Supplementary fig. 1 The expression of BUB1B in renal cell carcinoma (RCC) from the GEPIA web tool. (A) Box plot of *BUB1B* expression in tumor and normal tissues in TCGA KIRC, KIRP, and KICH. (B, C, D) The mRNA expression levels of *BUB1B* were compared between the various TNM stages. One-way ANOVA was used to analyze the differences between mRNA expression levels of *BUB1B* and the different TNM stages in TCGA (KIRC, KIRP, and KICH).

Supplementary fig. 2 The prognostic value of BUB1B in renal cell carcinoma (RCC). (A)

The prognostic value of *BUB1B* across 32 types of cancer from TIMER2. (B, C, D) A Kaplan-Meier plot of overall survival of *BUB1B* expression in RCC patients after nephrectomy in TCGA (KIRC, KIRP, and KICH).

Supplementary fig. 3 Association between BUB1B expression and TP53 mutation

Association between *BUB1B* expression and *TP53* mutation across 32 types of cancer from TIMER2

Supplementary fig. 4 Association between CD274 and tumor infiltration in renal cell carcinoma (RCC). (A, B) Box plot of *CD274* expression in 4 types of immune groups in TCGA KIRC and CPTAC KIRC. \**P* <0.05.