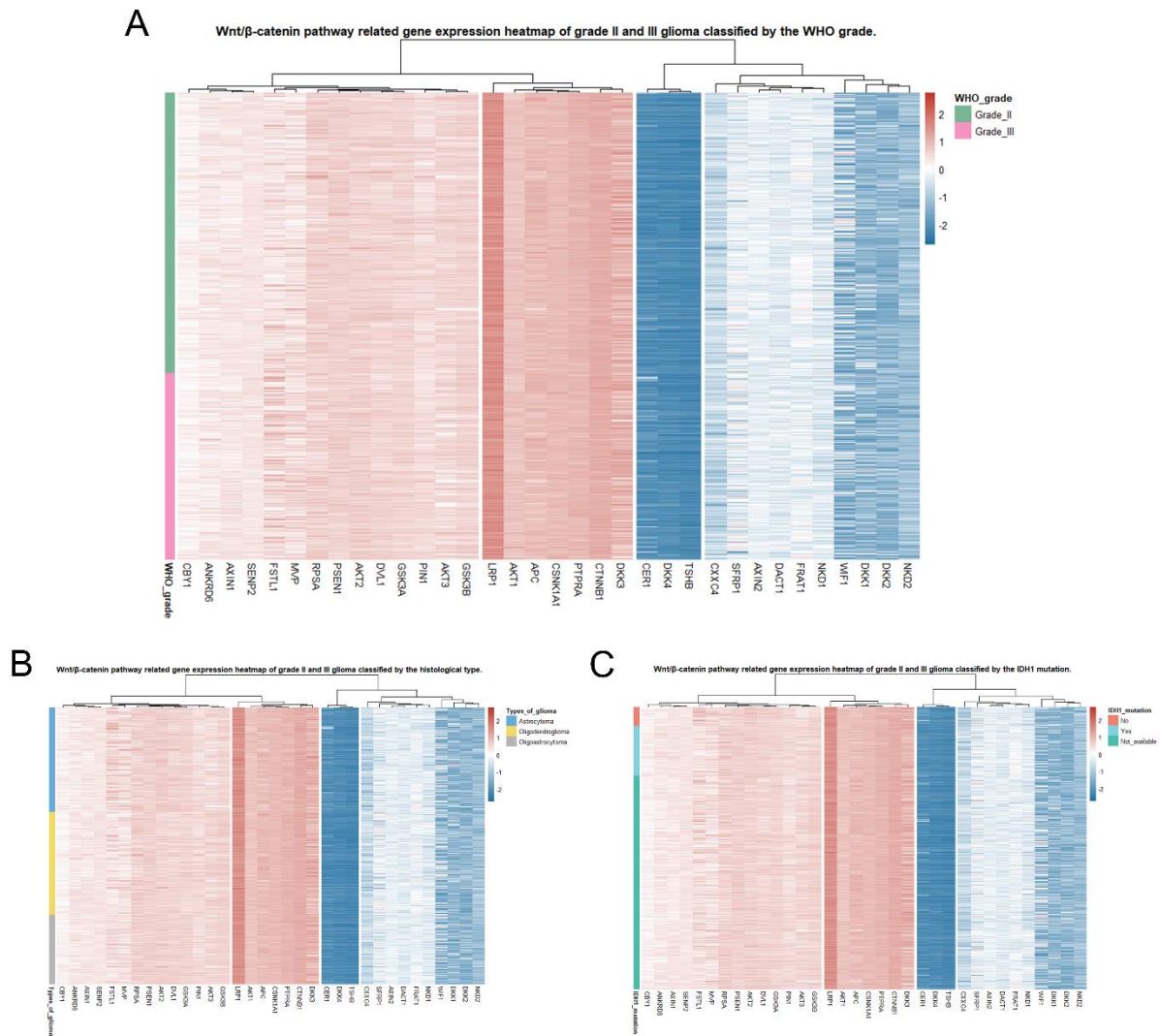


Supplementary Materials

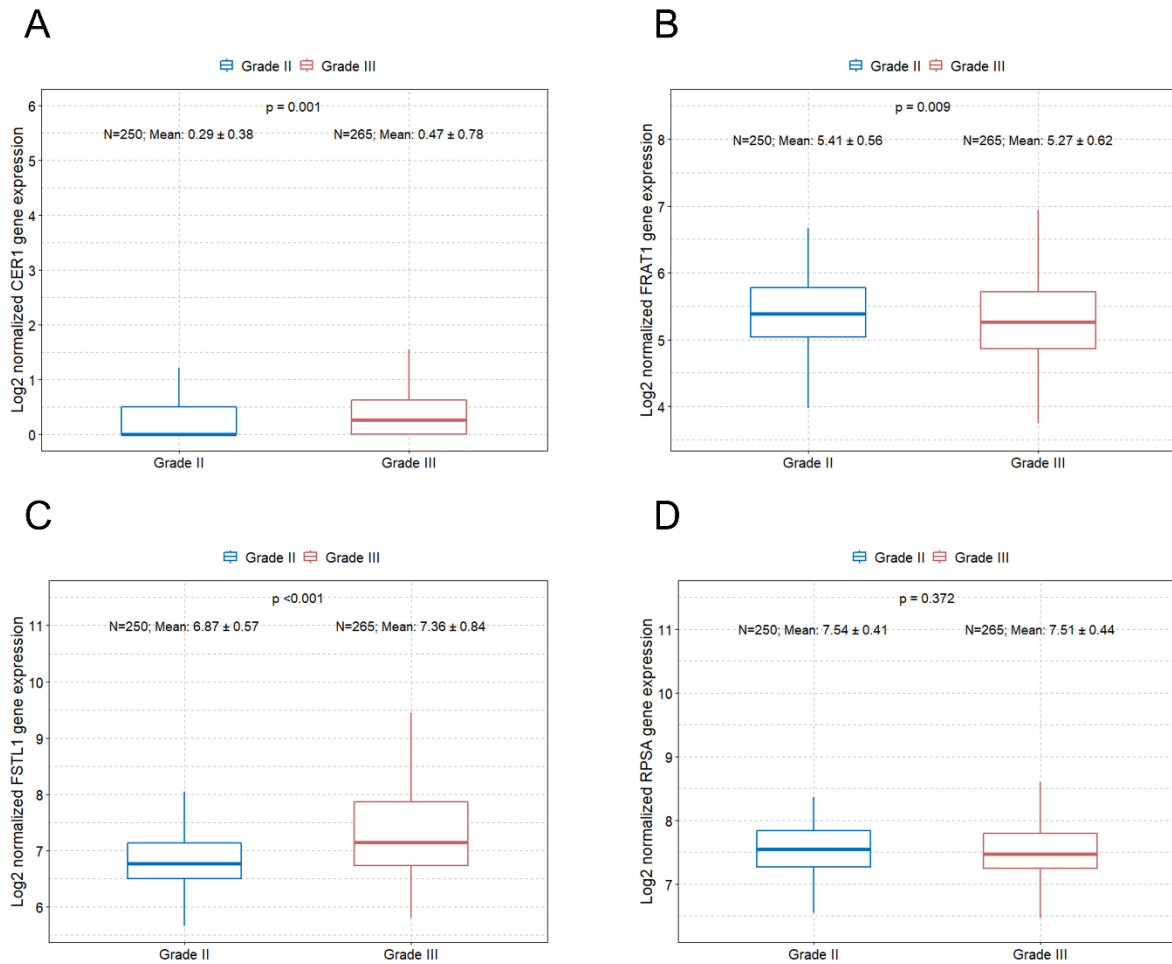
**Significant genes associated with mortality and disease progression in grade II
and III glioma**



Supplementary Figure S1. Heatmaps showing the expression patterns of 34 genes related to Wnt/ β -catenin signaling pathway in patients with grade II and III glioma. Gene expressions were log2 transformed and color density indicating levels of log2 fold changes are displayed. Red and blue represent up- and downregulated expression in grade II and III glioma, respectively: (A) Heatmap showing the expression patterns of 34 genes related to Wnt/ β -catenin signaling pathway in patients with grade II and III glioma classified by WHO grade; (B) heatmap showing the expression patterns of 34 genes related to Wnt/ β -catenin signaling pathway in patients with grade II and III glioma classified by histological types of glioma; and (C) heatmap showing the

expression patterns of 34 genes related to Wnt/ β -catenin signaling pathway in patients with grade II and III glioma classified by *IDH1* mutation status.

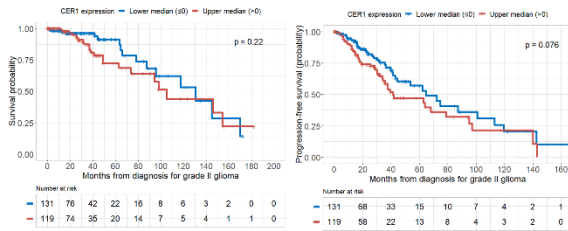
WHO, World Health Organization; IDH, isocitrate dehydrogenase.



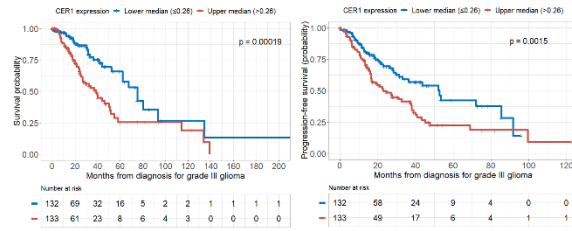
Supplementary Figure S3. Comparison of gene mRNA expressions between grade II and grade III glioma based on four significant genes related to Wnt/ β -catenin signaling pathway: (A) *CER1*; (B) *FRAT1*; (C) *FSTL1*; and (D) *RPSA*.

CER1, cerberus 1; *FRAT1*, FRAT regulator of WNT signaling pathway 1; *FSTL1*, follistatin like 1; *RPSA*, ribosomal protein SA.

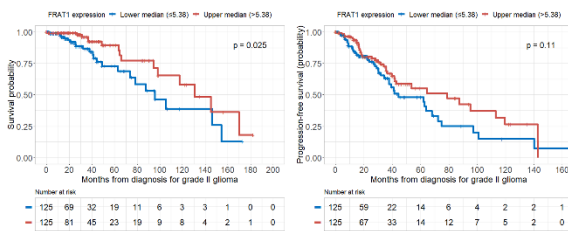
A. WHO grade II - CER1



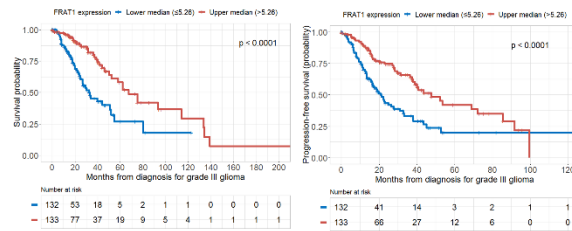
B. WHO grade III - CER1



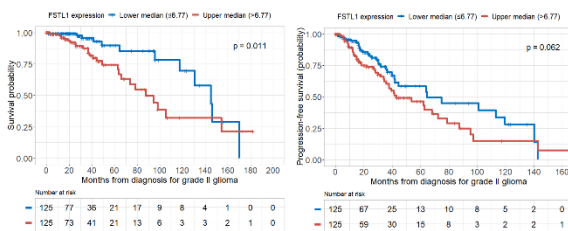
C. WHO grade II - FRAT1



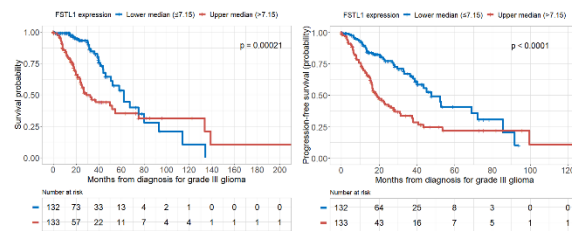
D. WHO grade III - FRAT1



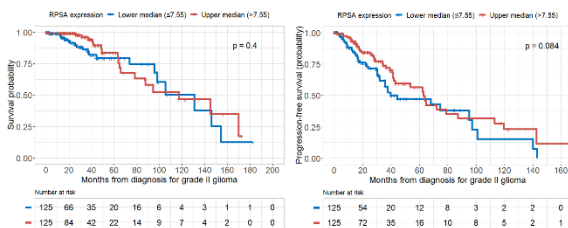
E. WHO grade II - FSTL1



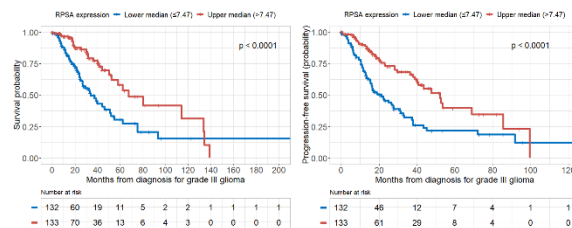
F. WHO grade III - FSTL1



G. WHO grade II - RPSA

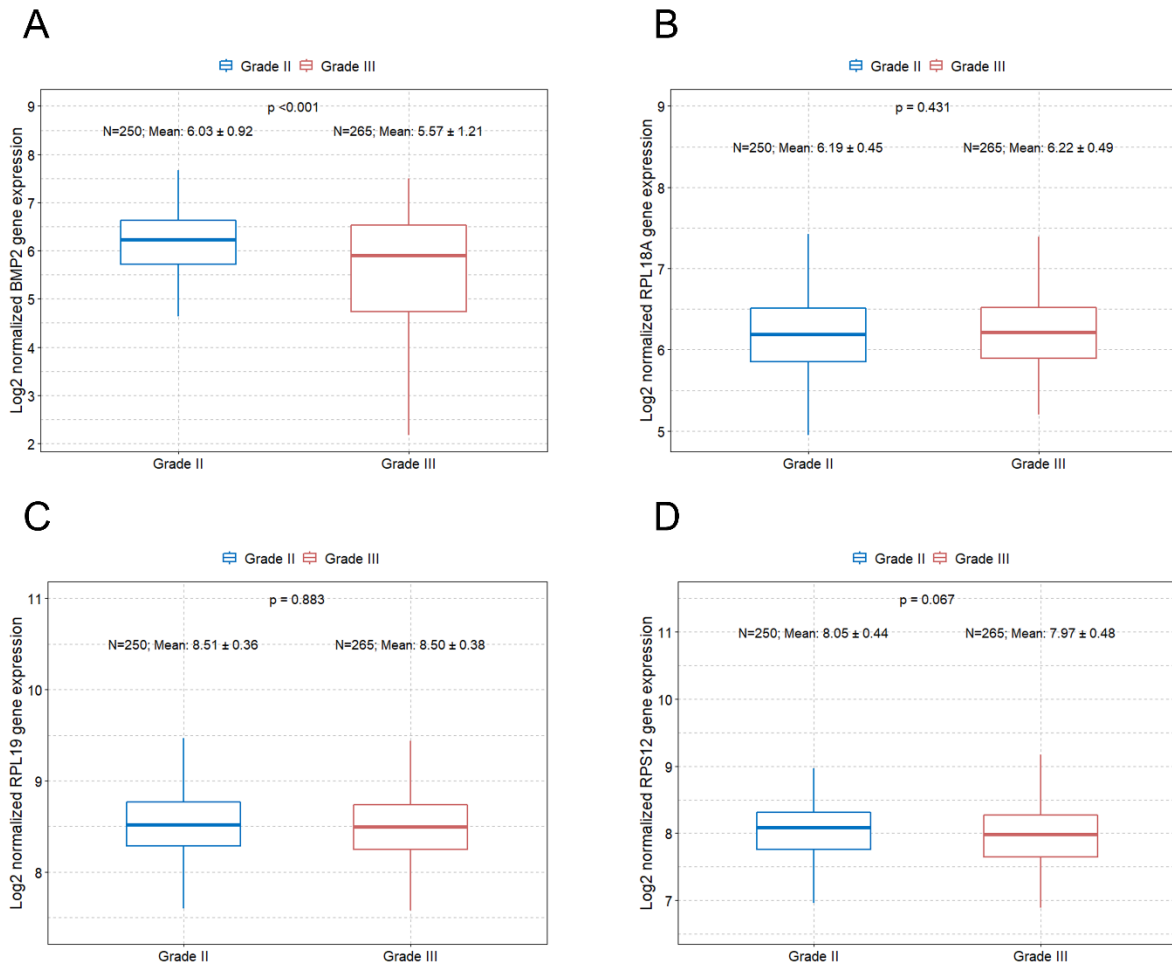


H. WHO grade III - RPSA



Supplementary Figure S4. Kaplan–Meier curves showing OS and PFS rates for the selected four significant genes related to Wnt/ β -catenin signaling pathway in glioma patients classified by WHO grade.

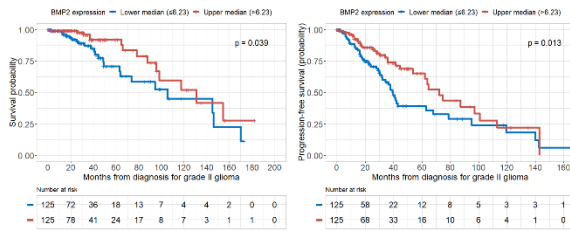
OS, overall survival; PFS, progression-free survival; WHO, World Health Organization.



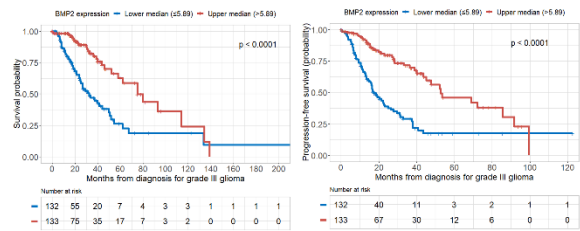
Supplementary Figure S5. Comparison of gene mRNA expressions between grade II and grade III glioma according to four additional significant genes: (A) *BMP2*; (B) *RPL18A*; (C) *RPL19*; and (D) *RPS12*.

BMP2, bone morphogenetic protein 2; *RPL18A*, ribosomal protein L18A; *RPL19*, ribosomal protein L19; *RPS12*, ribosomal protein S12.

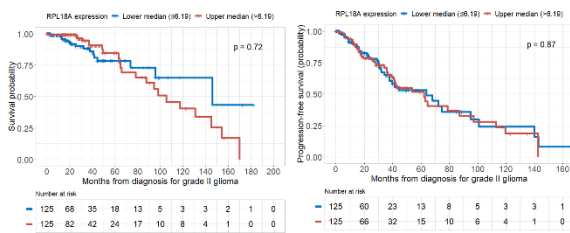
A. WHO grade II - BMP2



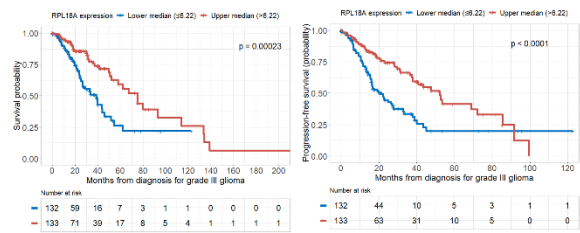
B. WHO grade III - BMP2



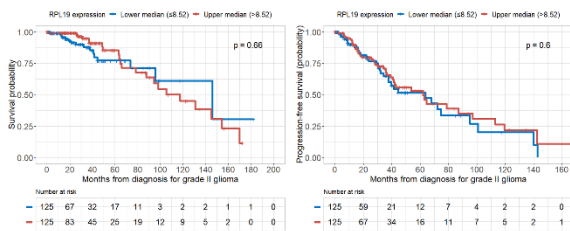
C. WHO grade II - RPL18A



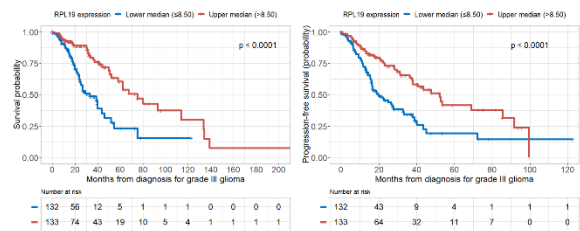
D. WHO grade III - RPL18A



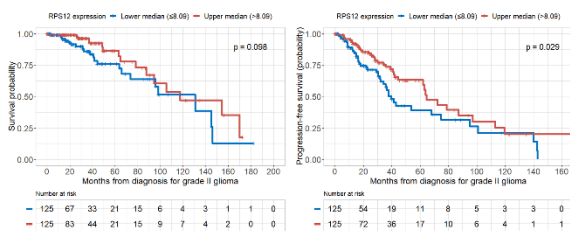
H. WHO grade II - RPL19



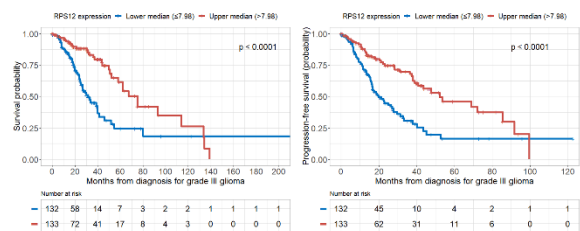
I. WHO grade III - RPL19



K. WHO grade II - RPS12



L. WHO grade III - RPS12



Supplementary Figure S6. Kaplan–Meier curves showing OS and PFS rates for additional four significant genes in glioma patients classified by WHO grade.

OS, overall survival; PFS, progression-free survival; WHO, World Health Organization.