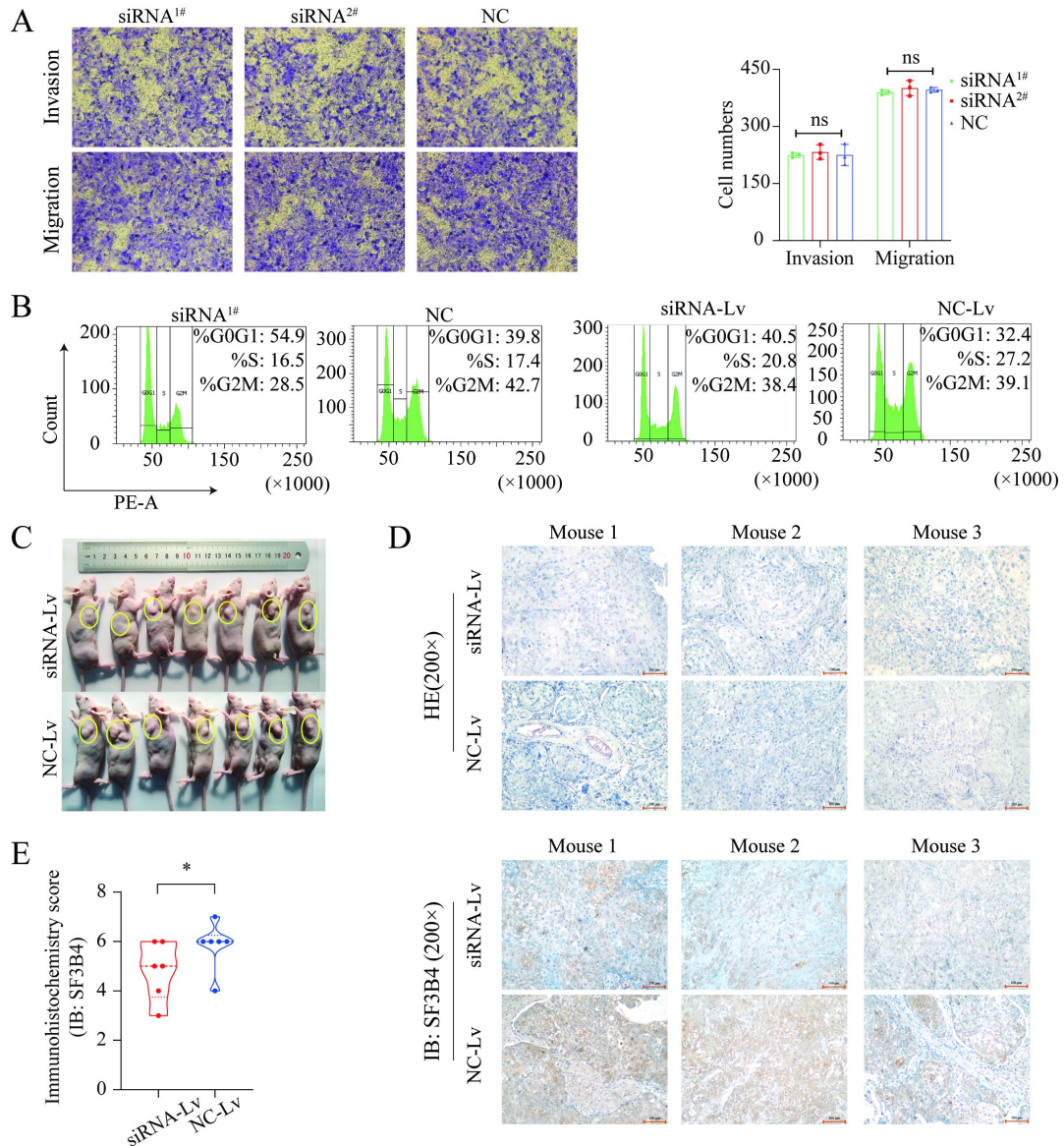
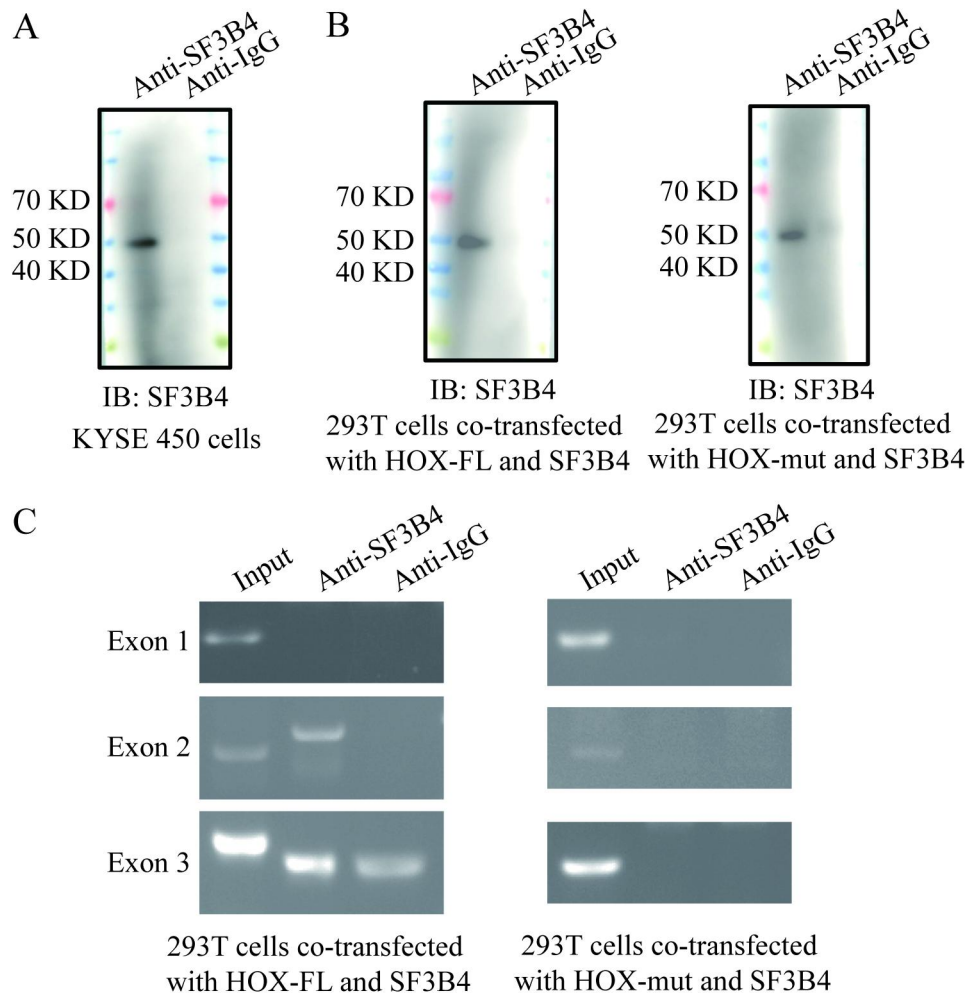


**Figure S1** The relative expressions of SF3B3, RBM5, RBM6, PABPC1, HSPA8 and SMC1A in ESCC and paired para-tumor tissues. Statistical significance was assessed by paired t-test.



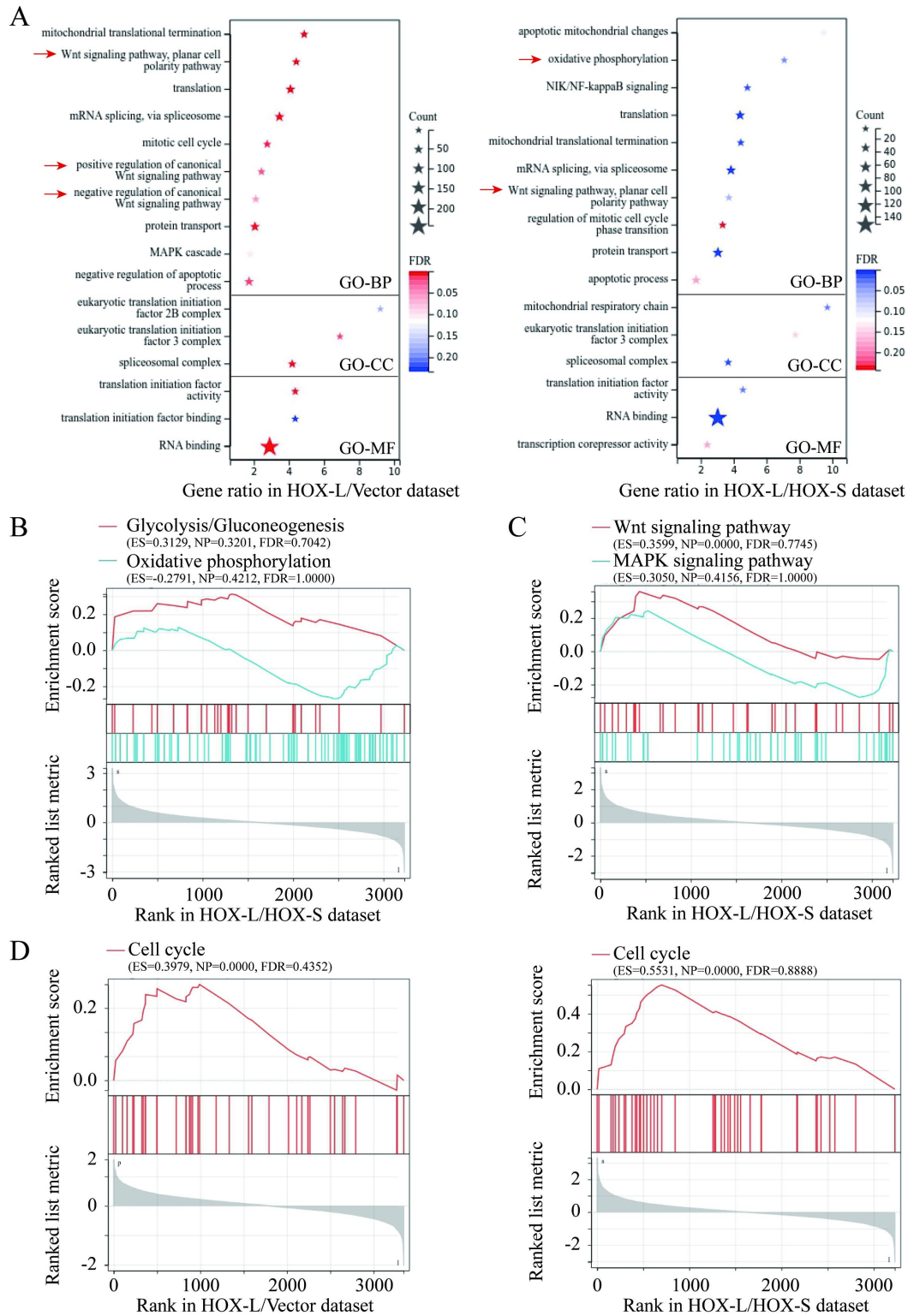
**Figure S2 Knocking down SF3B4 declined ESCC cells malignancy both *in vitro* and *in vivo*.** (A) Representative images (original magnification, 200 $\times$ ) of transwell assays for KYSE 150 cells with wild or low expression of SF3B4; right histogram showed quantification analysis. (B) Flow cytometry analysis for the cell cycle distribution of KYSE 150 cells with wild or low expression of SF3B4. (C) Images of xenograft model of BALB/c-nu/nu male mice with subcutaneous injection of KYSE 450 cells with wild or low expression of SF3B4. (D) Representative images of H&E staining in xenograft tumour tissues. (E) Representative images of SF3B4

immunohistochemical staining in xenograft tumour tissues; left histogram showed quantification analysis. Data were presented as mean  $\pm$  SD, \*P < 0.05, n = 3; statistical significance was assessed by paired t-test or one-way ANOVA with Tukey or Newman-Keuls Multiple Comparison Test.



**Figure S3 Analysis of SF3B4-HOXA11-AS exons binding motif. (A-B)**

Immunoblotting analysis for testing the affinity of the anti-SF3B4 antibody to the SF3B4 protein in (A) KYSE 450 or (B) 293T cell lysate. (C) Representative agarose gel electrophoresis bands for RIP-PCR results of SF3B4-regulated exons in HOXA11-AS.



cellular component; GO-MF referred to the molecular function. (B-C) GSEA analysis of metabolic pathways (B) and tumor-related signaling pathways (C) in KYSE 150 cells transfected with HOX-L compared to HOX-S. (D) GSEA analysis of cell cycle pathway in KYSE 150 cells transfected with HOX-L compared to the vector or HOX-S.