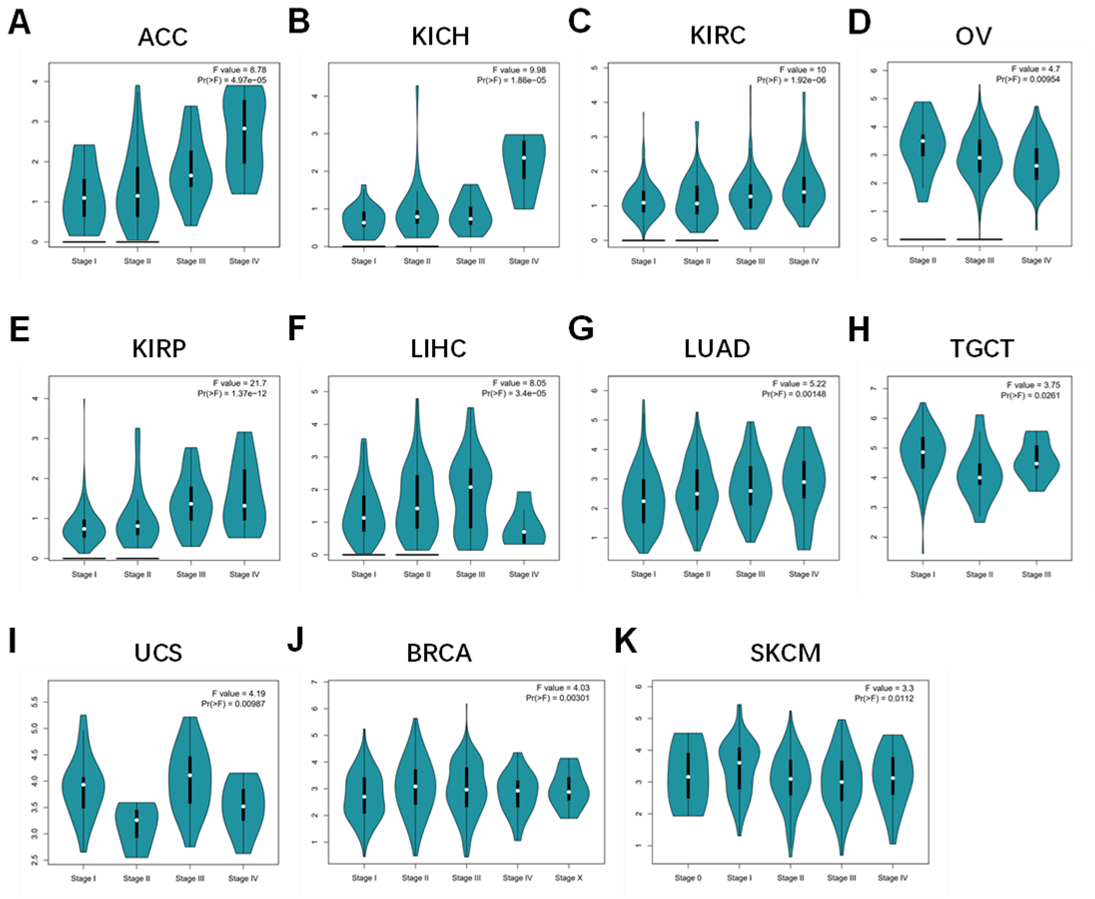



Figure S1. The correlation between BUB1B expression and the pathological stages. GEPIA2 database analyses of the association between BUB1B expression and the pathological stages in (A)ACC, (B)KICH, (C)KIRC, (D)OV, (E)KIRP, (F)LIHC, (G)LUAD, (H)TGCT, (I)UCS, (J)BRCA and (K)SKCM.

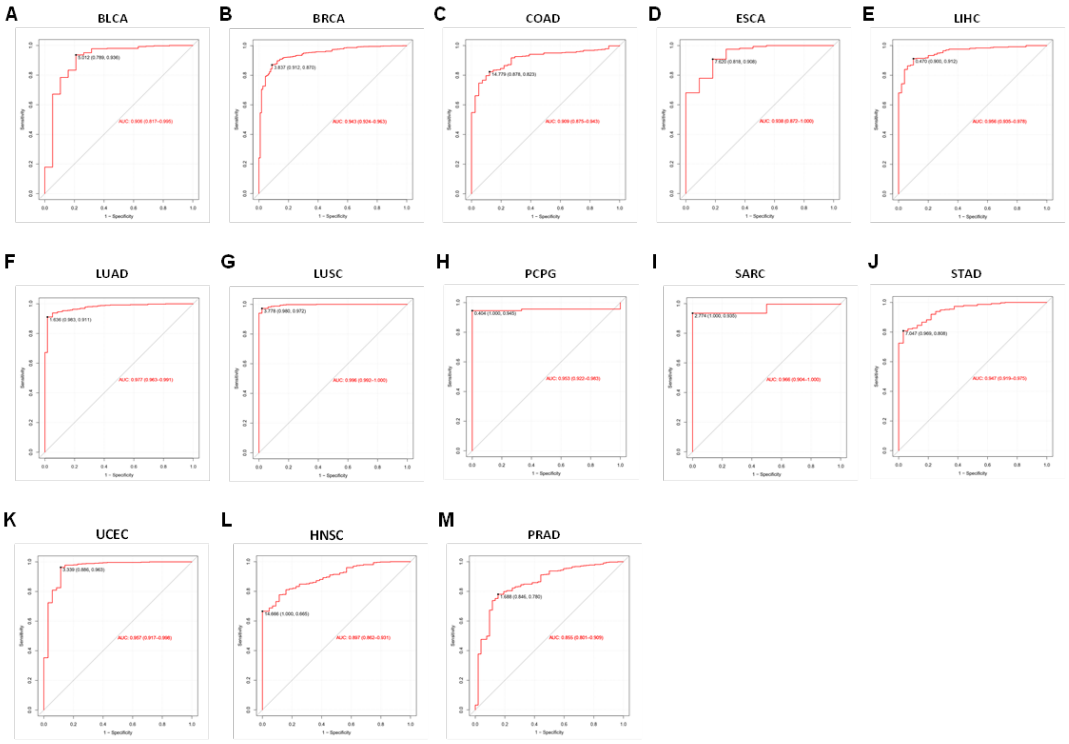



Figure S2. The diagnostic value of BUB1B in pan-cancer. (A–M). The ROC curves of BUB1B in BLCA, BRCA, COAD, ESCA, LIHC, LUAD, LUSC, PCPG, SARC, STAD, UCEC, HNSC, PRAD.

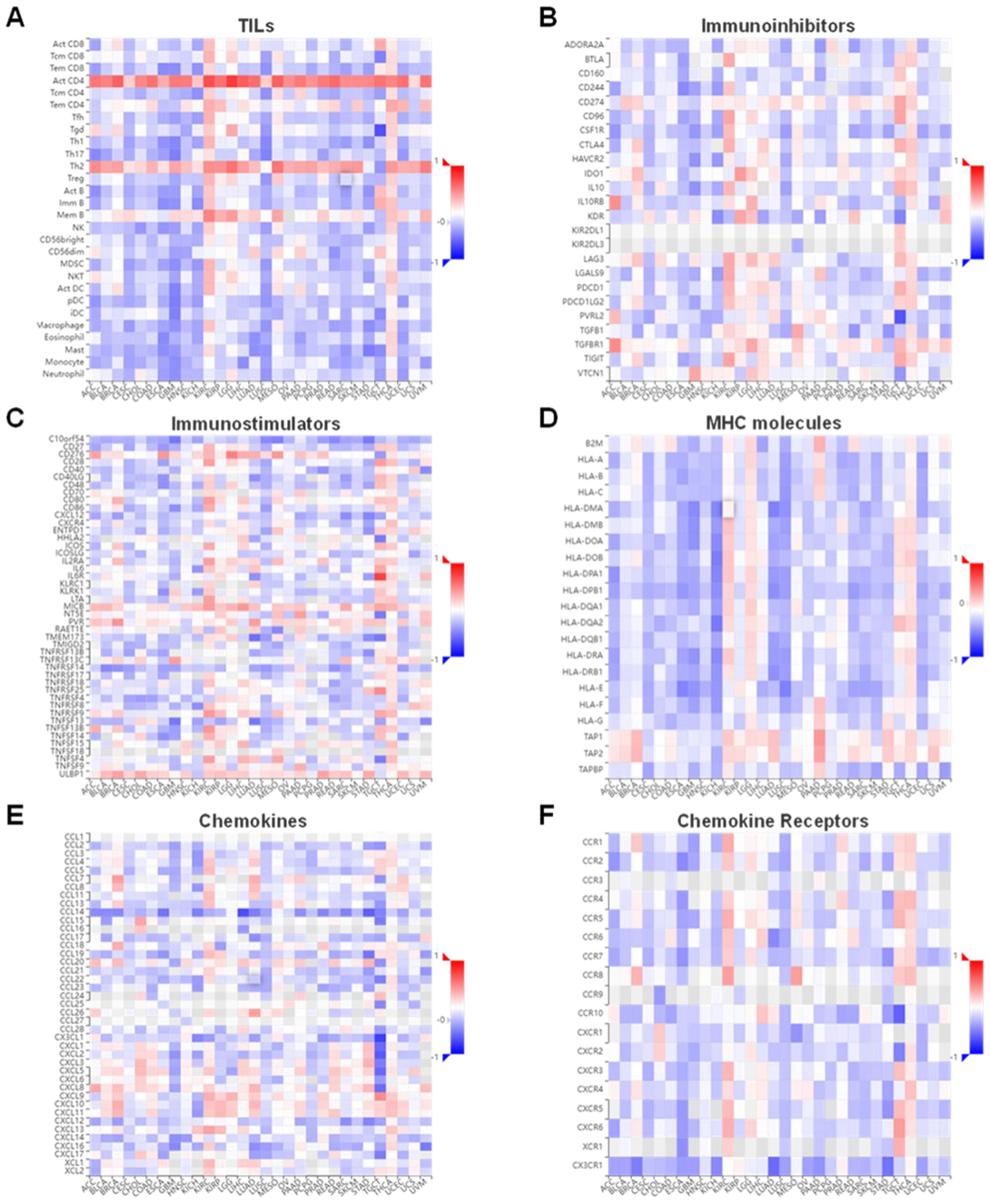



Figure S3. Heatmap analysis of the correlation between BUB1B expression and (A) TILs, (B) immunoinhibitors, (C) immunostimulators, (D) MHC molecules, (E) chemokines and (F) chemokines receptors in tumours.

**Table S1.** Abbreviations

| Abbreviations | Full names |
|---|---|
| ACC | Adrenocortical carcinoma |
| BLCA | Bladder Urothelial Carcinoma |
| BRCA | Breast invasive carcinoma |
| CESC | Cervical squamous cell carcinoma and endocervical adenocarcinoma |
| CHOL | Cholangiocarcinoma |
| COAD | Colon adenocarcinoma |
| COADREAD | Colon adenocarcinoma/Rectum adenocarcinoma Esophageal carcinoma |
| DLBC | Lymphoid Neoplasm Diffuse Large B-cell Lymphoma |
| ESCA | Esophageal carcinoma |
| FPPP | FFPE Pilot Phase II |
| GBM | Glioblastoma multiforme |
| GBMLGG | Glioma |
| HNSC | Head and Neck squamous cell carcinoma |
| KICH | Kidney Chromophobe |
| KIPAN | Pan-kidney cohort (KICH+KIRC+KIRP) |
| KIRC | Kidney renal clear cell carcinoma |
| KIRP | Kidney renal papillary cell carcinoma |
| LAML | Acute Myeloid Leukemia |
| LGG | Brain Lower Grade Glioma |
| LIHC | Liver hepatocellular carcinoma |
| LUAD | Lung adenocarcinoma |
| LUSC | Lung squamous cell carcinoma |
| MESO | Mesothelioma |
| OV | Ovarian serous cystadenocarcinoma |
| PAAD | Pancreatic adenocarcinoma |
| PCPG | Pheochromocytoma and Paraganglioma |
| PRAD | Prostate adenocarcinoma |
| READ | Rectum adenocarcinoma |
| SARC | Sarcoma |
| SKCM | Skin Cutaneous Melanoma |
| STAD | Stomach adenocarcinoma |
| STES | Stomach and Esophageal carcinoma |
| TGCT | Testicular Germ Cell Tumors |
| THCA | Thyroid carcinoma |
| THYM | Thymoma |
| UCEC | Uterine Corpus Endometrial Carcinoma |
| UCS | Uterine Carcinosarcoma |
| UVM | Uveal Melanoma |
| BUB1B | BUB1 mitotic checkpoint serine/threonine kinase B |
| TCGA | The Cancer Genome Atlas |
| OS | Overall Survival |
| HPA | The Human Protein Atlas |

| | |
|---|---|
| GDC | the Genomic Data Commons |
| TME | Tumor microenvironment |
| ICIs | Immune checkpoint inhibitors |
| lncRNAs | Long non-coding RNAs |
| ROC | Receiver Operating Characteristic Curve |
| AUC | Area Under Curve |
| TMB | Tumor Mutational Burden |
| MSI | Microsatellite Instability |
| MDSCs | Myeloid-derived suppressor cells |
| NKT | Natural killer T cell |
| MHC | Major Histocompatibility Complex |
| EMT | Epithelial-mesenchymal transition |
| OD | Optical density |