

Figure S1. Generation of hypercholesterolemic mouse models and the administration of sodium sulphate to hypercholesterolemic mice. (A) Overview of the experimental design. (B) Serum TC concentration in mice after 4 weeks of high cholesterol administration. (C) Body weight curves and (D) average daily food intake curves of mice from the CON, HCD, HCD + LSS, HCD + MSS, and HCD + HSS groups during the administration of sodium sulphate. (E) Average daily defecation mass of mice from the five groups. $^{###}P < 0.001$ vs. the CON group. CON, control; HCD, high cholesterol diet; TC, total cholesterol; LSS, low dose of sodium sulphate; MSS, middle dose of sodium sulphate; HSS, high dose of sodium sulphate.

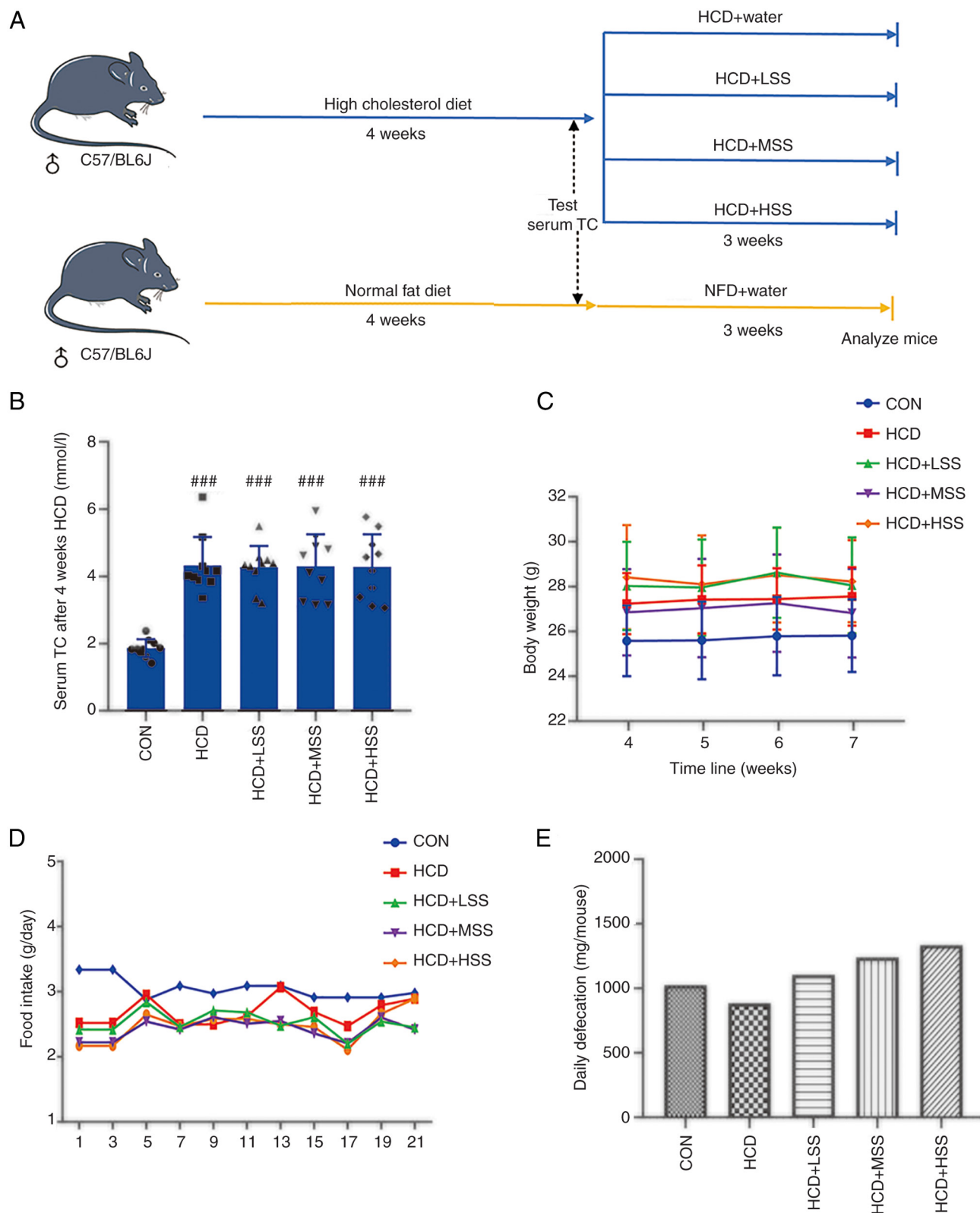


Figure S2. Effect of sodium sulphate on the morphology and histology of the livers from mice fed an HCD. (A) Representative photographic images of the livers of mice from the five study groups: CON, HCD, HCD + LSS, HCD + MSS, and HCD + HSS. (B) Liver weight and (C) liver/body weight ratio of mice from the five groups. (D) Representative images of haematoxylin and eosin stained liver tissue sections from mice in the five groups. Scale bar, 40 μ m. $^{##}P < 0.01$, $^{###}P < 0.001$ vs. the CON group. CON, control; HCD, high cholesterol diet; LSS, low dose of sodium sulphate; MSS, middle dose of sodium sulphate; HSS, high dose of sodium sulphate.

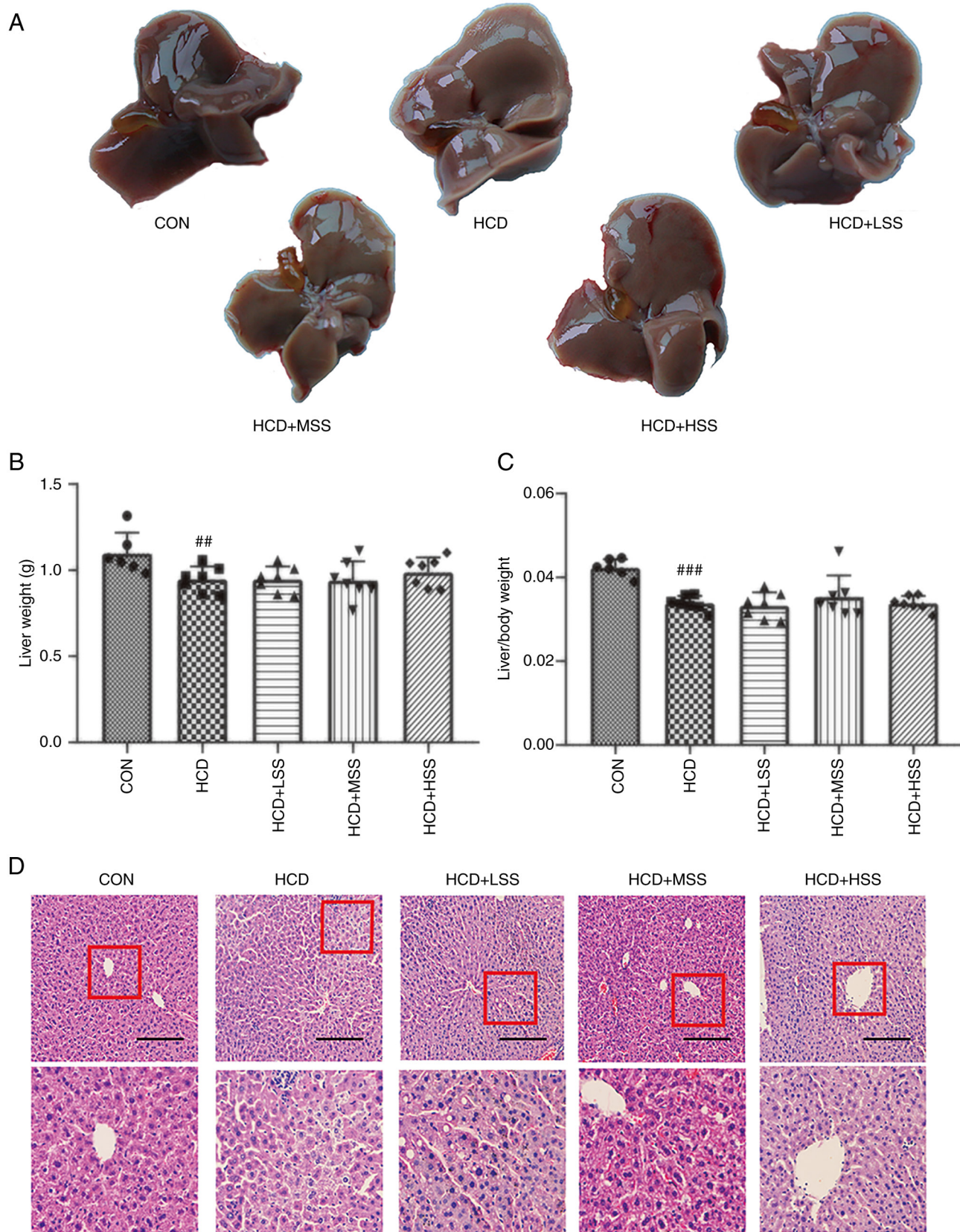


Figure S3. Comparison of the hepatic mRNA expression profiles in mice from the CON, HCD and HCD + MSS groups determined via RNA-sequencing technology. (A) Graph showing the numbers of differentially expressed mRNAs in the liver tissues of mice between the CON vs. HCD, CON vs. HCD + MSS, and HCD vs. HCD + MSS groups. Heatmap showing the differentially expressed mRNAs in the liver tissues of mice between the (B) CON and HCD, (C) HCD and HCD + MSS groups and (D) CON and HCD + MSS groups. (E) Heatmap showing the differentially expressed mRNAs encoding bile acid transporters in the livers of mice from the CON, HCD and HCD + nMSS groups. CON, control; HCD, high cholesterol diet; MSS, middle dose of sodium sulphate.

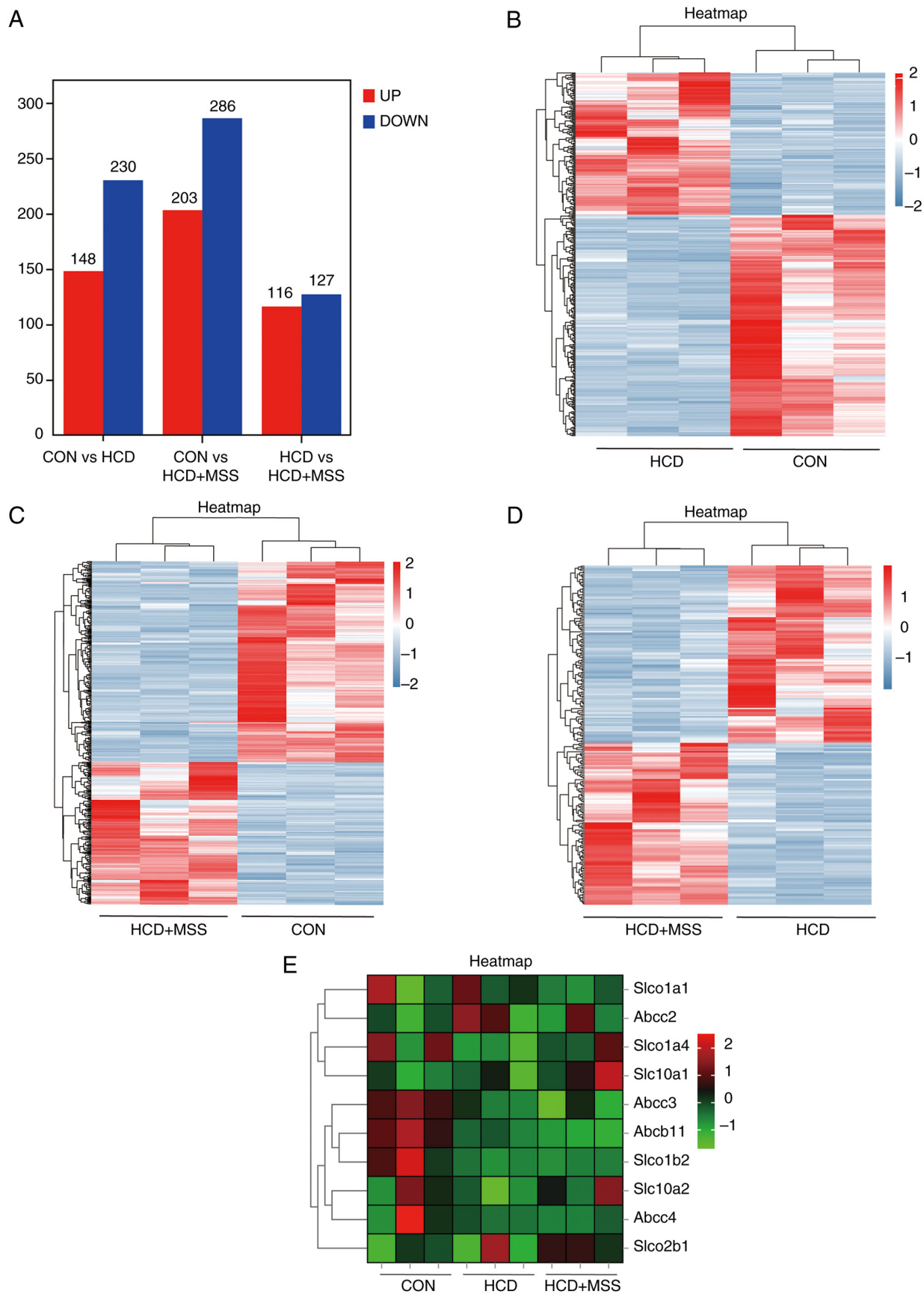


Figure S4. Effect of sodium sulphate on the expression of genes associated with cholesterol synthesis in the liver tissues of mice fed an HCD. (A) Graphs showing the relative mRNA expression levels of *Hmgcs1*, *Hmgcr*, *Mvk*, *Mvd*, *Idi1*, *Fdps*, *Fdft1*, *Sqle*, *Lss*, *Dhcr7* and *Cyp51a1* in the liver tissues from mice in the CON, HCD, HCD + LSS, HCD + MSS and HCD + HSS groups. (B) Western blotting results showing the protein expression levels of HMGCR, MVK, MVD, IDI1, FDPS, FDFT1 and LSS in the liver tissues of mice from the five groups. ## $P < 0.01$, ### $P < 0.001$ vs. the CON group; * $P < 0.05$, ** $P < 0.01$ vs. the HCD group. CON, control; HCD, high cholesterol diet; LSS, low dose of sodium sulphate; MSS, middle dose of sodium sulphate; HSS, high dose of sodium sulphate; *Hmgcs1*, 3-hydroxy-3-methylglutaryl-CoA synthase 1; *Hmgcr*, 3-hydroxy-3-methylglutaryl-CoA reductase; *Mvk*, mevalonate kinase; *Mvd*, mevalonate diphosphate decarboxylase; *Idi1*, isopentenyl-diphosphate δ isomerase 1; *Fdps*, farnesyl diphosphate synthase; *Fdft1*, farnesyl diphosphate farnesyltransferase 1; *Sqle*, squalene epoxidase; *Oss*, oxidosqualene-lanosterol cyclase (lanosterol synthase); *Dhcr7*, 7-dehydrocholesterol reductase; *Cyp51a1*, cytochrome P450 family member 51 subfamily member A member 1.

