

Supplementary Table S7. GSEA between neoAg^{hi}HLA^{hi} and others using Hallmark gene sets

NAME	SIZE	ES	NES	NOM p-val	FDR q-val	FWER p-val	RANK AT MAX
HALLMARK_INTERFERON_GAMMA_RESPONSE	199	0.680196	3.532326	p<0.001	q<0.001	p<0.001	3020
HALLMARK_ALLOGRAFT_REJECTION	200	0.650183	3.3717546	p<0.001	q<0.001	p<0.001	3123
HALLMARK_INTERFERON_ALPHA_RESPONSE	97	0.688111	3.2264938	p<0.001	q<0.001	p<0.001	2919
HALLMARK_INFLAMMATORY_RESPONSE	200	0.579116	3.0240781	p<0.001	q<0.001	p<0.001	3357
HALLMARK_TNFA_SIGNALING_VIA_NFKB	200	0.510466	2.6089373	p<0.001	q<0.001	p<0.001	2806
HALLMARK_IL6_JAK_STAT3_SIGNALING	87	0.58048	2.5902042	p<0.001	q<0.001	p<0.001	2399
HALLMARK_G2M_CHECKPOINT	190	0.503482	2.575577	p<0.001	q<0.001	p<0.001	3623
HALLMARK_E2F_TARGETS	191	0.491166	2.5198984	p<0.001	q<0.001	p<0.001	4524
HALLMARK_COMPLEMENT	200	0.482556	2.4921947	p<0.001	q<0.001	p<0.001	2882
HALLMARK_IL2_STAT5_SIGNALING	194	0.401231	2.0772722	p<0.001	q<0.001	p<0.001	4057
HALLMARK_KRAS_SIGNALING_UP	199	0.353116	1.8167179	p<0.001	0.001456	0.005	2316
HALLMARK_EPITHELIAL_MESENCHYMAL_TRANSITION	199	0.341129	1.7711827	p<0.001	0.002612	0.01	4086
HALLMARK_HYPOXIA	199	0.328883	1.7257806	p<0.001	0.002955	0.012	5204
HALLMARK_APOPTOSIS	161	0.34574	1.723137	p<0.001	0.002744	0.012	4269
HALLMARK_MTORC1_SIGNALING	197	0.329316	1.7108343	p<0.001	0.003	0.014	4651
HALLMARK_PI3K_AKT_MTOR_SIGNALING	104	0.339098	1.601513	0.0042373	0.006414	0.032	1725
HALLMARK_UV_RESPONSE_UP	158	0.309827	1.5662086	p<0.001	0.009843	0.05	3413
HALLMARK_APICAL_JUNCTION	199	0.301477	1.5618186	p<0.001	0.009491	0.051	2758
HALLMARK_P53_PATHWAY	195	0.279367	1.4491265	p<0.001	0.024636	0.134	3058
HALLMARK_SPERMATOGENESIS	132	0.284109	1.3841687	p<0.001	0.039039	0.212	2636
HALLMARK_MITOTIC_SPINDLE	197	0.266137	1.3819926	0.0060241	0.03793	0.214	3623
HALLMARK_GLYCOLYSIS	198	0.25227	1.309452	0.0175439	0.067976	0.37	4039
HALLMARK_REACTIVE_OXYGEN_SPECIES_PATHWAY	48	0.316441	1.2768631	0.105802	0.085716	0.458	2776
HALLMARK_OXIDATIVE_PHOSPHORYLATION	197	0.2402	1.2318515	0.0526316	0.114239	0.579	4872
HALLMARK_UNFOLDED_PROTEIN_RESPONSE	113	0.254267	1.2201619	0.0552995	0.122375	0.613	4066
HALLMARK_COAGULATION	137	0.24584	1.2078506	0.0817308	0.128179	0.647	2933
HALLMARK_ADIPOGENESIS	198	0.212571	1.1007594	0.1748252	0.289516	0.901	3218
HALLMARK_ANDROGEN_RESPONSE	100	0.225458	1.0532362	0.3138075	0.393744	0.959	4707
HALLMARK_MYC_TARGETS_V1	194	0.196561	1.0050031	0.4022988	0.52647	0.991	2243
HALLMARK_FATTY_ACID_METABOLISM	155	0.184929	0.941502	0.6557377	0.720956	1	3187
HALLMARK_XENOBIOTIC_METABOLISM	200	0.179356	0.9186347	0.7257143	0.773657	1	3146
HALLMARK_HEME_METABOLISM	197	0.165113	0.8548493	0.9235294	0.919445	1	3701
HALLMARK_ANGIOGENESIS	36	0.226022	0.8468149	0.7763975	0.907325	1	3819
HALLMARK_MYC_TARGETS_V2	58	0.163076	0.6925389	0.9894366	1	1	3836
HALLMARK_TGF_BETA_SIGNALING	54	0.159455	0.6698807	0.9792388	0.989906	1	4829
HALLMARK_BILE_ACID_METABOLISM	112	-0.31408	-1.29246	0.0699482	0.895889	0.898	4623
HALLMARK_WNT_BETA_CATENIN_SIGNALING	42	-0.30374	-1.069734	0.3399154	1	1	5995
HALLMARK_HEDGEHOG_SIGNALING	36	-0.30188	-1.00855	0.4771341	1	1	7117
HALLMARK_APICAL_SURFACE	44	-0.26699	-0.944693	0.5642857	1	1	1626
HALLMARK_MYOGENESIS	200	-0.20831	-0.928614	0.6417556	1	1	5513
HALLMARK_KRAS_SIGNALING_DN	196	-0.20635	-0.913941	0.6768666	1	1	4331
HALLMARK_ESTROGEN_RESPONSE_EARLY	196	-0.19508	-0.860379	0.8035928	1	1	6151
HALLMARK_UV_RESPONSE_DN	140	-0.20166	-0.856653	0.7719298	1	1	6237
HALLMARK_DNA_REPAIR	147	-0.19078	-0.805275	0.8794588	1	1	3330
HALLMARK_PROTEIN_SECRETION	96	-0.18862	-0.760492	0.9128065	1	1	6855
HALLMARK_PEROXISOME	101	-0.18326	-0.746444	0.9308094	1	1	6316
HALLMARK_PANCREAS_BETA_CELLS	40	-0.20368	-0.706791	0.8986587	1	1	5055
HALLMARK_ESTROGEN_RESPONSE_LATE	200	-0.15943	-0.703672	0.9929245	1	1	5794
HALLMARK_CHOLESTEROL_HOMEOSTASIS	74	-0.17342	-0.671467	0.9793956	1	1	6160
HALLMARK_NOTCH_SIGNALING	32	-0.17954	-0.585991	0.9779412	0.997771	1	6627