

Supplementary Table S5. GSEA between neoAg^{hi}HLA^{hi} and others using GO_BP Immune response gene sets

NAME	SIZE	ES	NES	NOM p-val	FDR q-val	FWER p-val	RANK AT MAX
GO_ADAPTIVE_IMMUNE_RESPONSE	378	0.62997	3.542971	p<0.001	q<0.001	p<0.001	2682
GO_ADAPTIVE_IMMUNE_RESPONSE_BASED_ON_SOMATIC_RECOMBINATION_OF_IMMUNE_RECEPTORS_BUILT_FROM_IMM	245	0.599089	3.162659	p<0.001	q<0.001	p<0.001	2471
GO_T_CELL_ACTIVATION_INVOLVED_IN_IMMUNE_RESPONSE	98	0.641456	3.036672	p<0.001	q<0.001	p<0.001	1956
GO_REGULATION_OF_ADAPTIVE_IMMUNE_RESPONSE	154	0.59096	2.936618	p<0.001	q<0.001	p<0.001	2560
GO_T_CELL_DIFFERENTIATION_INVOLVED_IN_IMMUNE_RESPONSE	64	0.671069	2.909736	p<0.001	q<0.001	p<0.001	3418
GO_POSITIVE_REGULATION_OF_ADAPTIVE_IMMUNE_RESPONSE	98	0.622807	2.900395	p<0.001	q<0.001	p<0.001	2329
GO_IMMUNE_RESPONSE_REGULATING_CELL_SURFACE_RECEPTOR_SIGNALING_PATHWAY	366	0.525339	2.896291	p<0.001	q<0.001	p<0.001	3054
GO_LYMPHOCYTE_ACTIVATION_INVOLVED_IN_IMMUNE_RESPONSE	169	0.571542	2.876743	p<0.001	q<0.001	p<0.001	3100
GO_T_HELPER_1_TYPE_IMMUNE_RESPONSE	41	0.706962	2.782178	p<0.001	q<0.001	p<0.001	1779
GO_NATURAL_KILLER_CELL_ACTIVATION_INVOLVED_IN_IMMUNE_RESPONSE	31	0.736837	2.728468	p<0.001	q<0.001	p<0.001	1768
GO_NEGATIVE_REGULATION_OF_IMMUNE_RESPONSE	135	0.542388	2.693604	p<0.001	q<0.001	p<0.001	3295
GO_REGULATION_OF_INNATE_IMMUNE_RESPONSE	410	0.482349	2.687193	p<0.001	q<0.001	p<0.001	3297
GO_T_HELPER_17_TYPE_IMMUNE_RESPONSE	27	0.730914	2.527093	p<0.001	q<0.001	p<0.001	3100
GO_CYTOKINE_PRODUCTION_INVOLVED_IN_IMMUNE_RESPONSE	99	0.531027	2.453525	p<0.001	q<0.001	p<0.001	3082
GO_REGULATION_OF_CYTOKINE_PRODUCTION_INVOLVED_IN_IMMUNE_RESPONSE	83	0.548713	2.451129	p<0.001	q<0.001	p<0.001	3082
GO_REGULATION_OF_PRODUCTION_OF_MOLECULAR_MEDIATOR_OF_IMMUNE_RESPONSE	135	0.491739	2.447749	p<0.001	q<0.001	p<0.001	3082
GO_ACTIVATION_OF_INNATE_IMMUNE_RESPONSE	291	0.454441	2.439946	p<0.001	q<0.001	p<0.001	3297
GO_NEGATIVE_REGULATION_OF_ADAPTIVE_IMMUNE_RESPONSE	45	0.606788	2.43843	p<0.001	q<0.001	p<0.001	2806
GO_REGULATION_OF_T_HELPER_1_TYPE_IMMUNE_RESPONSE	27	0.687544	2.41696	p<0.001	q<0.001	p<0.001	2248
GO_REGULATION_OF_T_HELPER_17_TYPE_IMMUNE_RESPONSE	19	0.744327	2.415787	p<0.001	q<0.001	p<0.001	3054
GO_NEGATIVE_REGULATION_OF_INNATE_IMMUNE_RESPONSE	49	0.591969	2.399002	p<0.001	q<0.001	p<0.001	3125
GO_PRODUCTION_OF_MOLECULAR_MEDIATOR_OF_IMMUNE_RESPONSE	184	0.461268	2.389991	p<0.001	q<0.001	p<0.001	3082
GO_HUMORAL_IMMUNE_RESPONSE	232	0.440164	2.341211	p<0.001	q<0.001	p<0.001	2941
GO_TYPE_2_IMMUNE_RESPONSE	35	0.616131	2.327878	p<0.001	q<0.001	p<0.001	2471
GO_POSITIVE_REGULATION_OF_PRODUCTION_OF_MOLECULAR_MEDIATOR_OF_IMMUNE_RESPONSE	91	0.502618	2.302716	p<0.001	q<0.001	p<0.001	3234
GO_POSITIVE_REGULATION_OF_CYTOKINE_PRODUCTION_INVOLVED_IN_IMMUNE_RESPONSE	53	0.548166	2.259017	p<0.001	q<0.001	p<0.001	854
GO_B_CELL_ACTIVATION_INVOLVED_IN_IMMUNE_RESPONSE	70	0.499756	2.185903	p<0.001	2.08E-04	0.002	3009
GO_NEGATIVE_REGULATION_OF_CYTOKINE_PRODUCTION_INVOLVED_IN_IMMUNE_RESPONSE	25	0.634481	2.175823	p<0.001	2.01E-04	0.002	2714
GO_REGULATION_OF_TYPE_2_IMMUNE_RESPONSE	29	0.605298	2.170934	p<0.001	1.94E-04	0.002	2471
GO_POSITIVE_REGULATION_OF_TYPE_2_IMMUNE_RESPONSE	15	0.722106	2.159735	p<0.001	1.88E-04	0.002	1956
GO_NEGATIVE_REGULATION_OF_PRODUCTION_OF_MOLECULAR_MEDIATOR_OF_IMMUNE_RESPONSE	36	0.583307	2.130483	p<0.001	1.81E-04	0.002	2714
GO_HUMORAL_IMMUNE_RESPONSE_MEDIATED_BY_CIRCULATING_IMMUNOGLOBULIN	46	0.528715	2.101938	p<0.001	1.76E-04	0.002	2329
GO_POSITIVE_REGULATION_OF_T_HELPER_1_TYPE_IMMUNE_RESPONSE	20	0.640702	2.07592	p<0.001	2.75E-04	0.003	2248
GO_IMMUNOGLOBULIN_PRODUCTION_INVOLVED_IN_IMMUNOGLOBULIN_MEDIATED_IMMUNE_RESPONSE	52	0.494285	2.014678	p<0.001	6.33E-04	0.006	2682
GO_CYTOKINE_SECRETION_INVOLVED_IN_IMMUNE_RESPONSE	19	0.631347	1.976137	p<0.001	0.0011397	0.01	2029
GO_POSITIVE_REGULATION_OF_MYELOID_LEUKOCYTE_CYTOKINE_PRODUCTION_INVOLVED_IN_IMMUNE_RESPONSE	19	0.604447	1.915522	p<0.001	0.0017338	0.016	1536
GO_REGULATION_OF_HUMORAL_IMMUNE_RESPONSE	65	0.439006	1.895828	p<0.001	0.0020195	0.019	2933
GO_INNATE_IMMUNE_RESPONSE_IN_MUCOSA	21	0.576034	1.868944	p<0.001	0.002449	0.023	2581
GO_INNATE_IMMUNE_RESPONSE_ACTIVATING_CELL_SURFACE_RECEPTOR_SIGNALING_PATHWAY	108	0.394924	1.853693	p<0.001	0.0028675	0.028	2999
GO_IMMUNE_RESPONSE_TO_TUMOR_CELL	15	0.619416	1.846352	0.01075269	0.0028762	0.029	1303
GO_REGULATION_OF_MAST_CELL_ACTIVATION_INVOLVED_IN_IMMUNE_RESPONSE	29	0.499401	1.791039	p<0.001	0.0036515	0.037	3295
GO_ANTIMICROBIAL_HUMORAL_IMMUNE_RESPONSE_MEDIATED_BY_ANTIMICROBIAL_PEPTIDE	68	0.40856	1.767278	0.00361011	0.0037235	0.038	2581
GO_ORGAN_OR_TISSUE_SPECIFIC_IMMUNE_RESPONSE	33	0.467104	1.732756	p<0.001	0.0048163	0.052	2581
GO_MATURE_B_CELL_DIFFERENTIATION_INVOLVED_IN_IMMUNE_RESPONSE	19	0.501452	1.560626	0.02686567	0.017056	0.184	3009
GO_POSITIVE_REGULATION_OF_HUMORAL_IMMUNE_RESPONSE	15	0.49522	1.471046	0.07627118	0.0321627	0.31	2329