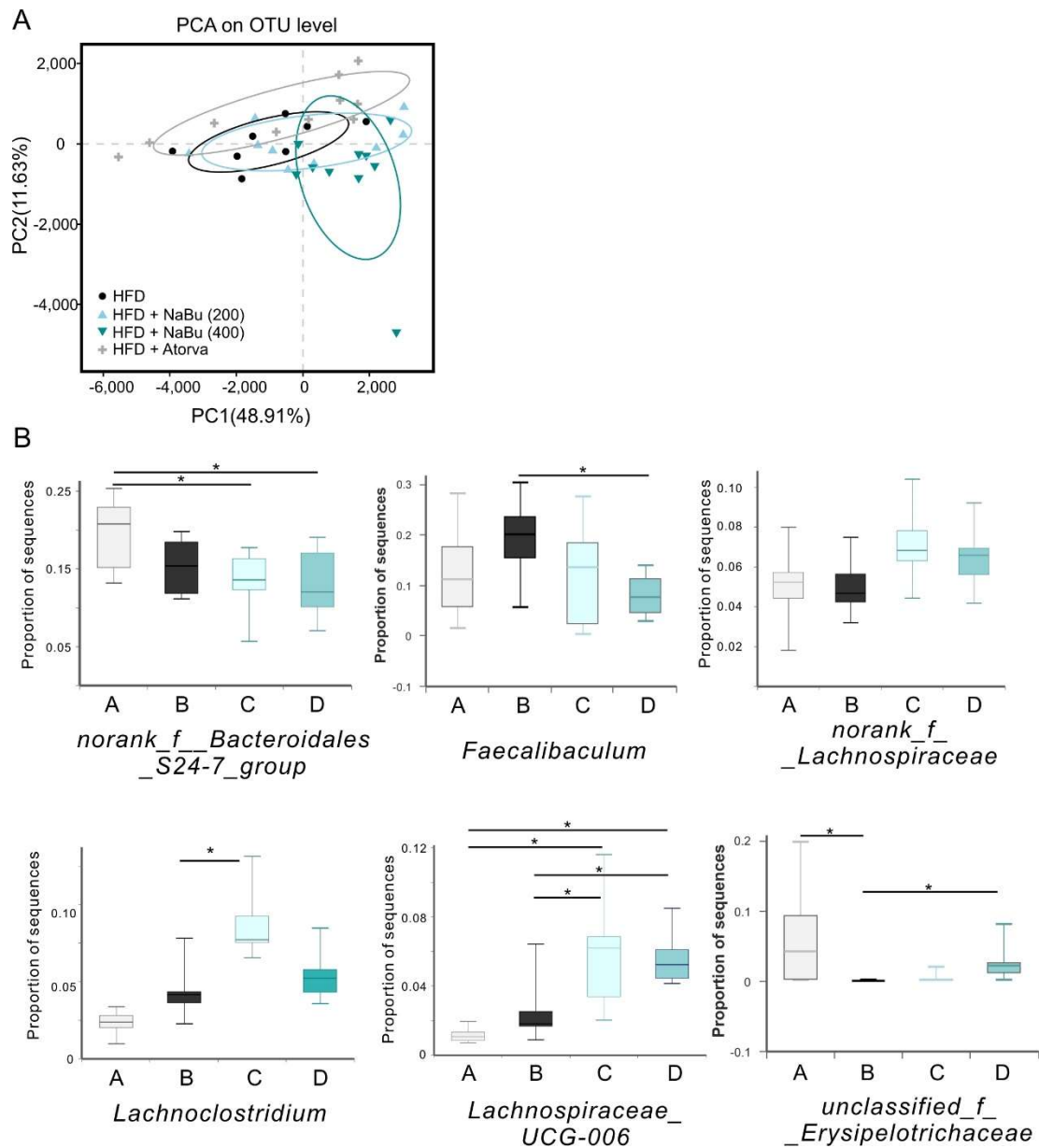
**Title:** Butyrate protects against high-fat diet-induced atherosclerosis via up-regulating ABCA1 expression in apolipoprotein E-deficiency mice

**Running title:** Butyrate ameliorates atherosclerosis via up-regulating ABCA1

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**Figure S1. Effect of butyrate on gut microbiota composition in HFD-fed ApoE<sup>-/-</sup> mice.** (A) Principal component analysis plot of microbiota is shown along the first two principal coordinate (PC) axes for HFD and HFD with butyrate or atorvastatin group. (B) Relative abundance of several genera between different groups. n = 7-8 for chow (group A) and HFD (group B) groups, n = 9-10 for HFD + butyrate (200 and 400 mg·kg<sup>-1</sup>, group C and D). \*  $P < 0.05$

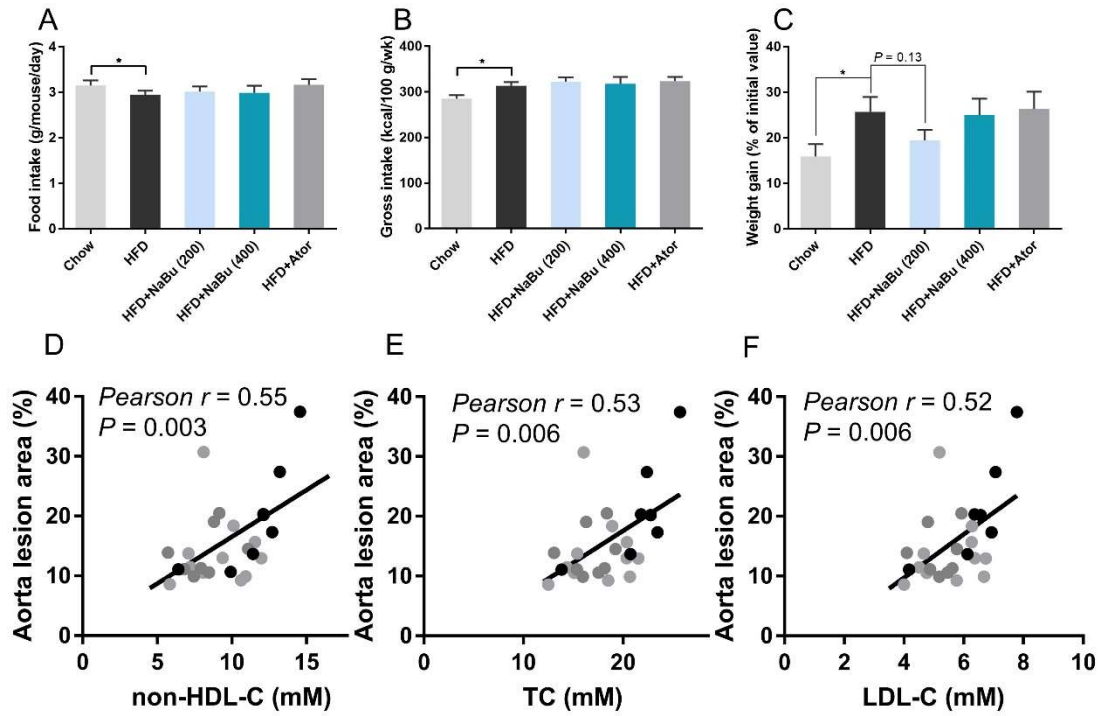
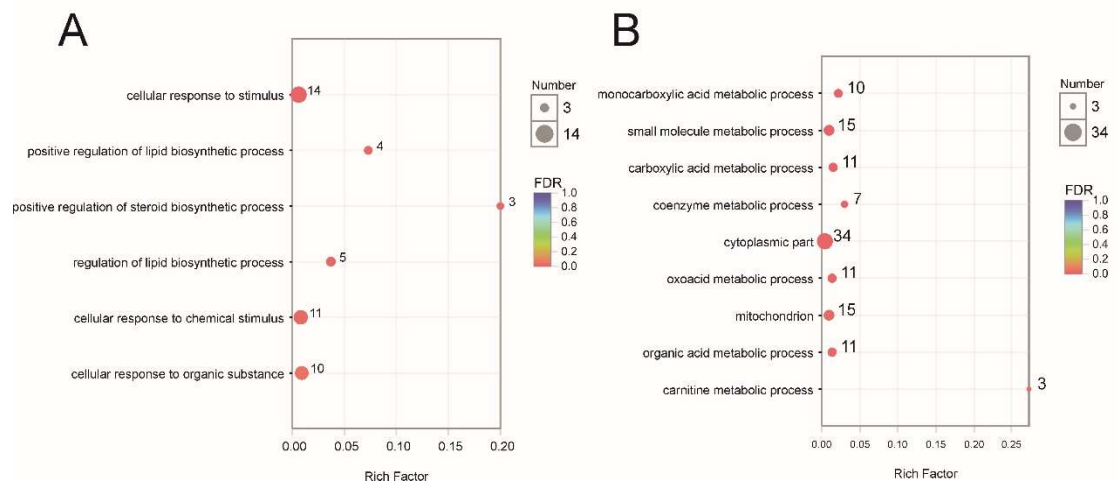


Figure S2. Effect of butyrate on food intake (A), total caloric intake (B) and body weight gain (C) in ApoE<sup>-/-</sup> mice after 16 weeks treatment. (D-F) Correlation between aortae lesion area and serum non-HDL-cholesterol, total cholesterol, LDL-cholesterol, respectively. Black circle: HFD; light gray circle: HFD + 200 mg·kg<sup>-1</sup> NaBu; dark gray circle: HFD + 400 mg·kg<sup>-1</sup> NaBu.



**Figure S3. Liver transcriptome analyses compared between HFD and HFD + 400 mg·kg<sup>-1</sup> butyrate groups.** Gene Ontology term enrichments with Bonferroni tests for differentially expressed genes that up-regulated (A) or down-regulated (B) by butyrate (Fold change > 1.5, FDR < 0.05).

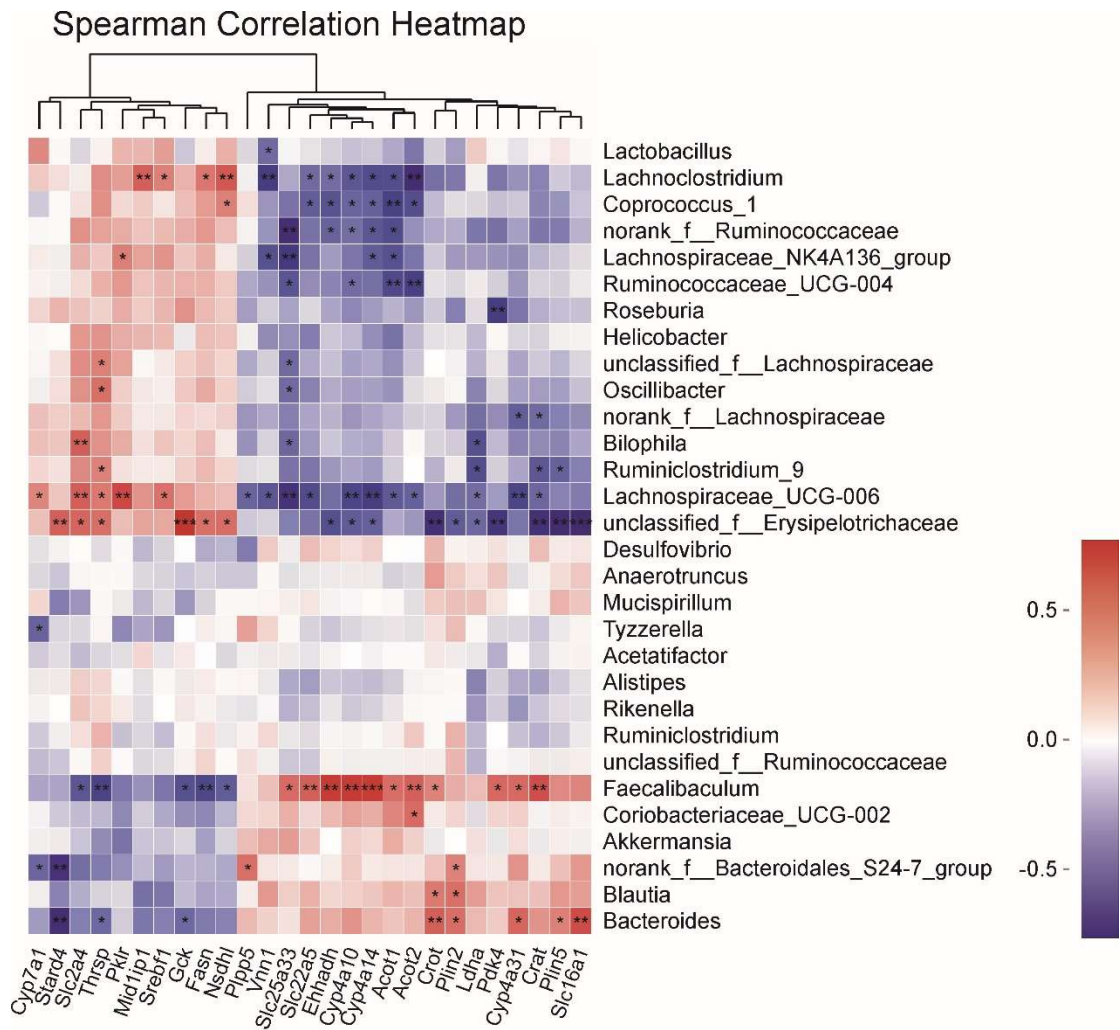


Figure S4. Heat map of Spearman correlations between the differentially expressed genes involved in lipid and/or glucose metabolism and the abundance of microbiota at the genus level. \* P < 0.05