

Table SIII. Co-expression genes gene set enrichment analysis of SLAMF1/4/7/8.

GSEA gene set
KEGG_INTESTINAL_IMMUNE_NETWORK_FOR_IGA_PRODUCTION
KEGG_LEISHMANIA_INFECTION
KEGG_PRIMARY_IMMUNODEFICIENCY
KEGG_CHEMOKINE_SIGNALING_PATHWAY
KEGG_GRAFT_VERSUS_HOST_DISEASE
KEGG_CYTOKINE_CYTOKINE_RECEPTOR_INTERACTION
KEGG_ALLOGRAFT_REJECTION
KEGG_ASTHMA
KEGG_ANTIGEN_PROCESSING_AND_PRESENTATION
KEGG_TYPE_I_DIABETES_MELLITUS
KEGG_NATURAL_KILLER_CELL_MEDIATED_CYTOTOXICITY
KEGG_HEMATOPOIETIC_CELL_LINEAGE
KEGG_T_CELL_RECEPTOR_SIGNALING_PATHWAY
KEGG_AUTOIMMUNE_THYROID_DISEASE
KEGG_TOLL_LIKE_RECEPTOR_SIGNALING_PATHWAY
KEGG_JAK_STAT_SIGNALING_PATHWAY
KEGG_SYSTEMIC_LUPUS_ERYTHEMATOSUS
KEGG_B_CELL_RECEPTOR_SIGNALING_PATHWAY
KEGG_NOD_LIKE_RECEPTOR_SIGNALING_PATHWAY
KEGG_CYTOSOLIC_DNA_SENSING_PATHWAY
KEGG_VIRAL_MYOCARDITIS
KEGG_CELL_ADHESION_MOLECULES_CAMS
KEGG_PPAR_SIGNALING_PATHWAY
KEGG_EPITHELIAL_CELL_SIGNALING_IN_HELICOBACTER_PYLORI_INFECTION
KEGG_VIBRIO_CHOLERAE_INFECTION
KEGG_HUNTINGTONS_DISEASE
KEGG_PARKINSONS_DISEASE

KEGG_OXIDATIVE_PHOSPHORYLATION

GSEA, gene set enrichment analysis; SLAMPF, signaling lymphocyte activation molecule family.

Table SIV. Correlation of SLAMF1 with immune cell gene markers in ccRCC.

Immune cell	Gene marker	None		Purity	
		Cor	P-value	Cor	P-value
B cell	CD19	0.593	<0.001	0.574	<0.001
	CD79A	0.642	<0.001	0.629	<0.001
CD8 ⁺ T cell	CD8A	0.659	<0.001	0.602	<0.001
	CD8B	0.614	<0.001	0.561	<0.001
T cell	CD3D	0.756	<0.001	0.722	<0.001
	CD3E	0.799	<0.001	0.759	<0.001
Monocyte	CD86	0.672	<0.001	0.634	<0.001
	CD115 (CSF1R)	0.593	<0.001	0.551	<0.001
TAM	CCL2	0.137	<0.010	0.059	ns
	CD68	0.44	<0.001	0.426	<0.001
	IL10	0.511	<0.001	0.445	<0.001
M1 macrophage	INOS (NOS2)	0.069	ns	-0.011	ns
	IRF5	0.391	<0.001	0.353	<0.001
	COX2 (PTGS2)	0.127	<0.010	0.11	<0.050
M2 macrophage	CD163	0.458	<0.001	0.462	<0.001
	VSIG4	0.491	<0.001	0.444	<0.001
	MS4A4A	0.556	<0.001	0.517	<0.001
T cell exhaustion	PDCD1	0.654	<0.001	0.607	<0.001
	CTLA4	0.713	<0.001	0.678	<0.001
	TIM3 (HAVCR2)	0.252	<0.001	0.192	<0.001
	GZMB	0.459	<0.001	0.415	<0.001
	LAG3	0.596	<0.001	0.545	<0.001

SLAMPF, signaling lymphocyte activation molecule family; ccRCC, clear cell renal cell carcinoma; Cor, correlation; ns, not significant; TAM, tumor-associated macrophage.

Table SV. Correlation of SLAMF4 with immune cell gene markers in ccRCC.

Immune cell	Gene marker	None		Purity	
		Cor	P-value	Cor	P-value
B cell	CD19	0.366	<0.001	0.317	<0.001
	CD79A	0.432	<0.001	0.362	<0.001
CD8 ⁺ T cell	CD8A	0.729	<0.001	0.682	<0.001
	CD8B	0.713	<0.001	0.662	<0.001
T cell	CD3D	0.746	<0.001	0.702	<0.001
	CD3E	0.746	<0.001	0.704	<0.001
Monocyte	CD86	0.654	<0.001	0.613	<0.001
	CD115 (CSF1R)	0.573	<0.001	0.526	<0.001
TAM	CCL2	0.152	<0.001	0.092	<0.050
	CD68	0.383	<0.001	0.346	<0.001
	IL10	0.481	<0.001	0.402	<0.001
M1 macrophage	INOS (NOS2)	0.076	ns	0.013	ns
	IRF5	0.467	<0.001	0.454	<0.001
	COX2 (PTGS2)	-0.032	ns	-0.078	ns
M2 macrophage	CD163	0.379	<0.001	0.337	<0.001
	VSIG4	0.439	<0.001	0.376	<0.001
	MS4A4A	0.465	<0.001	0.418	<0.001
T cell exhaustion	PDCD1	0.665	<0.001	0.62	<0.001
	CTLA4	0.569	<0.001	0.514	<0.001
	TIM3 (HAVCR2)	0.366	<0.001	0.315	<0.001
	GZMB	0.569	<0.001	0.525	<0.001
	LAG3	0.673	<0.001	0.626	<0.001

SLAMPF, signaling lymphocyte activation molecule family; ccRCC, clear cell renal cell

carcinoma; Cor, correlation; ns, not significant; TAM, tumor-associated macrophage.

Table SVI. Correlation of SLAMF7 with immune cell gene markers in ccRCC.

Immune cell	Gene marker	None		Purity	
		Cor	P-value	Cor	P-value
B cell	CD19	0.535	<0.001	0.514	<0.001
	CD79A	0.636	<0.001	0.613	<0.001
CD8 ⁺ T cell	CD8A	0.796	<0.001	0.763	<0.001
	CD8B	0.765	<0.001	0.727	<0.001
T cell	CD3D	0.836	<0.001	0.81	<0.001
	CD3E	0.84	<0.001	0.815	<0.001
Monocyte	CD86	0.751	<0.001	0.718	<0.001
	CD115 (CSF1R)	0.58	<0.001	0.532	<0.001
TAM	CCL2	0.103	<0.050	0.041	ns
	CD68	0.508	<0.001	0.478	<0.001
	IL10	0.612	<0.001	0.543	<0.001
M1 macrophage	INOS (NOS2)	-0.028	ns	-0.098	<0.050
	IRF5	0.433	<0.001	0.419	<0.001
	COX2 (PTGS2)	0.037	ns	0.012	ns
M2 macrophage	CD163	0.478	<0.001	0.448	<0.001
	VSIG4	0.501	<0.001	0.449	<0.001
	MS4A4A	0.572	<0.001	0.535	<0.001
T cell exhaustion	PDCD1	0.752	<0.001	0.725	<0.001
	CTLA4	0.684	<0.001	0.645	<0.001
	TIM3 (HAVCR2)	0.363	<0.001	0.311	<0.001
	GZMB	0.473	<0.001	0.43	<0.001
	LAG3	0.745	<0.001	0.718	<0.001

SLAMPF, signaling lymphocyte activation molecule family; ccRCC, clear cell renal cell carcinoma; Cor, correlation; ns, not significant; TAM, tumor-associated macrophage.

Table SVII. Correlation of SLAMF8 with immune cell gene markers in ccRCC.

Immune cell	Gene marker	None		Purity	
		Cor	P-value	Cor	P-value
B cell	CD19	0.498	<0.001	0.475	<0.001
	CD79A	0.528	<0.001	0.503	<0.001
CD8 ⁺ T cell	CD8A	0.635	<0.001	0.586	<0.001
	CD8B	0.602	<0.001	0.554	<0.001
T cell	CD3D	0.696	<0.001	0.652	<0.001
	CD3E	0.71	<0.001	0.666	<0.001
Monocyte	CD86	0.822	<0.001	0.803	<0.001
	CD115 (CSF1R)	0.732	<0.001	0.698	<0.001
TAM	CCL2	-0.006	ns	-0.067	ns
	CD68	0.63	<0.001	0.636	<0.001
	IL10	0.636	<0.001	0.58	<0.001
M1 macrophage	INOS (NOS2)	0.032	ns	-0.04	ns
	IRF5	0.397	<0.001	0.389	<0.001
	COX2 (PTGS2)	0.101	<0.050	0.068	ns
M2 macrophage	CD163	0.693	<0.001	0.675	<0.001
	VSIG4	0.693	<0.001	0.66	<0.001
	MS4A4A	0.727	<0.001	0.696	<0.001
T cell exhaustion	PDCD1	0.651	<0.001	0.628	<0.001
	CTLA4	0.658	<0.001	0.644	<0.001
	TIM3 (HAVCR2)	0.303	<0.001	0.238	<0.001
	GZMB	0.362	<0.001	0.312	<0.001
	LAG3	0.628	<0.001	0.597	<0.001

SLAMPF, signaling lymphocyte activation molecule family; ccRCC, clear cell renal cell carcinoma; Cor, correlation; ns, not significant; TAM, tumor-associated macrophage.