

Table 1

Demographic and clinical characteristics of patients with low PSMB2 expression and high expression of glioma in TCGA

Characteristic	Low expression of PSMB2	High expression of PSMB2	p
n	348	348	
WHO grade, n (%)			< 0.001
G2	166 (26.1%)	58 (9.1%)	
G3	130 (20.5%)	113 (17.8%)	
G4	13 (2%)	155 (24.4%)	
IDH status, n (%)			< 0.001
WT	48 (7%)	198 (28.9%)	
Mut	298 (43.4%)	142 (20.7%)	
1p/19q codeletion, n (%)			< 0.001
codelet	168 (24.4%)	3 (0.4%)	
non-codelet	179 (26%)	339 (49.2%)	
Gender, n (%)			0.818
Female	151 (21.7%)	147 (21.1%)	
Male	197 (28.3%)	201 (28.9%)	
Age, n (%)			< 0.001
<=60	298 (42.8%)	255 (36.6%)	
>60	50 (7.2%)	93 (13.4%)	
OS event, n (%)			< 0.001
Alive	277 (39.8%)	147 (21.1%)	
Dead	71 (10.2%)	201 (28.9%)	
Age, median (IQR)	42 (33, 53)	51 (36, 62)	< 0.001

Table 2

The univariate and multivariate analyses of overall survival according to PSMB2 expression(n=695)

Characteristics	Total(N)	Univariate analysis		Multivariate analysis	
		Hazard ratio (95% CI)	P value	Hazard ratio (95% CI)	P value
WHO grade	634				
G2	223	Reference			
G3	243	2.999 (2.007-4.480)	<0.001	1.920 (1.253-2.945)	0.003
G4	168	18.615 (12.460-27.812)	<0.001	4.587 (2.707-7.772)	<0.001
IDH status	685				
WT	246	Reference			
Mut	439	0.117 (0.090-0.152)	<0.001	0.296 (0.198-0.442)	<0.001
Gender	695				
Female	297	Reference			
Male	398	1.262 (0.988-1.610)	0.062	1.210 (0.921-1.589)	0.171
Age	695				
<=60	552	Reference			
>60	143	4.668 (3.598-6.056)	<0.001	1.528 (1.122-2.081)	0.007
1p/19q codeletion	688				
code1	170	Reference			
non-code1	518	4.428 (2.885-6.799)	<0.001	1.315 (0.762-2.268)	0.326
Race	682				
Asian&Black or African American	46	Reference			
White	636	0.821 (0.502-1.344)	0.433		
PSMB2	695				
Low	347	Reference			

Characteristics	Total(N)	Univariate analysis		Multivariate analysis	
		Hazard ratio (95% CI)	P value	Hazard ratio (95% CI)	P value
High	348	5.950 (4.493-7.879)	<0.001	2.807 (1.484-5.310)	0.002

Table 3

Hallmark pathways enriched in high-risk groups and low-risk groups by using GSEA.

Description	NES	pvalue	p.adjust
HALLMARK_EPITHELIAL_MESENCHYMAL_TRANSITION	2.24384284	0.00101523	0.00451427
HALLMARK_E2F_TARGETS	2.06432984	0.00101626	0.00451427
HALLMARK_G2M_CHECKPOINT	2.13640963	0.00101626	0.00451427
HALLMARK_INTERFERON_GAMMA_RESPONSE	2.11858047	0.00101626	0.00451427
HALLMARK_ALLOGRAFT_REJECTION	1.96608531	0.00101729	0.00451427
HALLMARK_COMPLEMENT	1.63530836	0.00101729	0.00451427
HALLMARK_INFLAMMATORY_RESPONSE	1.87843062	0.00101729	0.00451427
HALLMARK_TNFA_SIGNALING_VIA_NFKB	1.81547429	0.00101729	0.00451427
HALLMARK_APOPTOSIS	1.59393617	0.00103093	0.00451427
HALLMARK_COAGULATION	1.64205619	0.00105042	0.00451427
HALLMARK_INTERFERON_ALPHA_RESPONSE	1.99139637	0.0010627	0.00451427
HALLMARK_IL6_JAK_STAT3_SIGNALING	1.94293231	0.00108342	0.00451427
HALLMARK_ANGIOGENESIS	2.06588071	0.00120919	0.00465073
HALLMARK_MYC_TARGETS_V1	1.48335192	0.00306435	0.01094411
HALLMARK_HYPOXIA	1.45464496	0.00508647	0.0169549
HALLMARK_GLYCOLYSIS	1.43563575	0.00814664	0.02545825
HALLMARK_KRAS_SIGNALING_UP	1.36032733	0.01930894	0.05679101
HALLMARK_IL2_STAT5_SIGNALING	1.35396592	0.02235772	0.06210479
HALLMARK_KRAS_SIGNALING_DN	1.71638608	0.04347826	0.11441648
HALLMARK_MITOTIC_SPINDLE	1.3012877	0.04679552	0.11698881
HALLMARK_PANCREAS_BETA_CELLS	1.47101135	0.05325444	0.12679628

Table 4

Relationship between PSMB2 mRNA expression and immune cell infiltration level

PSMB2	Cells	Correlation(Pearson)	P-value(Pearson)	Correlation(Spearman)	P-value(Spearman)
	aDC	0.278	<0.001	0.307	<0.001
	CD8 T cells	-0.230	<0.001	-0.232	<0.001
	DC	-0.150	<0.001	-0.211	<0.001
	Eosinophils	0.384	<0.001	0.401	<0.001
	iDC	0.234	<0.001	0.269	<0.001
	Macrophages	0.466	<0.001	0.501	<0.001
	Neutrophils	0.349	<0.001	0.383	<0.001
	NK CD56bright cells	-0.378	<0.001	-0.386	<0.001
	pDC	-0.487	<0.001	-0.488	<0.001
	T cells	0.234	<0.001	0.249	<0.001
	T helper cells	0.166	<0.001	0.172	<0.001
	Tcm	-0.236	<0.001	-0.239	<0.001
	Tem	-0.166	<0.001	-0.180	<0.001
	TFH	-0.239	<0.001	-0.232	<0.001
	Tgd	-0.142	<0.001	-0.142	<0.001
	Th2 cells	0.594	<0.001	0.596	<0.001
	TReg	-0.233	<0.001	-0.270	<0.001
	Mast cells	-0.120	0.002	-0.120	0.001
	Cytotoxic cells	0.102	0.007	0.115	0.002
	NK CD56dim cells	0.123	0.001	0.119	0.002
	NK cells	0.105	0.005	0.110	0.004
	Th1 cells	0.097	0.010	0.096	0.011
	Th17 cells	0.032	0.395	0.046	0.228
	B cells	0.035	0.362	0.045	0.233