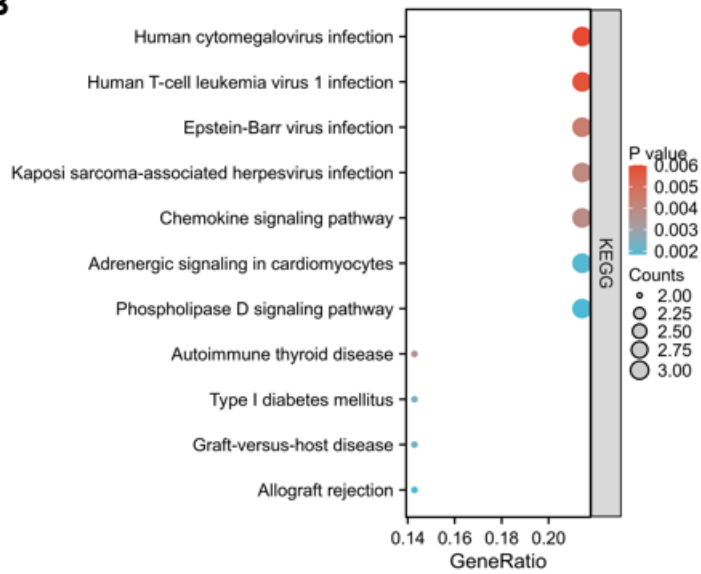**A**

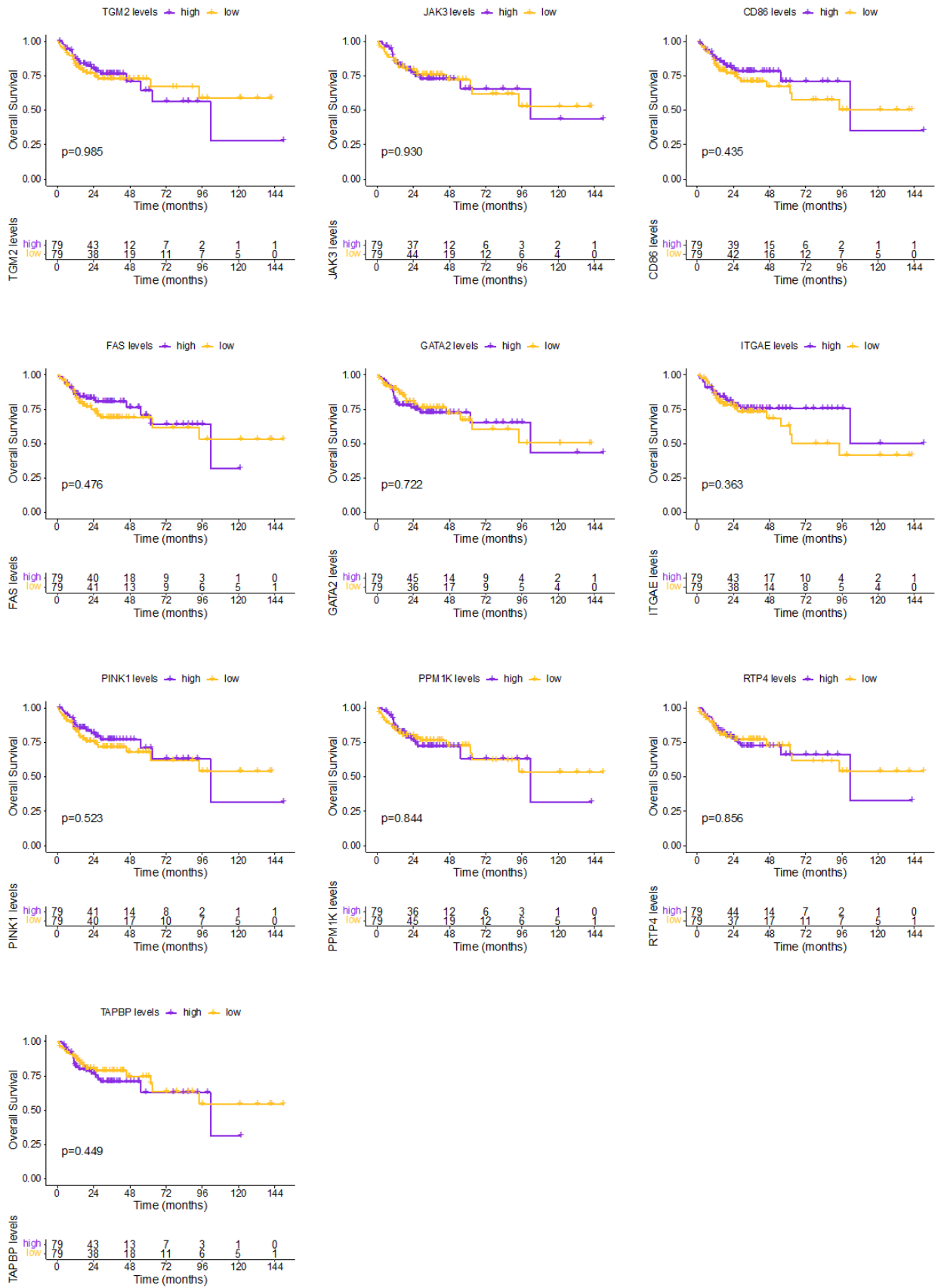Module genes of TCGA   Module genes of GEO
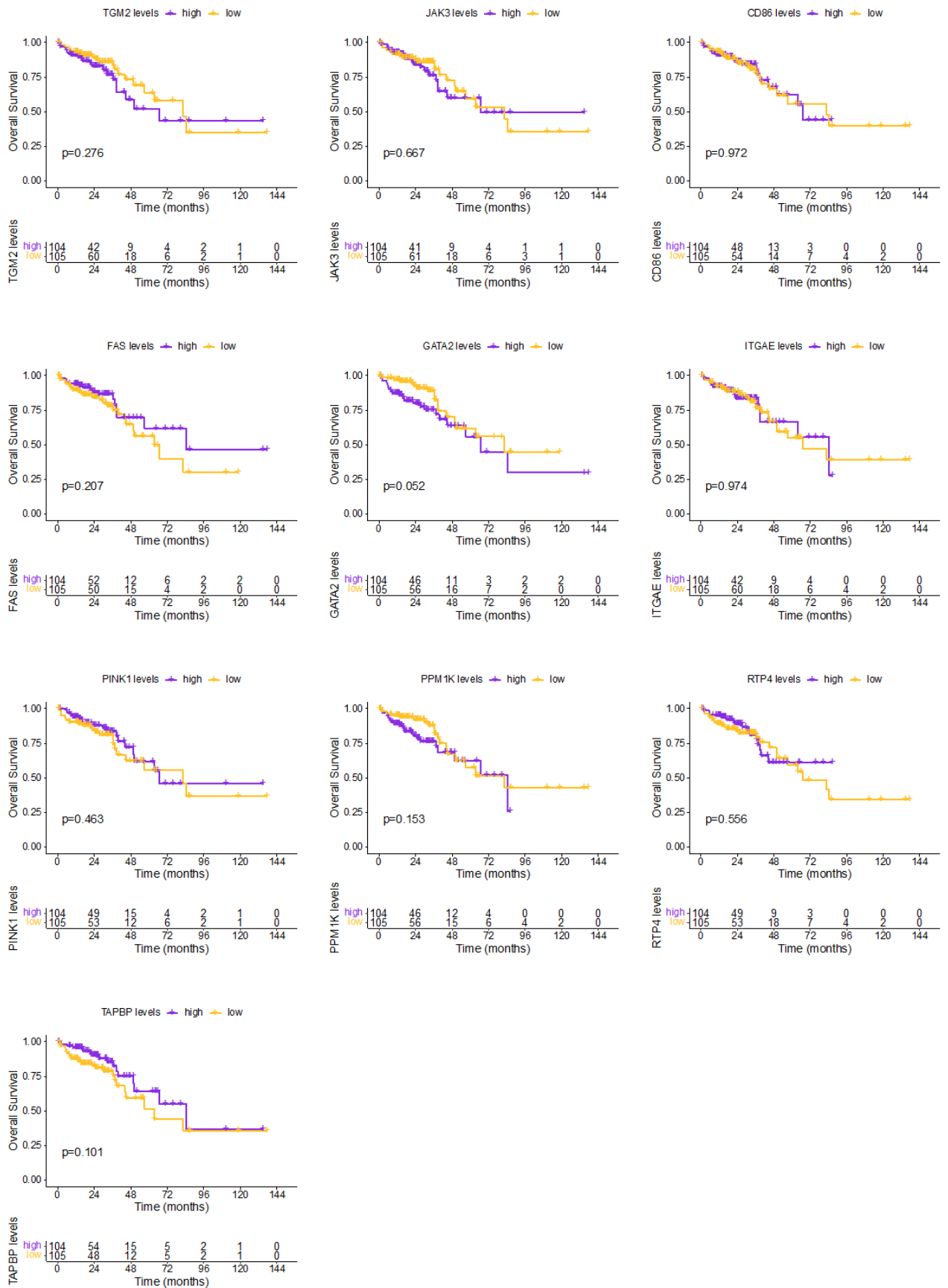
3180   36   2534

B

Supplementary Figure 1 A: The intersection of genes within the KRAS mutation-related modules from both the TCGA and GSE87211 datasets; B: KEGG functional enrichment of 36 KRAS mutation-related genes.

Supplementary Figure 2 Kaplan-Meier survival analysis for overall survival (OS) in a cohort of 158 individuals with KRAS mutant colon cancer.

Supplementary Figure 3 Kaplan-Meier survival analysis for overall survival (OS) in a cohort of 209 individuals with KRAS wild-type colon cancer.
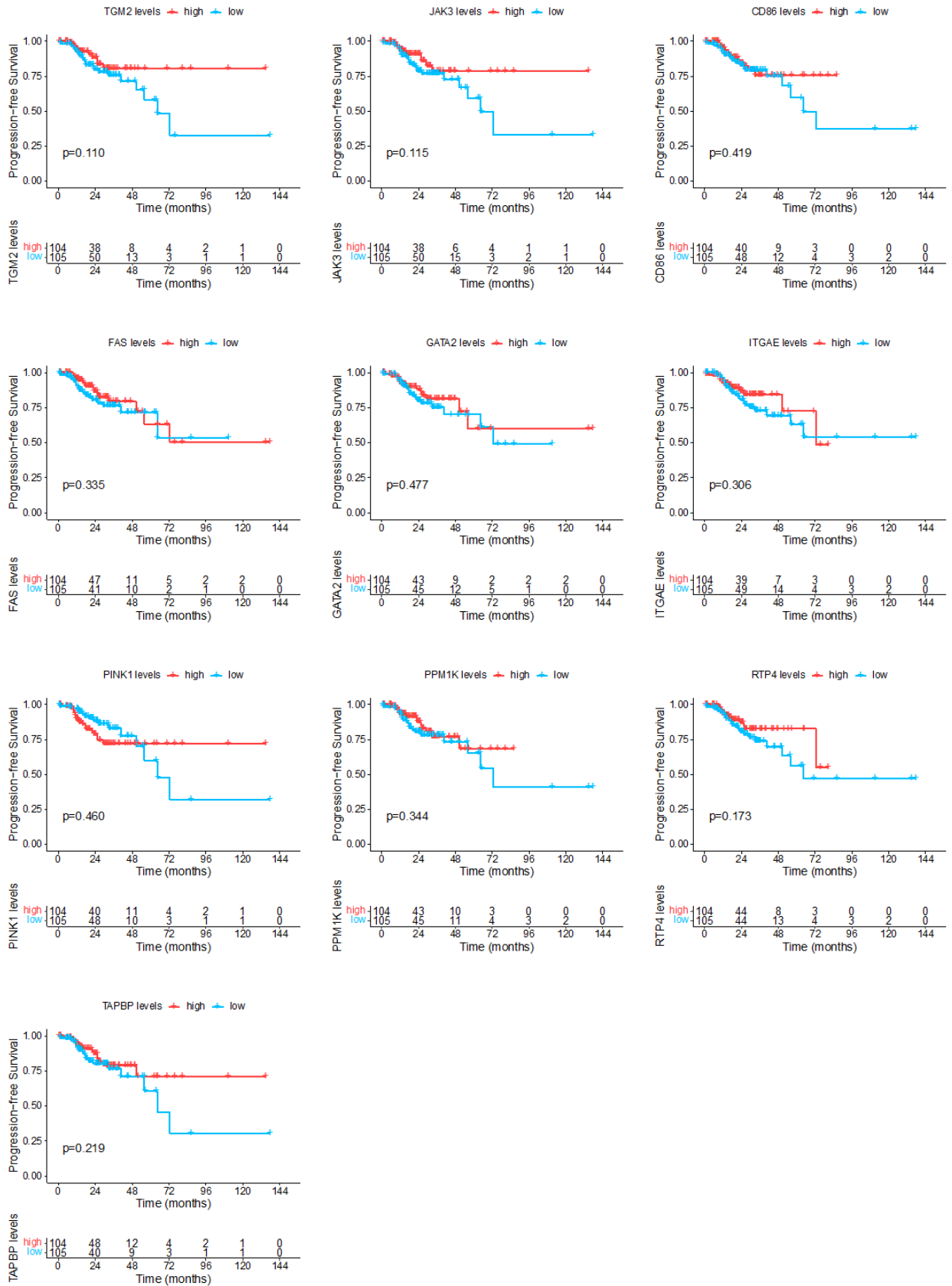
Supplementary Figure 4 Kaplan-Meier survival analysis for progression-free survival in a cohort of 209 individuals with KRAS wild-type colon cancer.
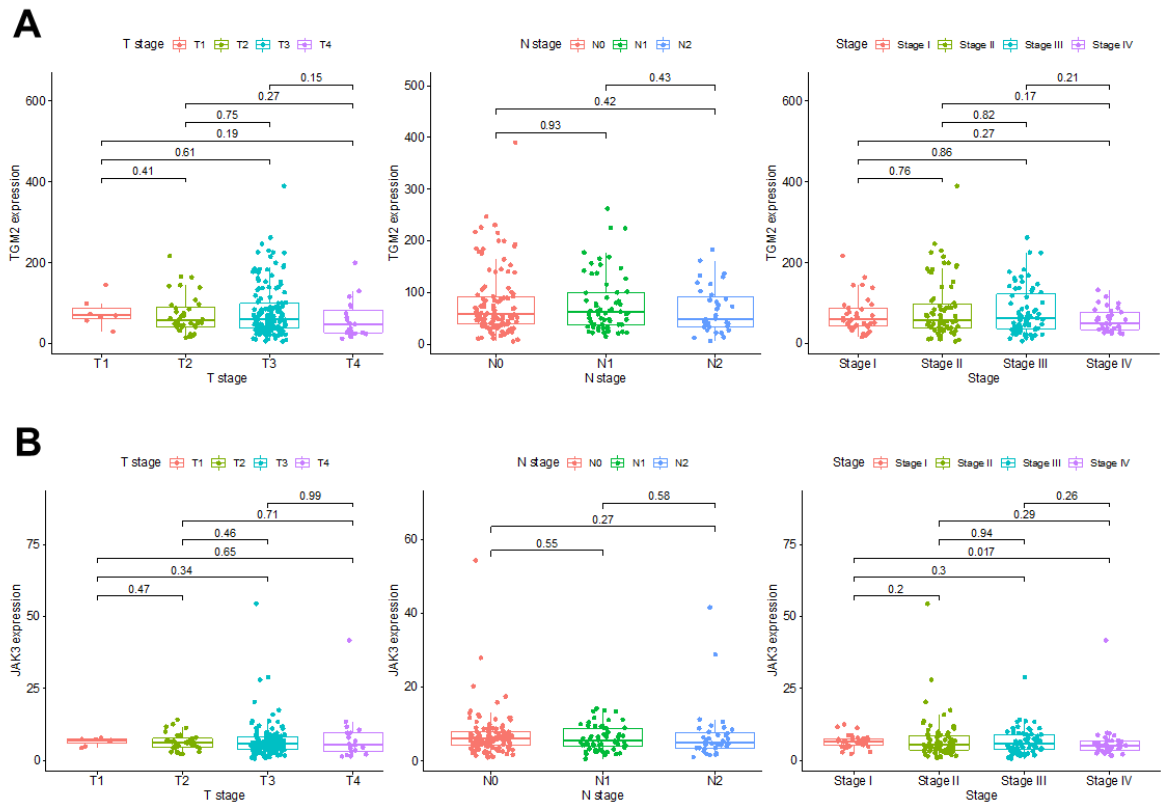
Supplementary Figure 5 Association between expression of TGM2 (A) and JAK3 (B) and clinicopathological characteristics in patients with KRAS wild-type colon cancer.

Supplementary Table 1 Chi-square tests between JAK3 level and clinicopathological characteristic in entire patient cohort

Clinical parameters	JAK3 expression level		χ^2	P value
	Low (*n* = 44)	High (*n* = 46)		
Age			0.002	0.962
≤ 60	17 (38.64%)	18 (39.13%)		
> 60	27 (61.36%)	28 (60.87%)		
Gender			5.361	**0.021***
Female	17 (38.64%)	29 (63.04%)		
Male	27 (61.36%)	17 (36.96%)		
Histologic grade			3.271	0.070
Grade II	32 (72.73%)	25 (54.35%)		
Grade III	12 (27.27%)	21 (45.65%)		
Tumor size			2.185	0.139
< 5 cm	19 (43.18%)	13 (28.26%)		
≥ 5 cm	25 (56.82%)	33 (71.74%)		
Lympho-vascular invasion			0.356	0.551
No	28 (63.64%)	32 (69.57%)		
Yes	16 (36.36%)	14 (30.43%)		
Perineural invasion			0.206	0.650
No	37 (84.09%)	37 (80.43%)		
Yes	7 (15.91%)	9 (19.57%)		
Pathologic T stage			1.076	0.300
T2-T3	22 (50.00%)	18 (39.13%)		
T4a-T4b	22 (50.00%)	28 (60.87%)		
Pathologic N stage			2.482	0.115
N0	31 (70.45%)	25 (54.35%)		
N1-2	13 (29.55%)	21 (45.65%)		
Clinical M stage			0.217	0.641
M0	43 (97.73%)	43 (93.48%)		
M1	1 (2.27%)	3 (6.52%)		
Disease stage			3.920	0.058
Stage I & II	31 (70.45%)	23 (50.00%)		
Stage III & IV	13 (29.55%)	23 (50.00%)		
CD8 positive rate, *n*			2.690	0.101
< 5%	33 (75.00%)	27 (58.70%)		
≥ 5%	11 (25.00%)	19 (41.30%)		

PD-L1 positive rate, n				0.305	0.581
< 5%	32 (72.73%)	31 (67.39%)			
≥ 5%	12 (27.27%)	15 (32.61%)			
PD-1 positive rate, n				3.169	0.075
< 5%	36 (81.82%)	30 (65.22%)			
≥ 5%	8 (18.18%)	16 (34.78%)			
KRAS mutant status				1.500	0.221
Wild type	33 (75.00%)	29 (63.04%)			
Mutation	11 (25.00%)	17 (36.96%)			

Supplementary Table 2 Chi-square tests between JAK3 level and clinicopathological characteristic in KRAS mutant patients

Clinical parameters	JAK3 expression level		P value
	Low ($n = 11$)	High ($n = 17$)	
Age			1.000
≤ 60	5 (45.45%)	8 (47.06%)	
> 60	6 (54.55%)	9 (52.94%)	
Gender			0.120
Female	3 (27.27%)	11 (64.71%)	
Male	8 (72.73%)	6 (35.29%)	
Histologic grade			0.226
Grade II	9 (81.82%)	9 (52.94%)	
Grade III	2 (18.18%)	8 (47.06%)	
Tumor size			0.701
< 5 cm	5 (45.45%)	6 (35.29%)	
≥ 5 cm	6 (54.55%)	11 (64.71%)	
Lympho-vascular invasion			1.000
No	8 (72.73%)	13 (76.47%)	
Yes	3 (27.27%)	4 (23.53%)	
Perineural invasion			0.619
No	10 (90.91%)	13 (76.47%)	
Yes	1 (9.09%)	4 (23.53%)	
Pathologic T stage			0.441
T2-T3	6 (54.55%)	6 (35.29%)	
T4a-T4b	5 (45.45%)	11 (64.71%)	
Pathologic N stage			0.435
N0	8 (72.73%)	9 (52.94%)	
N1-2	3 (27.27%)	8 (47.06%)	
Clinical M stage			1.000
M0	11 (100.00%)	16 (94.12%)	
M1	0 (0.00%)	1 (5.88%)	
Disease stage			0.253
Stage I & II	8 (72.73%)	8 (47.06%)	
Stage III & IV	3 (27.27%)	9 (52.94%)	
CD8 positive rate, n			1.000
< 5%	8 (72.73%)	12 (70.59%)	
≥ 5%	3 (27.27%)	5 (29.41%)	

PD-L1 positive rate, n			1.000
< 5%	8 (72.73%)	11 (64.71%)	
≥ 5%	3 (27.27%)	6 (35.29%)	
PD-1 positive rate, n			1.000
< 5%	7 (63.64%)	12 (70.59%)	
≥ 5%	4 (36.36%)	5 (29.41%)	