

**Supplementary Table 1. Immune checkpoint expression between primary tumor and brain metastases**

Molecules	Base Mean	Fold change	lfcSE	stat	P-value	adjusted P-value
<b>Stimulatory</b>						
CD27	63.4110667	0.349550864	0.260664569	-3.421004094	0.000623904	0.011277064
CD28	11.3096417	0.4846974	0.300887131	-1.830724181	0.067141722	0.437134746
CD40	79.799973	0.79551707	0.268855212	0	1	1
CD137	10.9729311	0.57046043	0.330882027	-0.891630489	0.372591022	1
OX40	22.2580993	0.511950222	0.287434305	-1.379798563	0.167648675	0.77698713
AITR	193.83379	0.870776356	0.372021853	0	1	1
ICOS	10.0580001	0.379263821	0.325911013	-2.693982089	0.007060396	0.083072799
ICOSLG	42.4929866	1.728648349	0.254220899	1.05659709	0.290695509	1
<b>Inhibitory</b>						
ADORA2A	29.7654347	0.762967021	0.236522849	0	1	1
B7-H3	638.606298	1.332650081	0.264207764	0	1	1
BTLA	8.71492004	0.504925579	0.322621187	-1.42312345	0.154700371	0.748874854
CTLA4	16.2636509	0.57410378	0.317682244	-0.923311594	0.355844848	1
IDO1	81.7228967	0.629079609	0.356646965	-0.55926842	0.575978544	1
LAG3	32.6608035	0.608695784	0.345258833	-0.974119267	0.329997324	1
CYBB	367.5198	0.576582638	0.225756564	-1.028625734	0.30365558	1
CD274	28.5244503	1.052660632	0.35062691	0	1	1
PDCD1	8.31301171	0.962277408	0.339199748	0	1	1
PDCD1LG2	11.8243734	0.707916386	0.328826352	0	1	1
HAVCR2	54.4983321	1.276043965	0.252534434	0	1	1
TIGIT	37.2250487	0.263701015	0.300150032	-4.349616896	1.36E-05	0.000547775

\* Fold change >1 indicates that the gene expression is higher in the brain metastases