

ORIGINAL ARTICLE

A Pan-Cancer Analysis of the Immunological and Prognostic Role of BUB1 Mitotic Checkpoint Serine/Threonine Kinase B (BUB1B) in Human Tumors

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SUMMARY

Background: BUB1 mitotic checkpoint serine/threonine kinase B (BUB1B) is a member of the spindle assembly checkpoint family and is related to cancer disease progression, invasion, metastasis, and functional promotion of angiogenesis. Several studies have noted that the BUB1B gene is frequently upregulated in various types of cancers. However, the expression patterns of BUB1B across different cancer types and its diagnostic and prognostic potential have not been investigated from a pan-cancer perspective.

Methods: The Cancer Genome Atlas (TCGA) data were used to explore the diagnostic and prognostic immunological potential of BUB1B in 33 cancer types.

Results: BUB1B was almost universally upregulated across all cancers, with increased protein expression in at least six cancer types and an enhanced phosphorylation level of S670 in two cancer types. Furthermore, BUB1B expression was negatively associated with clinical progression and prognosis in most cancers. BUB1B expression was positively associated with tumor mutational burden and microsatellite instability in 17 and 7 cancer types, respectively, and there was a correlation between BUB1B expression and DNA methylation at multiple probes in 30 cancer types. Additionally, a positive relationship existed between BUB1B expression and the infiltration levels of Th2, Tcm, and T helper cells, whereas BUB1B showed a negative correlation with the infiltration levels of other immune cells in multiple cancers. Moreover, functions associated with cell cycle progression and ubiquitin-mediated proteolysis were involved in the functional mechanism of BUB1B.

Conclusions: Our pan-cancer study offers a comprehensive understanding of the role of BUB1B in tumorigenesis and tumor immunity across different types of cancer.

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Supplementary Data

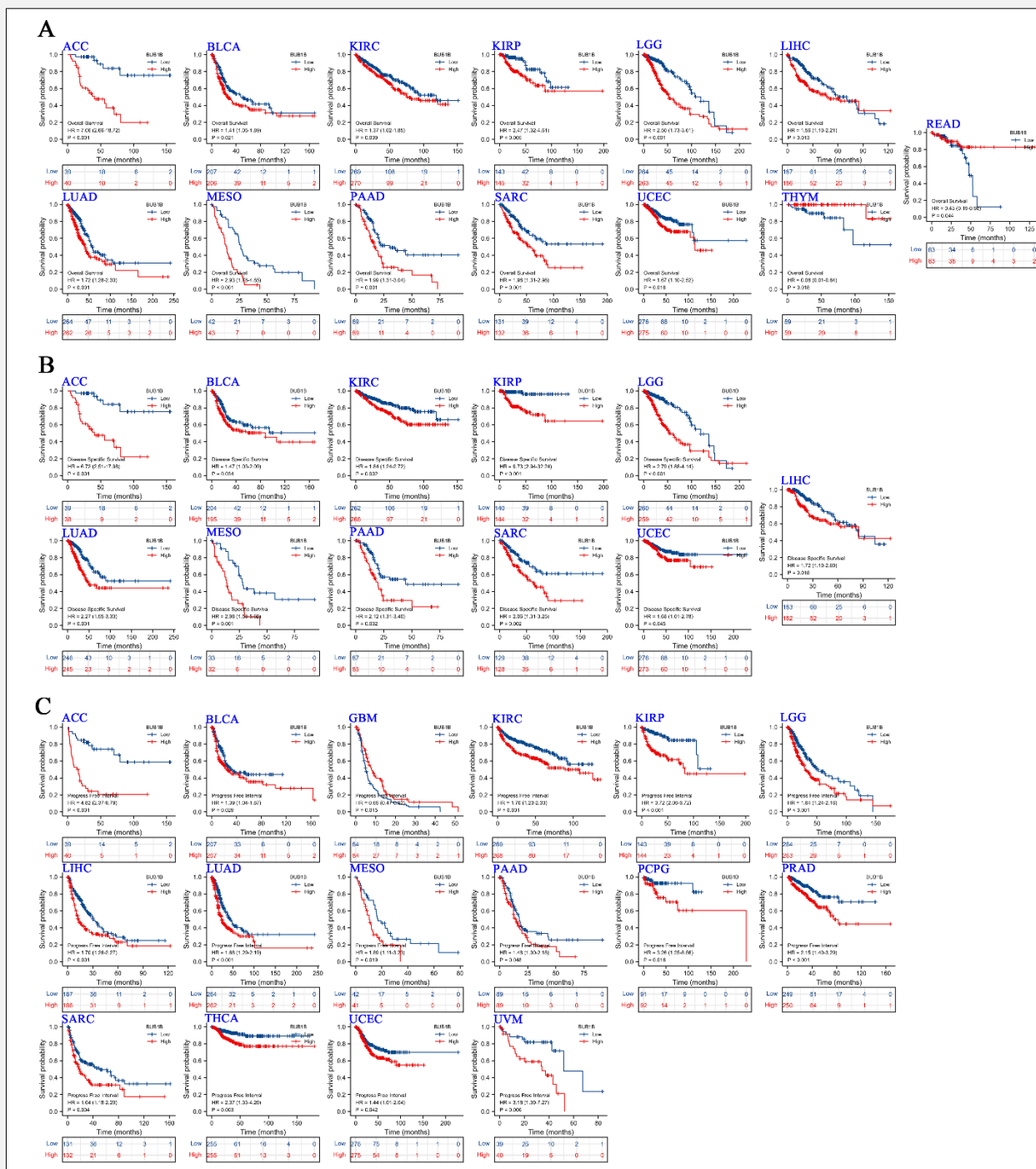


Figure S1.

BUB1B in Cancer: Pan-Cancer Analysis

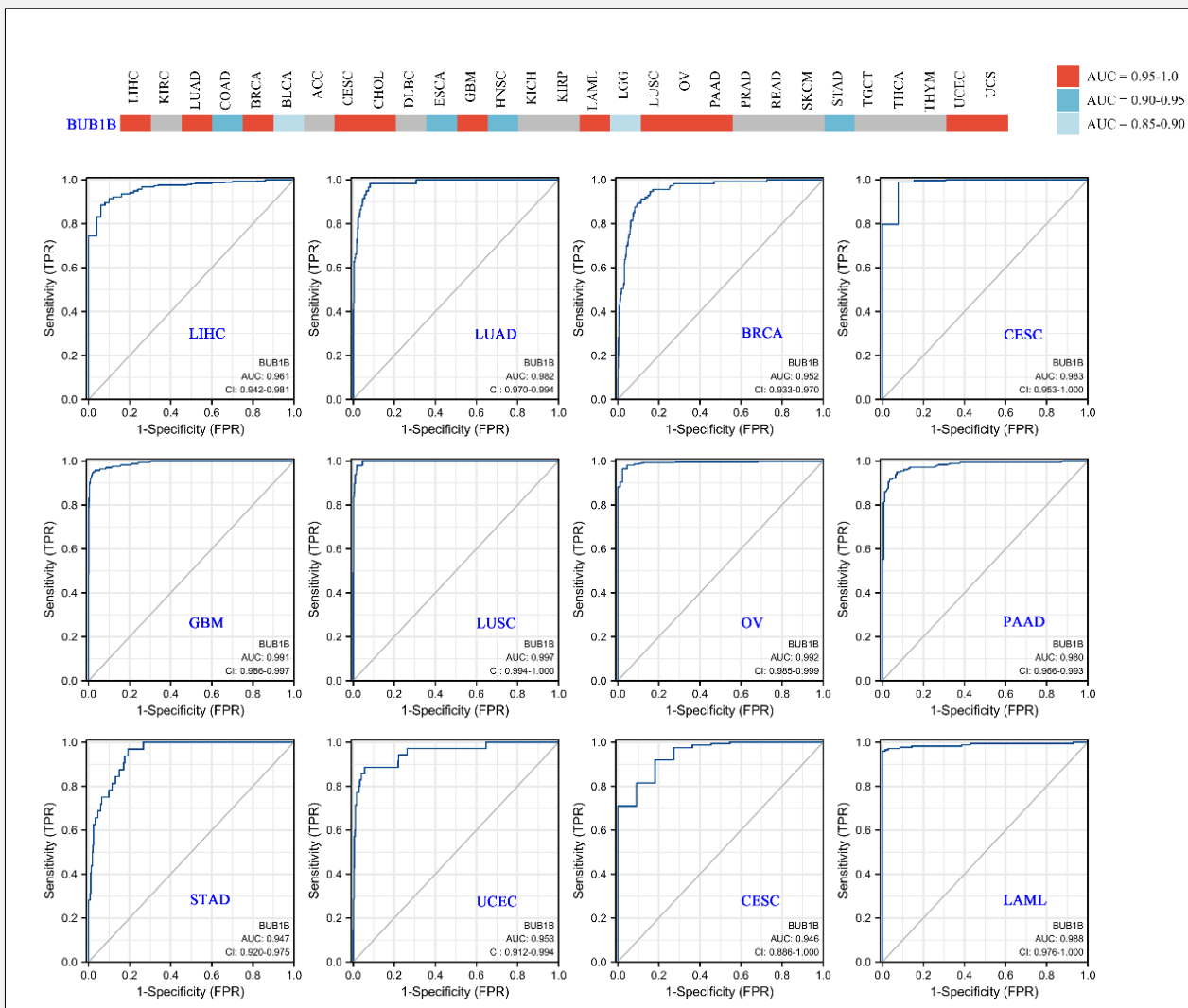


Figure S2.

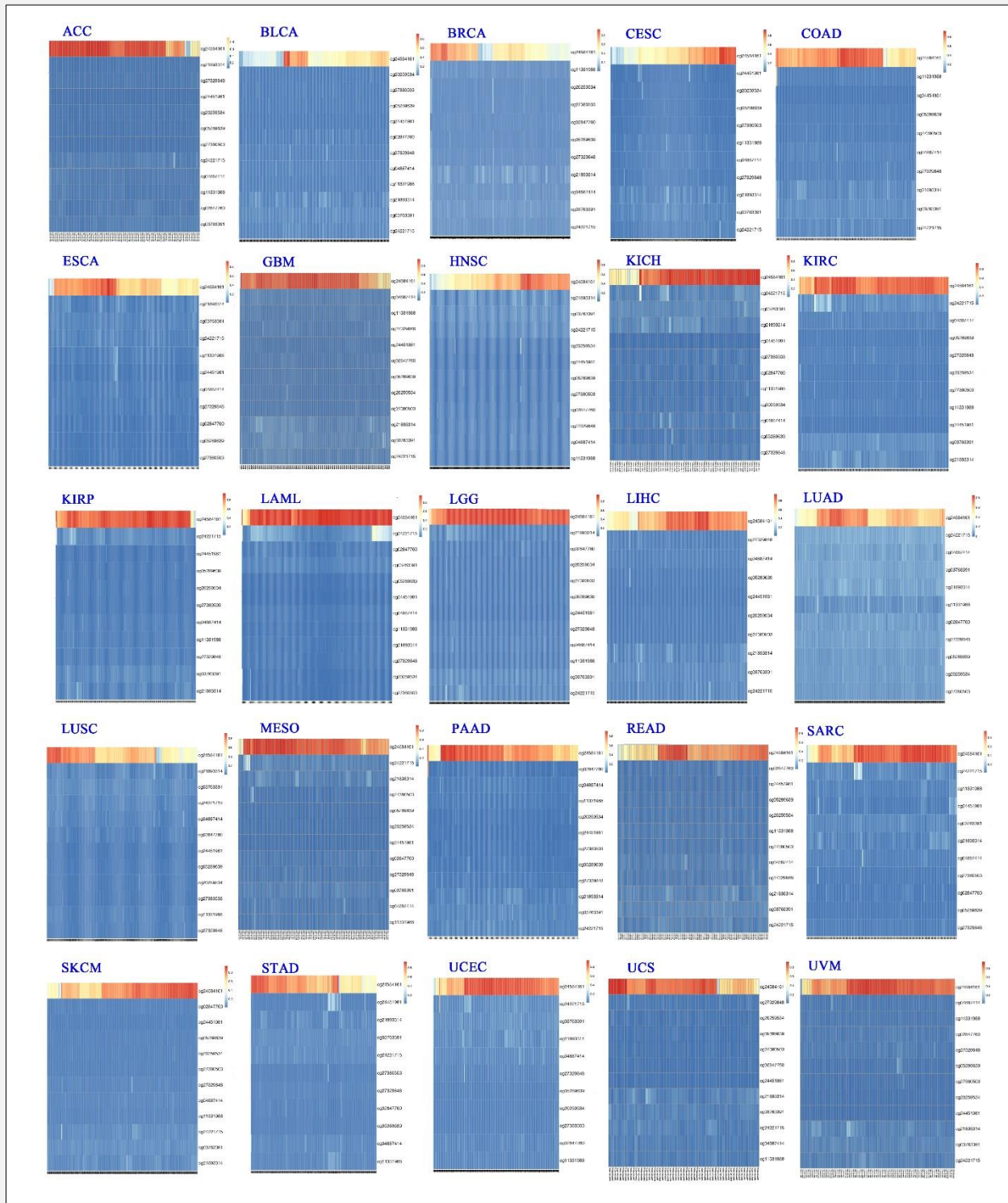


Figure S3.

BUB1B in Cancer: Pan-Cancer Analysis

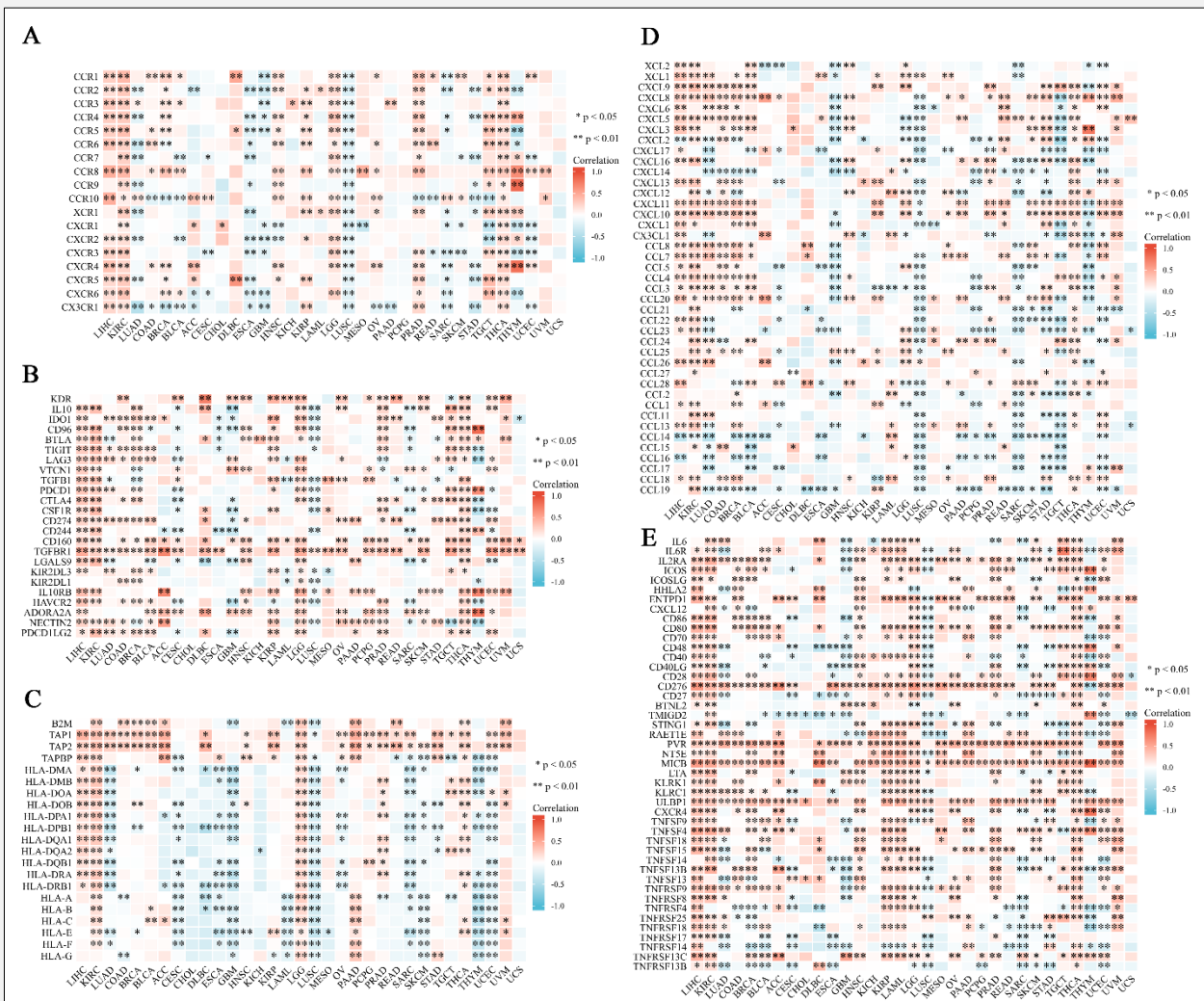


Figure S4.

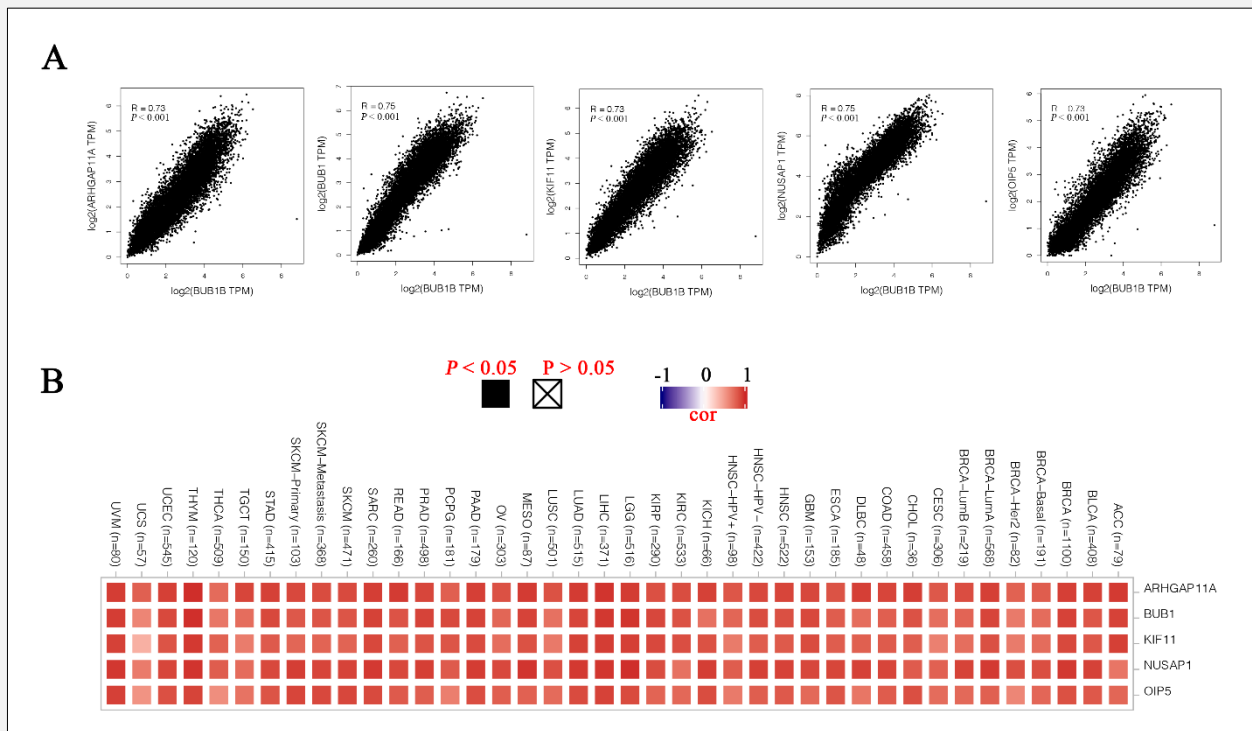


Figure S5.