

Supplementary Table S6. Correlation table between immune checkpoint marker genes and ZC3H12D expression.

Type	Variables	Total (n = 570)	Normal (n = 59)	Tumor (n = 511)	Group p-value	Correlation with ZC3H12D expression	Correlation p-value
ZC3H12D	ZC3H12D, Median (Q1,Q3)	0.61 (0.37, 0.93)	0.37 (0.22, 0.49)	0.64 (0.4, 0.99)	< 0.001	1	0
Inhibitory	ADORA2A, Median (Q1,Q3)	0.12 (0.07, 0.19)	0.17 (0.13, 0.22)	0.12 (0.07, 0.18)	< 0.001	0.469785636	1.24E-32
Inhibitory	ARG1, Median (Q1,Q3)	0.12 (0.07, 0.2)	0.28 (0.17, 0.37)	0.11 (0.07, 0.18)	< 0.001	0.194638906	2.85E-06
Inhibitory	BTLA, Median (Q1,Q3)	0.44 (0.24, 0.76)	0.33 (0.24, 0.45)	0.45 (0.24, 0.8)	0.002	0.715528886	1.53E-90
Stimulaotry	BTN3A1, Mean ± SD	3.45 ± 0.69	3.66 ± 0.43	3.43 ± 0.71	0.015	0.363242618	3.21E-19
Stimulaotry	BTN3A2, Median (Q1,Q3)	3.34 (2.8, 3.81)	3.74 (3.43, 4)	3.24 (2.72, 3.76)	< 0.001	0.233653687	1.66E-08
Inhibitory	C10orf54, Mean ± SD	3.47 ± 0.81	4.81 ± 0.36	3.32 ± 0.7	< 0.001	0.11643568	0.005382003
Stimulaotry	CCL5, Mean ± SD	4.69 ± 1.28	5.06 ± 0.7	4.65 ± 1.33	0.022	0.329684369	6.43E-16
Stimulaotry	CD27, Median (Q1,Q3)	2.53 (1.66, 3.33)	1.54 (1.16, 1.99)	2.62 (1.83, 3.41)	< 0.001	0.569790715	2.25E-50
Inhibitory	CD274, Median (Q1,Q3)	1.86 (1.24, 2.65)	2.77 (2.38, 3.07)	1.75 (1.16, 2.46)	< 0.001	0.175861826	2.42E-05
Inhibitory	CD276, Mean ± SD	4.12 ± 0.58	3.55 ± 0.37	4.19 ± 0.57	< 0.001	-0.154603907	0.000211127
Stimulaotry	CD28, Median (Q1,Q3)	0.96 (0.58, 1.38)	0.65 (0.49, 0.98)	1.01 (0.6, 1.41)	< 0.001	0.654008172	7.37E-71
Stimulaotry	CD40, Median (Q1,Q3)	3.91 (3.1, 4.38)	4.25 (3.95, 4.36)	3.83 (3, 4.38)	< 0.001	0.188847529	5.63E-06
Stimulaotry	CD40LG, Median (Q1,Q3)	0.84 (0.51, 1.38)	1.11 (0.8, 1.6)	0.81 (0.47, 1.36)	< 0.001	0.555846441	1.57E-47
Stimulaotry	CD70, Median (Q1,Q3)	0.51 (0.28, 0.9)	0.38 (0.19, 0.52)	0.55 (0.31, 0.95)	< 0.001	0.246054498	2.63E-09
Stimulaotry	CD80, Median (Q1,Q3)	0.71 (0.43, 1.02)	0.87 (0.74, 1.06)	0.68 (0.4, 1.01)	< 0.001	0.436402516	6.65E-28
Inhibitory	CTLA4, Median (Q1,Q3)	1.33 (0.83, 1.95)	0.81 (0.52, 1.17)	1.4 (0.9, 1.99)	< 0.001	0.669867304	1.77E-75
Stimulaotry	CX3CL1, Median (Q1,Q3)	3.78 (2.43, 4.78)	4.78 (4.19, 5.23)	3.58 (2.3, 4.69)	< 0.001	-0.023428063	0.576717318
Stimulaotry	CXCL10, Median (Q1,Q3)	4.02 (2.95, 5.42)	3.35 (2.65, 4.37)	4.09 (3.01, 5.5)	0.002	0.28843965	2.20E-12
Stimulaotry	CXCL9, Median (Q1,Q3)	4.13 (2.79, 5.5)	3.26 (2.57, 4.53)	4.25 (2.86, 5.6)	< 0.001	0.406987341	3.77E-24
Inhibitory	EDNRB, Median (Q1,Q3)	1.84 (1.25, 2.61)	5.1 (4.52, 5.51)	1.71 (1.16, 2.3)	< 0.001	-0.065176665	0.120110815
Stimulaotry	ENTPD1, Median (Q1,Q3)	2.25 (1.91, 2.57)	2.42 (2.16, 2.7)	2.23 (1.9, 2.57)	0.012	0.433147854	1.81E-27
Stimulaotry	GZMA, Median (Q1,Q3)	3.29 (2.37, 4.14)	3.48 (3.02, 4.24)	3.21 (2.34, 4.13)	0.039	0.364717458	2.25E-19
Inhibitory	HAVCR2, Median (Q1,Q3)	2.9 (2.23, 3.47)	3.42 (3.13, 3.71)	2.81 (2.15, 3.39)	< 0.001	0.250711645	1.28E-09
Stimulaotry	HMGB1, Median (Q1,Q3)	4.54 (4.3, 4.78)	4.66 (4.57, 4.76)	4.52 (4.27, 4.79)	< 0.001	-0.127011759	0.002381383
Stimulaotry	ICAM1, Median (Q1,Q3)	6.28 (5.39, 7.08)	6.83 (6.41, 7.3)	6.15 (5.19, 7.03)	< 0.001	-0.015525044	0.711483846
Stimulaotry	ICOS, Median (Q1,Q3)	0.99 (0.57, 1.45)	1.35 (1.04, 1.7)	0.91 (0.54, 1.4)	< 0.001	0.546557813	1.04E-45
Stimulaotry	ICOSLG, Median (Q1,Q3)	0.27 (0.15, 0.4)	0.23 (0.14, 0.34)	0.27 (0.16, 0.41)	0.122	0.172133363	3.60E-05
Inhibitory	IDO1, Median (Q1,Q3)	2.87 (1.99, 4.02)	3.28 (2.6, 3.9)	2.83 (1.96, 4.04)	0.048	0.221394453	9.27E-08
Stimulaotry	IFNA1, Median (Q1,Q3)	0 (0, 0)	0 (0, 0.04)	0 (0, 0)	0.004	0.009060646	0.829105036
Stimulaotry	IFNA2, n (%)				1	0.013945612	0.739713937
Stimulaotry	IFNG, Median (Q1,Q3)	0.4 (0.16, 0.88)	0.3 (0.1, 0.5)	0.41 (0.16, 0.95)	0.009	0.43832183	3.67E-28
Inhibitory	IL10, Median (Q1,Q3)	0.51 (0.29, 0.75)	0.45 (0.29, 0.71)	0.51 (0.29, 0.76)	0.478	0.32750803	1.02E-15
Inhibitory	IL12A, Median (Q1,Q3)	0.45 (0.27, 0.66)	0.56 (0.36, 0.8)	0.43 (0.27, 0.63)	0.002	0.100757806	0.016110368
Inhibitory	IL13, Median (Q1,Q3)	0.02 (0.01, 0.05)	0.05 (0.02, 0.14)	0.02 (0.01, 0.05)	< 0.001	0.105053532	0.012088155
Stimulaotry	IL1A, Median (Q1,Q3)	0.43 (0.19, 0.91)	1.5 (0.98, 1.78)	0.38 (0.17, 0.73)	< 0.001	-0.067707538	0.106353964
Stimulaotry	IL1B, Median (Q1,Q3)	1.62 (1.08, 2.24)	2.25 (2.02, 2.88)	1.53 (1.01, 2.16)	< 0.001	0.12655313	0.002470262
Stimulaotry	IL2, Median (Q1,Q3)	0.07 (0.03, 0.15)	0.1 (0.05, 0.18)	0.07 (0.03, 0.14)	0.007	0.379505687	5.75E-21
Stimulaotry	IL2RA, Median (Q1,Q3)	1.61 (1.08, 2.36)	0.87 (0.68, 1.23)	1.73 (1.21, 2.42)	< 0.001	0.45005428	8.96E-30
Inhibitory	IL4, Median (Q1,Q3)	0.1 (0.04, 0.18)	0.11 (0.05, 0.17)	0.09 (0.04, 0.19)	0.525	0.279075052	1.17E-11
Stimulaotry	ITGB2, Median (Q1,Q3)	4.88 (3.99, 5.5)	5.28 (4.8, 5.75)	4.82 (3.81, 5.46)	< 0.001	0.229216258	3.12E-08
Inhibitory	KIR2DL1, Median (Q1,Q3)	0.04 (0.01, 0.12)	0.21 (0.1, 0.38)	0.03 (0, 0.1)	< 0.001	0.062244499	0.13774412
Inhibitory	KIR2DL3, Median (Q1,Q3)	0.03 (0.01, 0.08)	0.15 (0.09, 0.25)	0.03 (0.01, 0.06)	< 0.001	0.070974884	0.090471114
Inhibitory	LAG3, Median (Q1,Q3)	1.39 (0.91, 2.13)	0.98 (0.79, 1.32)	1.54 (0.95, 2.26)	< 0.001	0.378055983	8.31E-21
Inhibitory	PDCD1, Median (Q1,Q3)	1.13 (0.71, 1.76)	0.85 (0.53, 1.09)	1.22 (0.75, 1.84)	< 0.001	0.497877713	4.90E-37
Stimulaotry	PRF1, Median (Q1,Q3)	2.57 (1.83, 3.47)	3.83 (3.29, 4.41)	2.38 (1.78, 3.25)	< 0.001	0.207319455	5.94E-07
Stimulaotry	SELP, Median (Q1,Q3)	1.61 (1.02, 2.24)	3.27 (2.99, 3.87)	1.52 (0.92, 2.02)	< 0.001	0.164895429	7.64E-05
Inhibitory	SLAMF7, Median (Q1,Q3)	2.92 (2.14, 3.82)	2.23 (1.61, 2.63)	3.02 (2.2, 3.89)	< 0.001	0.477529211	8.33E-34
Inhibitory	TGFB1, Median (Q1,Q3)	4.65 (4.1, 5.11)	4.97 (4.71, 5.26)	4.58 (4.03, 5.08)	< 0.001	0.067816011	0.105793423
Inhibitory	TIGIT, Median (Q1,Q3)	1.1 (0.64, 1.63)	0.6 (0.43, 0.9)	1.17 (0.69, 1.74)	< 0.001	0.680012194	1.37E-78
Stimulaotry	TLR4, Median (Q1,Q3)	2.17 (1.52, 2.84)	3.45 (3.19, 3.73)	2.07 (1.46, 2.58)	< 0.001	0.218859526	1.31E-07
Stimulaotry	TNF, Median (Q1,Q3)	0.89 (0.48, 1.37)	1.26 (0.73, 1.65)	0.82 (0.46, 1.33)	< 0.001	0.351628754	4.95E-18
Stimulaotry	TNFRSF14, Mean ± SD	3.39 ± 0.77	3.41 ± 0.34	3.39 ± 0.8	0.841	0.319252732	5.69E-15
Stimulaotry	TNFRSF18, Median (Q1,Q3)	2.1 (1.32, 3.1)	0.9 (0.63, 1.17)	2.26 (1.53, 3.24)	< 0.001	0.243049448	4.14E-09
Stimulaotry	TNFRSF4, Mean ± SD	1.92 ± 0.71	1.53 ± 0.5	1.97 ± 0.71	< 0.001	0.362215531	4.11E-19
Stimulaotry	TNFRSF9, Median (Q1,Q3)	0.84 (0.43, 1.38)	0.36 (0.25, 0.64)	0.9 (0.49, 1.42)	< 0.001	0.422516035	4.37E-26
Stimulaotry	TNFSF4, Median (Q1,Q3)	0.9 (0.59, 1.37)	0.59 (0.49, 0.69)	0.96 (0.64, 1.43)	< 0.001	0.290376651	1.55E-12

Type	Variables	Total (n = 570)	Normal (n = 59)	Tumor (n = 511)	Group p-value	Correlation with ZC3H12D expression	Correlation p-value
Stimulaotry	TNFSF9, Median (Q1,Q3)	1.81 (1.23, 2.43)	1.63 (1.31, 2)	1.87 (1.2, 2.47)	0.12	-0.150278871	0.000317668
Inhibitory	VEGFA, Mean ± SD	4.23 ± 0.95	3.97 ± 0.57	4.25 ± 0.98	0.032	0.0676235	0.106789849
Inhibitory	VEGFB, Median (Q1,Q3)	5.77 (5.49, 6.06)	5.75 (5.64, 5.94)	5.77 (5.45, 6.07)	0.774	-0.123529698	0.00313604
Inhibitory	VTCN1, Median (Q1,Q3)	0.78 (0.28, 1.93)	0.32 (0.12, 0.79)	0.89 (0.3, 2.17)	< 0.001	0.007264292	0.862608853

Notes: Data were obtained from TCGA LUAD RNA-seq analysis.