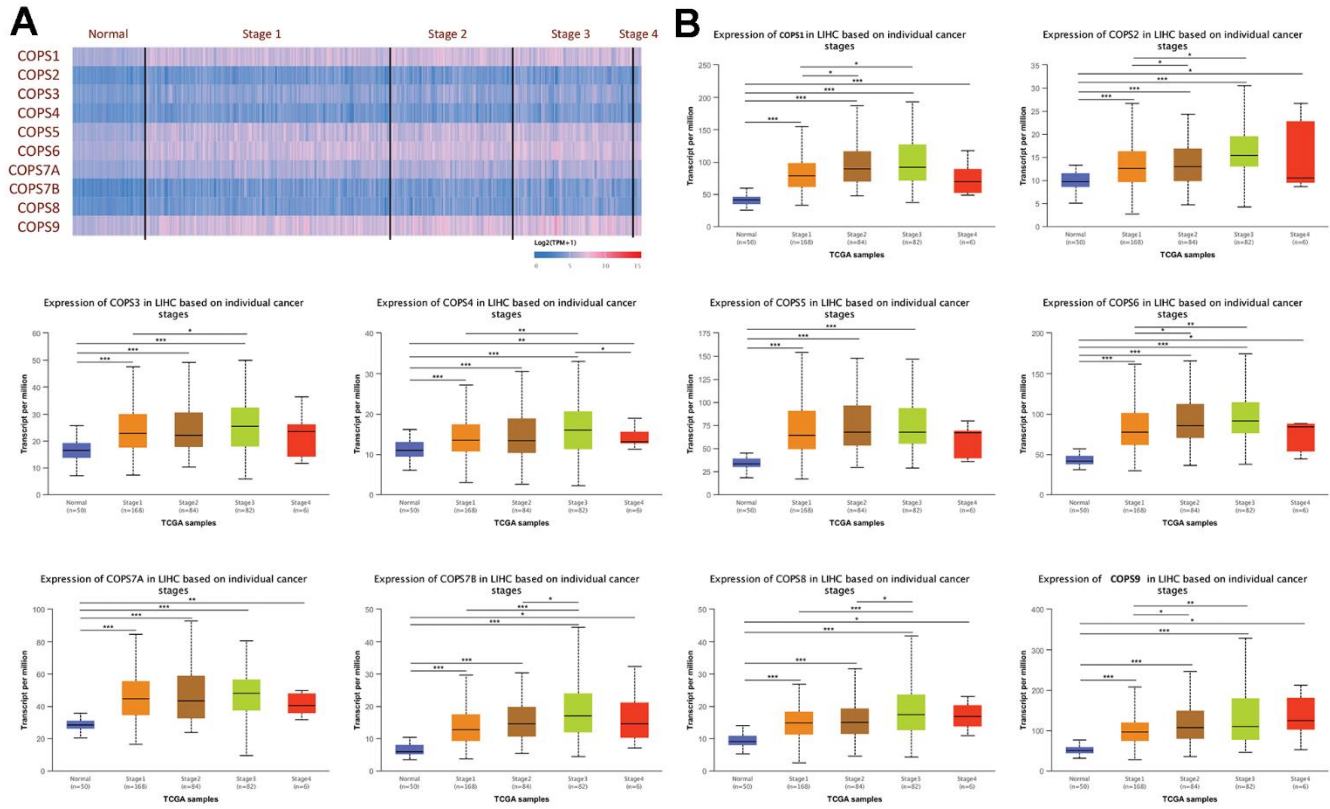
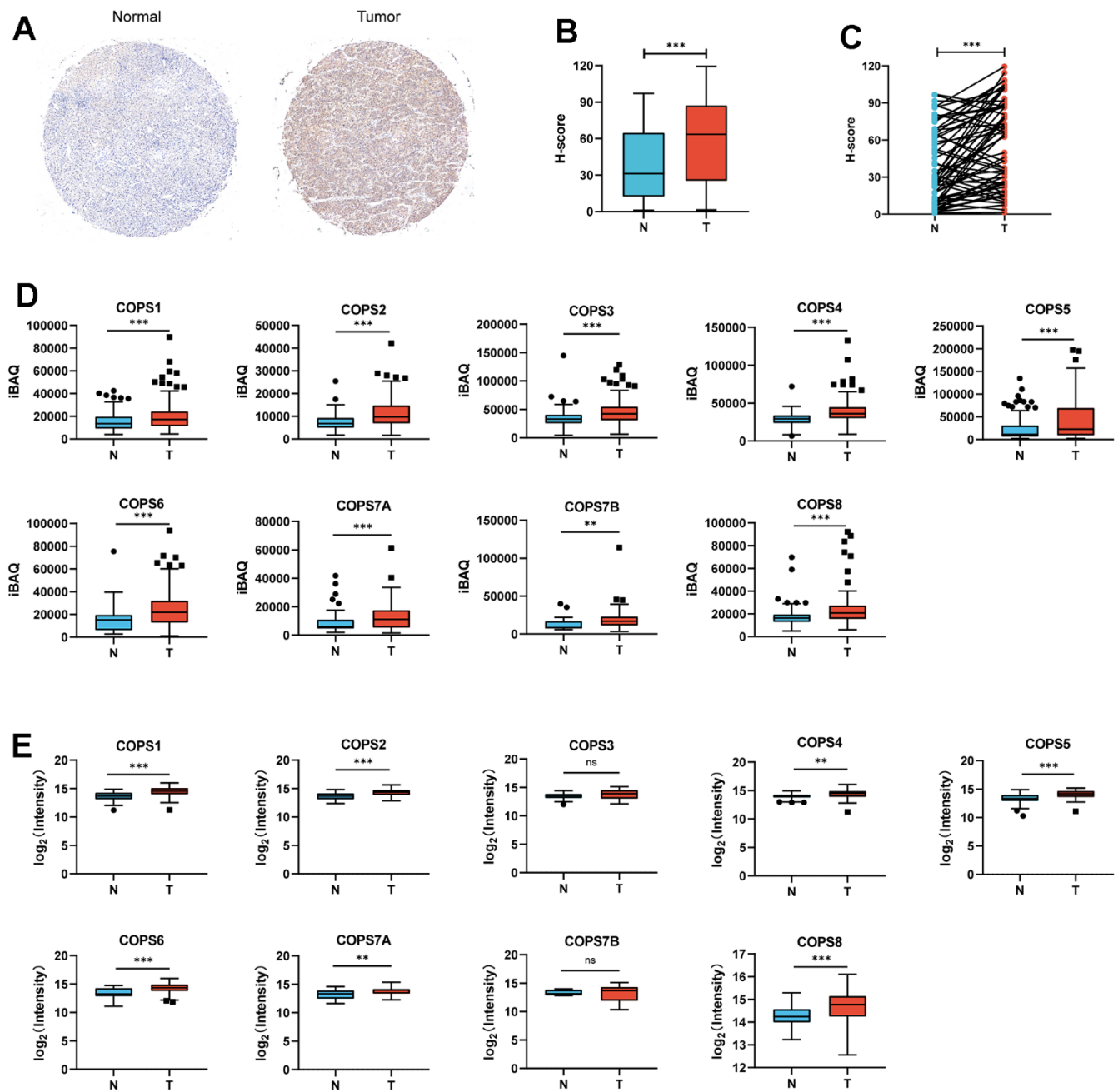


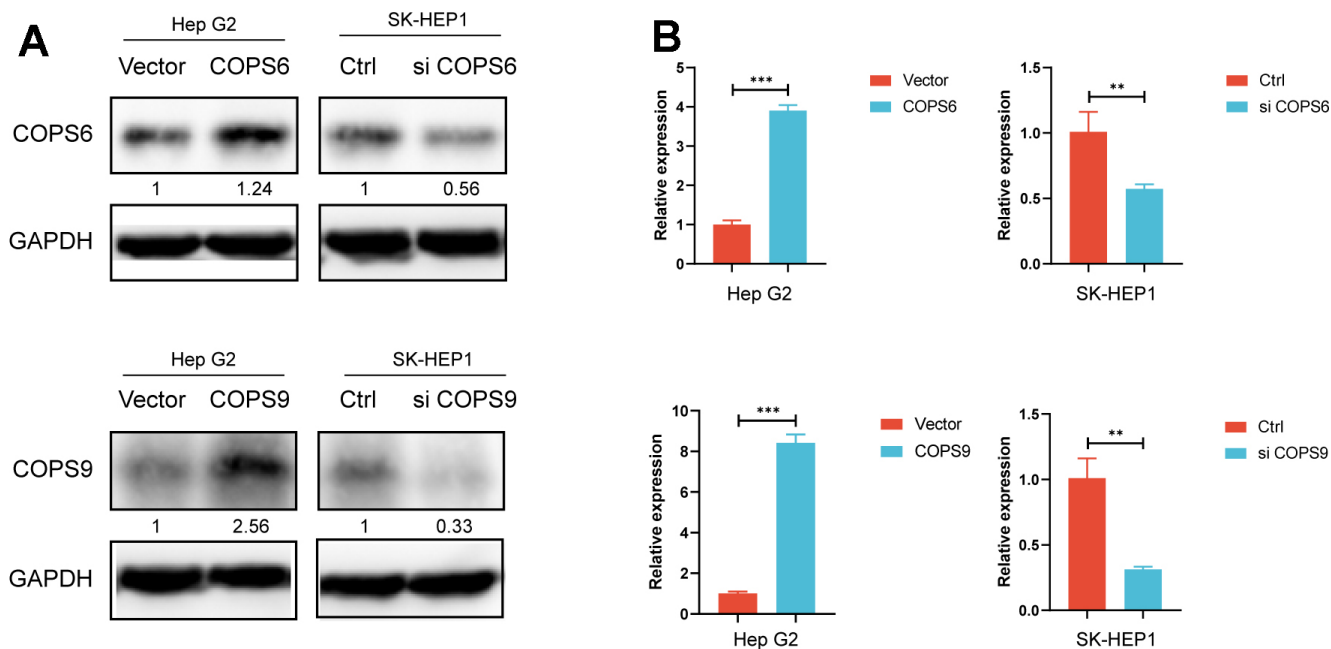
SUPPLEMENTARY FIGURES



Supplementary Figure 1. Greater COPS subunit mRNA expression levels are associated with higher HCC tumor stage (from UALCAN). (A) Heatmap showing the differential expression of COPS subunits in HCC patients with different tumor grades. (B) Expression levels of COPS subunits in HCC patients with different tumor grades. \*p < 0.05, \*\*p < 0.01, \*\*\*p < 0.001.



**Supplementary Figure 2. COPS subunits were upregulated in HCC.** (A, B) IHC analysis of COPS9 protein levels in adjacent tissues and HCC tissues. (C) COPS9 expression in paired adjacent tissues and HCC tissue samples. (D, E) Mass spectrometry-based quantitative proteomics analysis of COPS subunit proteins in HCC. \*\* $p < 0.01$ , \*\*\* $p < 0.001$ . ns, no significance.



**Supplementary Figure 3.** Efficiencies of COPS6/9 overexpression and knockdown in Hep G2 and SK-HEP1 cells following plasmid and siRNA transfection, respectively, as confirmed by Western blotting (A) and qPCR (B). \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .