

A

PGR

Analysis Type by Cancer	Cancer vs. Normal	Cancer vs. Cancer				
		Cancer Histology	Multi-cancer			
Bladder Cancer	1					
Brain and CNS Cancer	1	3	3			
Breast Cancer	3	3	4			
Cervical Cancer	1					
Colorectal Cancer	8	2	1			
Esophageal Cancer			1			
Gastric Cancer	1	2	1			
Head and Neck Cancer	2		1			
Kidney Cancer		2	2			
Leukemia			1			
Liver Cancer			1			
Lung Cancer	4		2			
Lymphoma			1			
Melanoma						
Myeloma						
Other Cancer	8	2	2			
Ovarian Cancer	2	5	4			
Pancreatic Cancer			1			
Prostate Cancer	2		1			
Sarcoma		4	2			
Significant Unique Analyses	3	33	23	21	8	12
Total Unique Analyses	406	683				



Gene rank percentile (%)

B

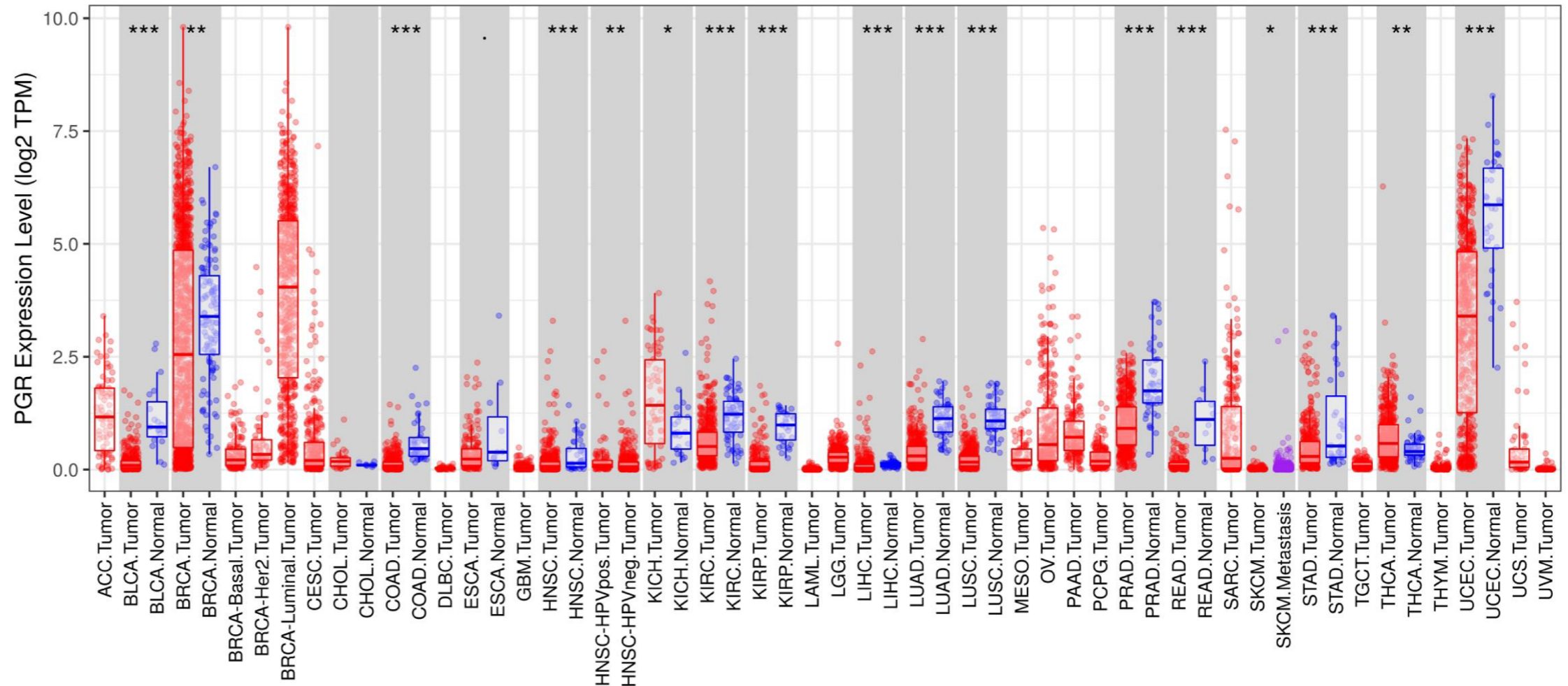


Figure S1 PGR expression levels in different cancer and normal tissues. (A) Oncomine database was used to compare PGR expression levels in different cancers with normal tissues. (B) The comparison of PGR expression levels in multiple cancer types and normal tissues by the TIMER database (*P<0.05, **P<0.01, ***P<0.001).

Table S1 PGR expression in cancers vs. normal tissue in Oncomine database

Cancer	Cancer type	P value	Fold change	Rank (%)	Sample	Reference (PMID)
Brain and CNS	Desmoplastic Medulloblastoma	1.96E-4	2.381	1%	62	AL137566
	Medulloblastoma	3.94E-5	5.526	2%	85	2328727
	Mixed Glioma	1.05E-5	1.511	2%	38	8889549
Breast	Breast Cancer	2.11E-6	4.305	1%	288	8889549
	Breast Cancer	1.56E-4	3.385	1%	76	8889549
	Mucinous Breast Carcinoma	1.41E-4	5.542	1%	336	AL137566
	Breast Cancer	8.18E-19	3.287	1%	341	31598691
	Mixed Lobular and Ductal Breast Carcinoma	7.52E-4	5.431	2%	593	31598691
	Invasive Ductal and Lobular Carcinoma	3.09E-4	7.096	5%	593	31598691
	Breast Cancer	2.35E-31	3.455	3%	1911	AL137566
	Tubular Breast Carcinoma	6.86E-7	1.617	5%	2136	31598691
	Breast Cancer	3.33E-4	2.442	10%	917	AL137566
Colorectal	Rectal Adenocarcinoma	8.19E-4	1.595	2%	154	AL137566
	Rectosigmoid Adenocarcinoma	1.49E-4	2.480	2%	237	31598691
Gastric	Diffuse Gastric Adenocarcinoma	4.98E-6	3.453	3%	43	AL137566
	Diffuse Gastric Adenocarcinoma	5.33E-4	1.871	4%	200	AL137566
Ovarian	Ovarian Endometrioid Adenocarcinoma	1.09E-5	3.984	1%	113	2328727
	Ovarian Endometrioid Adenocarcinoma	1.80E-4	2.946	1%	241	31598691
	Borderline Ovarian Surface Epithelial-Stromal Tumor	3.87E-13	8.160	1%	90	AL137566
	Borderline Ovarian Surface Epithelial-Stromal Tumor	9.61E-5	1.527	3%	39	31598691
	Borderline Ovarian Surface Epithelial-Stromal Tumor	5.73E-11	8.273	2%	295	AL137566
Prostate	Prostate Cancer	1.80E-10	1.889	8%	1911	AL137566

PGR, progesterone receptor gene; CNS, central nervous system.

Table S2 Correlation between PGR expression and prognosis of different cancers in Prognoscan database

Cancer type	Dataset	Endpoint	P-value	Hazard ratio (95% CI)
Bladder cancer	GSE5287 (n=30)	OS	0.866906	1.18 [0.17–7.98]
	GSE13507 (n=165)	OS	0.610353	1.53 [0.30–7.82]
Blood cancer	GSE12417-GPL96 (n=163)	OS	0.829778	0.89 [0.30–2.63]
	GSE8970 (n=34)	OS	0.081255	1.37 [0.96–1.96]
	GSE2658 (n=559)	DSS	0.377941	0.90 [0.72–1.13]
Brain cancer	GSE4271-GPL96 (n=77)	OS	0.680079	0.93 [0.65–1.33]
	GSE7696	OS	0.826305	1.40 [0.07–29.12]
	GSE16581 (n=67)	OS	0.900187	1.08 [0.34–3.40]
Breast cancer	GSE12276 (n=204)	RFS	0.000004	0.84 [0.78–0.91]
	GSE6532-GPL570 (n=87)	RFS	0.020421	0.84 [0.73–0.97]
	GSE1379 (n=60)	RFS	0.018115	0.83 [0.72–0.97]
	GSE1456-GPL97 (n=159)	RFS	0.017101	0.74 [0.57–0.95]
	GSE6532-GPL570 (n=87)	DMFS	0.015345	0.71 [0.53–0.94]
	GSE9195 (n=77)	DMFS	0.033456	0.76 [0.59–0.98]
	GSE11121(n=200)	DMFS	0.005517	0.79 [0.67–0.93]
	GSE2034 (n=280)	DMFS	0.002136	0.83 [0.73–0.93]
	E-TABM-158 (n=117)	DMFS	0.296147	1.22 [0.84–1.79]
	GSE1456-GPL96 (n=159)	OS	0.042492	0.80 [0.64–0.99]
Colorectal cancer	GSE7390 (n=198)	OS	0.001387	0.84 [0.76–0.94]
	GSE12945 (n=62)	OS	0.252414	7.96 [0.23–277.96]
	GSE17536 (n=177)	DSS	0.664883	0.61 [0.06–5.81]
Eye cancer	GSE17537 (n=55)	OS	0.559584	0.52 [0.06–4.67]
	GSE22138 (n=63)	DMFS	0.000533	5.29 [2.06–13.57]
	GSE2837 (n=28)	RFS	0.768132	0.45 [0.00–86.58]
Lung cancer	GSE31210 (n=204)	RFS	0.003040	0.59 [0.41–0.84]
	GSE3141 (n=111)	OS	0.009047	0.65 [0.47–0.90]
	GSE17710 (n=56)	RFS	0.364172	1.15 [0.85–1.56]
Ovarian cancer	GSE9891 (n=278)	OS	0.002163	0.58 [0.41–0.82]
	GSE8841 (n=81)	OS	0.005308	0.37 [0.18–0.74]
	GSE17260 (n=110)	OS	0.132846	0.87 [0.73–1.04]
Skin cancer	GSE19234 (n=38)	OS	0.459531	0.69 [0.26–1.84]

PGR, progesterone receptor gene; OS, overall survival; RFS, relapse-free survival; DSS, disease free survival; DMFS, distant metastasis-free survival.

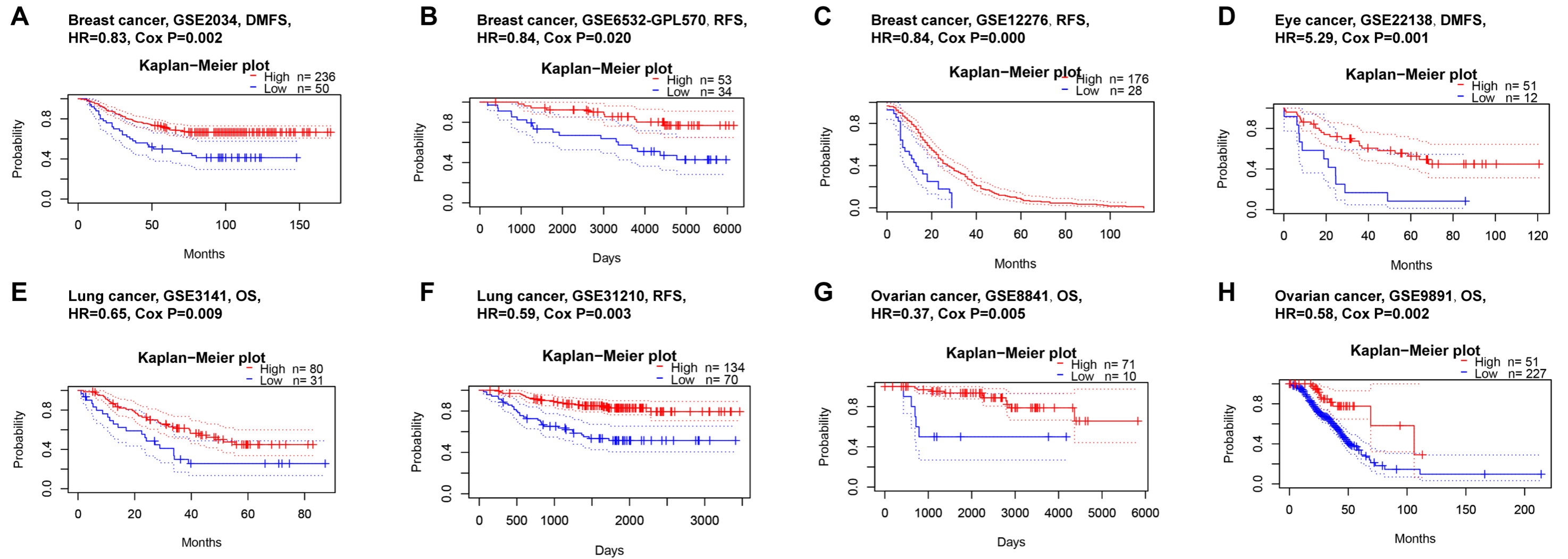


Figure S2 Correlation between PGR expression and prognosis in different cancers in the PrognoScan database. (A-H) Kaplan-Meier survival curves of breast, eye, lung and ovarian cancers. OS, overall survival; RFS, relapse-free survival; DMFS, distant metastasis-free survival.

Table S3 Multivariate analysis of the correlation of PGR expression and clinical characteristics with prognosis in GC patients

Parameter	HR	95% CI	P-value
Overall survival			
Gender	1.72	1.32-2.24	0.059
Stage	1.28	0.96-1.72	0.089
Stage T	1.78	1.09-2.91	0.020
Stage N	1.85	1.32-2.59	0.00027
Stage M	1.53	0.86-2.72	0.14
Lauren classification	2.60	1.67-4.06	1.2e-05
Differentiation	0.73	0.46-1.15	0.170
PGR	1.63	1.32-2.02	4.5e-06
Progression-free survival			
Gender	1.72	1.28-2.31	0.280
Stage	0.75	0.51-1.12	0.160
Stage T	0.77	0.55-1.08	0.130
Stage N	1.73	1.06-2.81	0.027
Stage M	1.41	0.79-2.52	0.250
Lauren classification	2.26	1.44-3.55	0.00029
Differentiation	0.61	0.37-1.02	0.056
PGR	1.80	1.39-2.32	5.7e-06

PGR, progesterone receptor gene; GC, gastric cancer

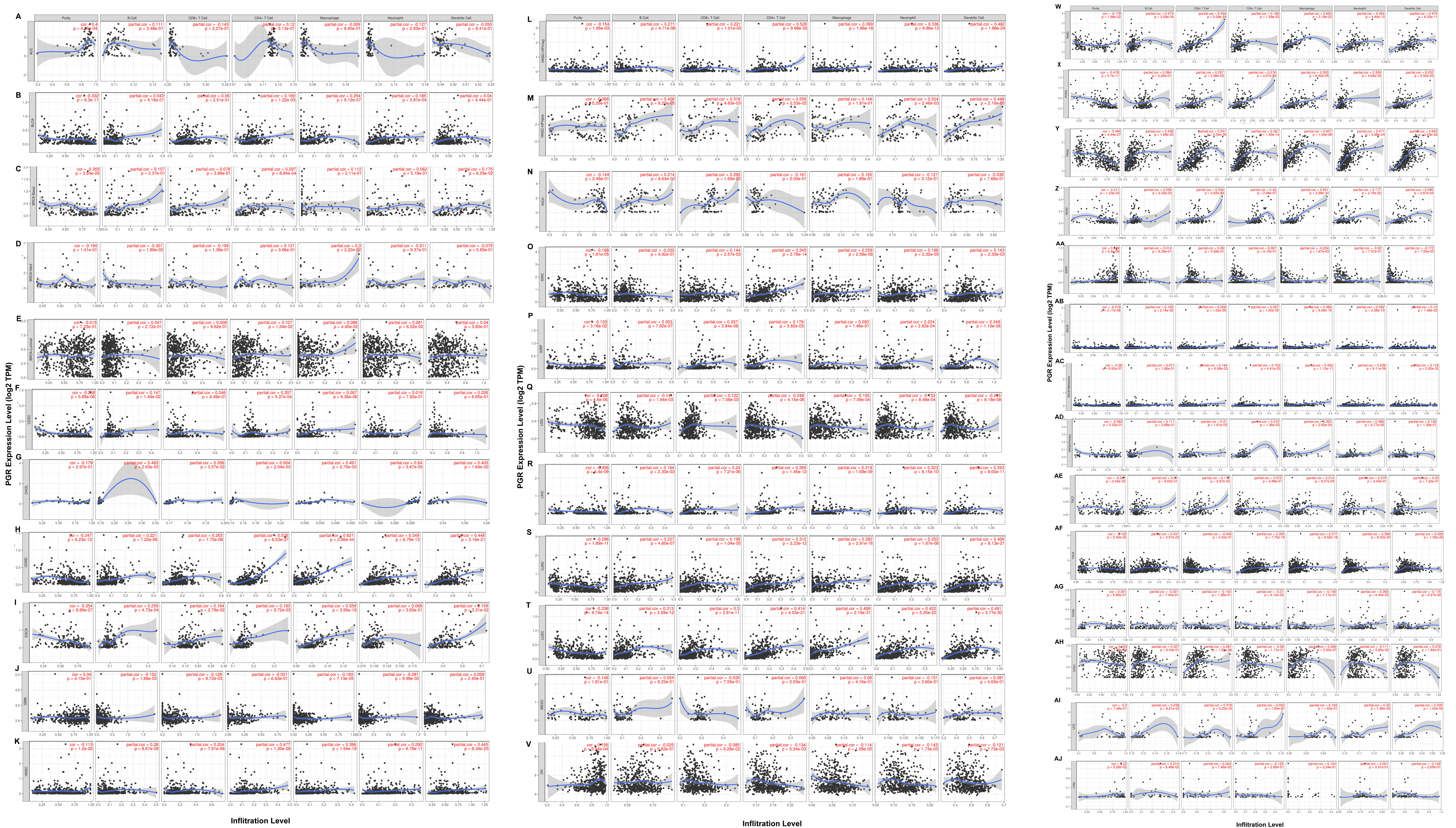


Figure S3 Correlation of PGR expression with immune infiltration levels in different cancers. Adrenocortical carcinoma (ACC) (A), bladder urothelial carcinoma (BLCA) (B), breast invasive carcinoma (BRCA) (C), breast invasive carcinoma-basal (BRCA-basal) (D), breast invasive carcinoma-Luminal (BRCA-Luminal) (E), cervical squamous cell carcinoma and endocervical adenocarcinoma (CESC) (F), cholangiocarcinoma (CHOL) (G), colon adenocarcinoma (COAD) (H), esophageal carcinoma (ESCA) (I), glioblastoma multiforme (GBM) (J), head and neck squamous cell carcinoma (HNSC) (K), head and neck squamous cell carcinoma-HPVneg (HNSC-HPVneg) (L), head and neck squamous cell carcinoma-HPVpos (HNSC-HPVpos) (M), kidney renal papillary cell carcinoma (KIPAP) (N), kidney renal clear cell carcinoma (KIRC) (O), kidney renal papillary cell carcinoma (KIRP) (P), brain lower grade glioma (LGG) (Q), liver hepatocellular carcinoma (LIHC) (R), lung adenocarcinoma (LUAD) (S), lung squamous cell carcinoma (LUSC) (T), mesothelioma (MESO) (U), ovarian serous cystadenocarcinoma (OV) (V), pancreatic adenocarcinoma (PAAD) (W), pheochromocytoma and paraganglioma (PCPG) (X), prostate adenocarcinoma (PRAD) (Y), rectum adenocarcinoma (READ) (Z), sarcoma (SARC) (AA), skin cutaneous melanoma (SKCM) (AB), skin cutaneous melanoma-metastasis (SKCM-Metastasis) (AC), skin cutaneous melanoma-primary (SKCM-Primary) (AD), testicular germ cell tumors (TGCT) (AE), thyroid carcinoma (THCA) (AF), thymoma (THYM) (AG), uterine corpus endometrial carcinoma (UCEC) (AH), uterine carcinosarcoma (UCS) (AI), uveal melanoma (UVM) (AJ).

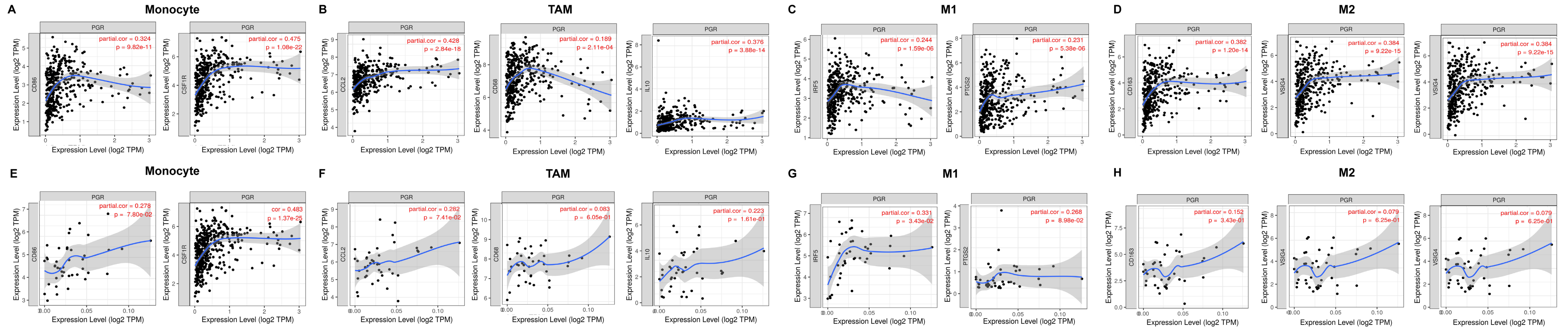


Figure S4 Analysis of the correlation between PGR and immune markers of monocyte, TAM, M1 and M2 in STAD and DLBC. (A-D) Correlations between PGR expression and gene markers of monocytes (A), TAMs (B), and M1 (C) and M2 macrophages (D) in STAD. (E-H) Correlations between PGR expression and gene markers of monocytes (E), TAMs (F), and M1 (G) and M2 macrophages (H) in DLBC. STAD, stomach adenocarcinoma; DLBC, diffuse large B-cell lymphoma; M1, M1 macrophage; M2, M2 macrophage; TAM, tumor-associated macrophage.