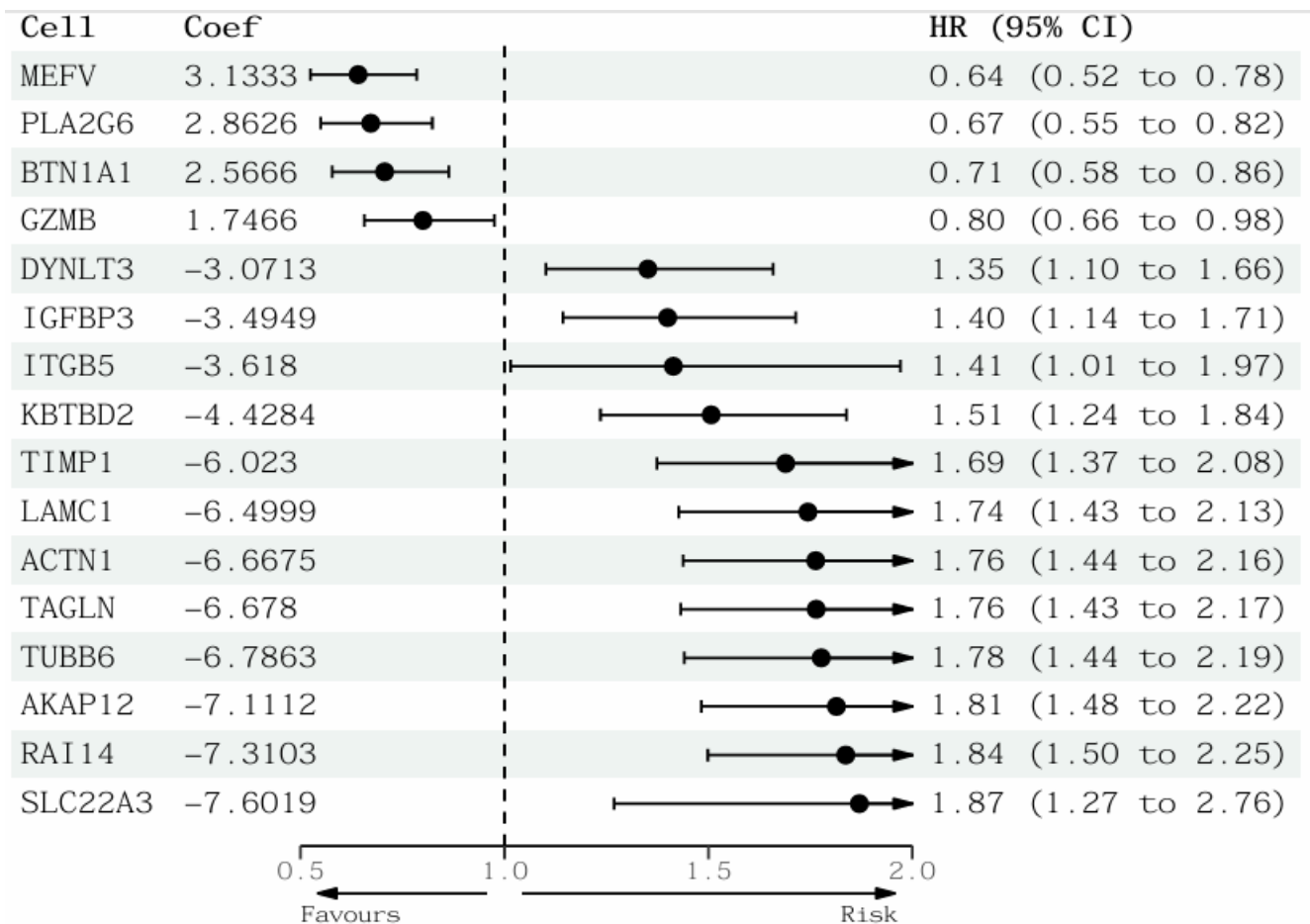
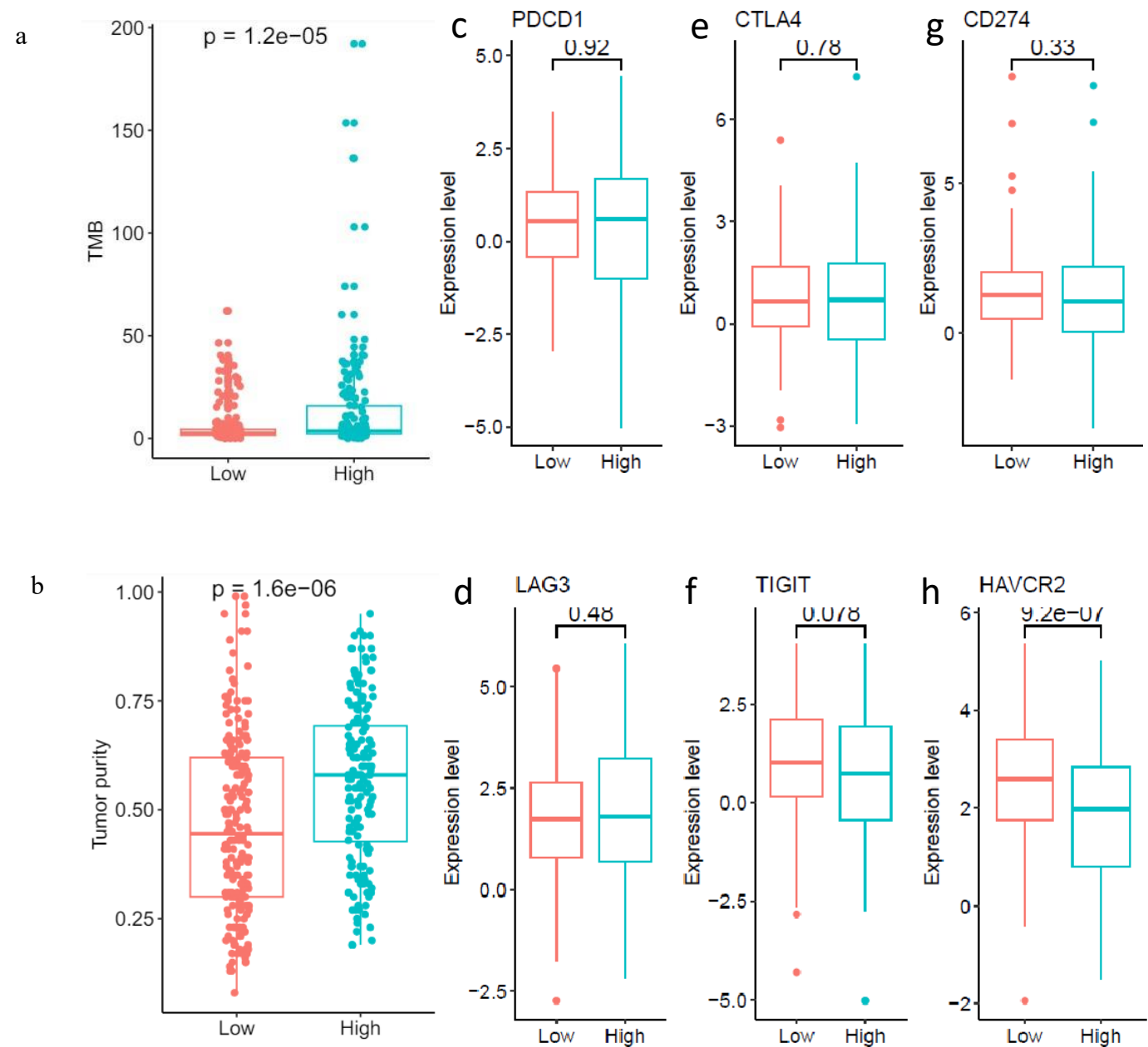
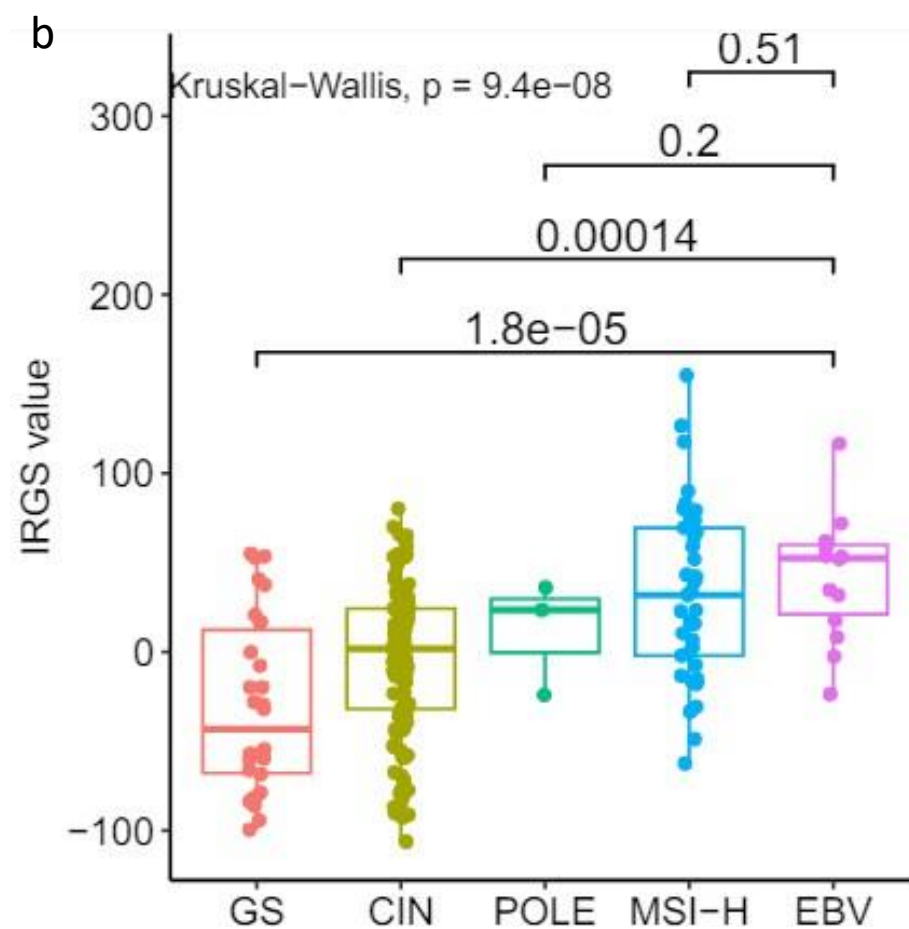
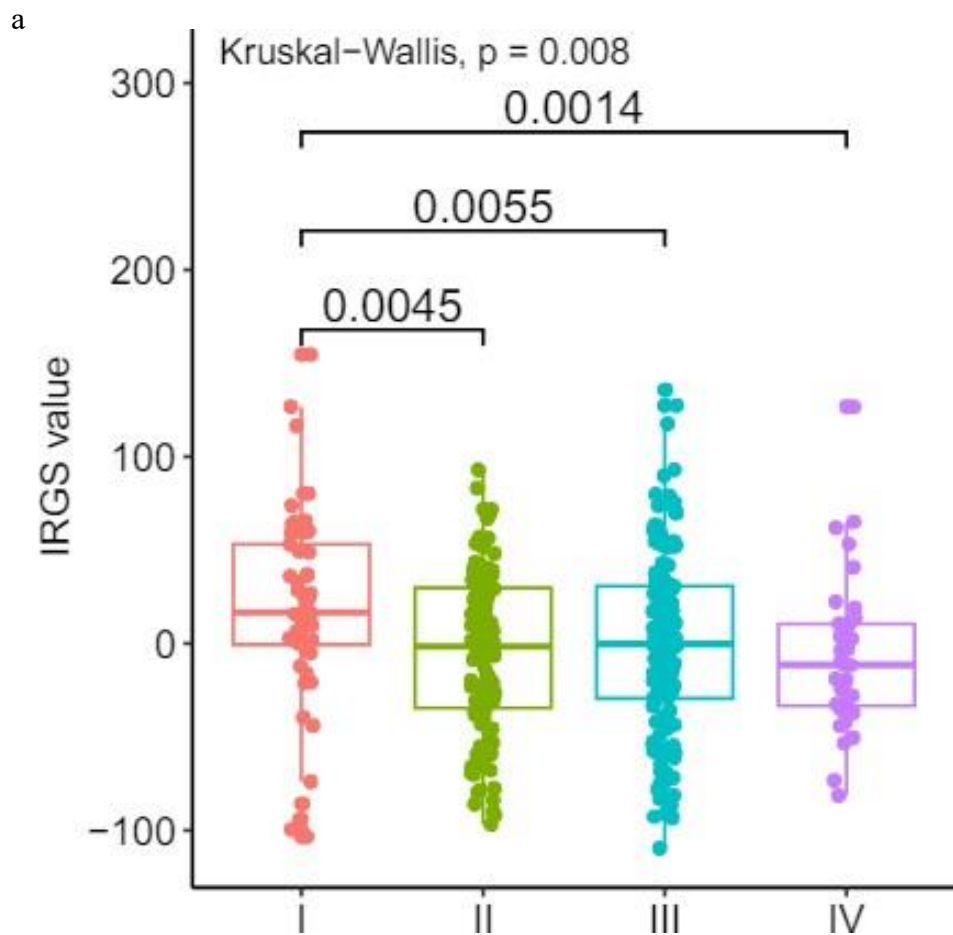




Supplementary Figure 1: Key prognostic genes identified for OS prediction. Cox and meta-analyses across eight cohorts identified 689 survival-associated gastric cancer genes ($p < 0.05$). LASSO regression refined these to 16 OS-linked genes.



Supplementary Figure 2: Correlation analysis between immunogen-related markers and IRGS score. Immunogen-related markers included a) TMB, b) tumor purity, c) PDCD1, d) LAG3, e) CTLA4, f) TIGIT, g) CD274, and h) HAVCE2.



Supplementary Figure 3: Analysis of IRGS scores in different subgroups. a) the comparison of IRGS levels with different clinical stages, and b) the comparison of IRGS levels with common markers of gastric cancer.

Supplementary Table 1: Independence analysis table-GSE84437

	Variables	Characteristic	Size	HR95CI.x	p.value.x	HR95CI.y	p.value.y	HR95CI	p.value
1	age	age(<60 vs. >=60)	474	0.57(0.43-0.74)	0.0001	0.57(0.43-0.76)	0.0001	0.58(0.44-0.76)	0.0001
2	sex	sex(Male vs. Female)	474	1.24(0.93-1.66)	0.15				
3	stage	stage(III/IV vs. I/II)	474	2.43(1.73-3.41)	0	2.37(1.67-3.35)	0	2.38(1.68-3.37)	0
4	lauren	lauren(Diffuse vs. Intestinal)	325	1.2(0.86-1.67)	0.276				
5	lauren	lauren(Mixed vs. Intestinal)	190	0.8(0.37-1.75)	0.58				
6	ebv	ebv(Positive vs. Negative)	205	0.28(0.09-0.89)	0.0313				
7	lym_scular_inv	lym_scular_inv(Positive vs. Negative)	472	1.4(1.07-1.82)	0.0127	1.11(0.84-1.47)	0.474	1.12(0.84-1.48)	0.437
8	perineural_inv	perineural_inv(Positive vs. Negative)	470	1.38(1-1.9)	0.0514	1.36(0.97-1.91)	0.0785	1.35(0.95-1.9)	0.0919
9	adjuvant_chemo	adjuvant_chemo(Yes vs. No)	472	1.38(0.95-2)	0.0878				
10	score	score(score vs. score)	948	1(0.99-1)	0.0244			1(0.99-1)	0.0489
11	risk	risk(High vs. Low)	474	0.51(0.33-0.8)	0.0029	0.53(0.34-0.83)	0.0053		

Supplementary Table 2: Independence analysis table-TCGA

	Variables	Characteristic	Size	HR95CI.x	p.value.x	HR95CI.y	p.value.y	HR95CI	p.value
1	age	age(<60 vs. >=60)	385	0.66(0.46-0.94)	0.0233	0.6(0.42-0.86)	0.0061	0.56(0.39-0.81)	0.0021
2	sex	sex(Male vs. Female)	388	1.21(0.86-1.7)	0.262				
3	stage	stage(III/IV vs. I/II)	388	2.1(1.49-2.96)	0	2.05(1.45-2.89)	0	2.13(1.51-3)	0
4	msi_status	msi_status(MSI-H vs. MSS)	239	0.72(0.42-1.23)	0.229				
5	score	score(score vs. score)	776	0.99(0.99-1)	0.0003			0.99(0.99-1)	0.0001
6	risk	risk(High vs. Low)	388	0.61(0.44-0.85)	0.0036	0.61(0.44-0.85)	0.004		