

Table S1 Sixty-nine NET-related genes

HGNC symbol	Entrez Gene	Ensembl
AKT1	207	ENSG00000142208
AKT2	208	ENSG00000105221
ATG7	10533	ENSG00000197548
CLEC6A	93978	ENSG00000205846
CSF3	1440	ENSG00000108342
CTSG	1511	ENSG00000100448
CYBB	1536	ENSG00000165168
DNASE1	1773	ENSG00000213938
ELANE	1991	ENSG00000197561
ENTPD4	14573	ENSG00000197217
F3	2152	ENSG00000117525
HMGB1	3146	ENSG00000189403
IL17A	3605	ENSG00000112115
IL1B	3553	ENSG00000125538
IL6	3569	ENSG00000136244
IL8	3576	ENSG00000169429
IRAK4	51135	ENSG00000198001
ITGAM	3684	ENSG00000169896
ITGB2	3689	ENSG00000160255
KCNN3	3782	ENSG00000143603
MAPK1	5594	ENSG00000100030
MAPK3	5595	ENSG00000102882
MMP9	4218	ENSG00000100985
MPO	4353	ENSG00000005381
MTOR	2475	ENSG00000198793
PADI4	23569	ENSG00000159339
PTAFR	5724	ENSG00000169403
PIK3CA	5290	ENSG00000121879
RIPK1	8737	ENSG00000137275
RIPK3	11035	ENSG00000129465
SELP	6403	ENSG00000174175
SELPLG	6404	ENSG00000110876
SIGLEC14	10049587	ENSG00000254415
TLR2	7097	ENSG00000137462
TLR4	7099	ENSG00000136869
TLR7	51284	ENSG00000196664
TLR8	51311	ENSG00000101916
TNF	7124	ENSG00000232810
ALPL	249	ENSG00000162551
BST1	683	ENSG00000109743
CD93	22918	ENSG00000125810

CEACAM3	1084	ENSG00000170956
CREB5	9586	ENSG00000146592
CRISPLD2	83716	ENSG00000103196
CSF3R	1441	ENSG00000119535
CYP4F3	4051	ENSG00000186529
DYSF	8291	ENSG00000135636
FCAR	2204	ENSG00000186431
FCGR3B	2215	ENSG00000162747
CPPED1	55315	ENSG00000103381
FPR1	2357	ENSG00000171051
FPR2	2358	ENSG00000171049
G0S2	50486	ENSG00000123689
H2BC	8347	ENSG00000180596
HPSE	10855	ENSG00000173083
CXCR1	3577	ENSG00000163464
CXCR2	3579	ENSG00000180871
KCNJ15	3772	ENSG00000157551
LILRB2	10288	ENSG00000131042
MGAM	8972	ENSG00000257335
MME	4311	ENSG00000196549
PDE4B	5142	ENSG00000184588
S100A12	6283	ENSG00000163221
SIGLEC5	8778	ENSG00000105501
SLC22A4	6583	ENSG00000197208
SLC25A37	51312	ENSG00000147454
TECPR2	9895	ENSG00000196663
TNFRSF10C	8794	ENSG00000173535
VNN3	55350	ENSG00000093134

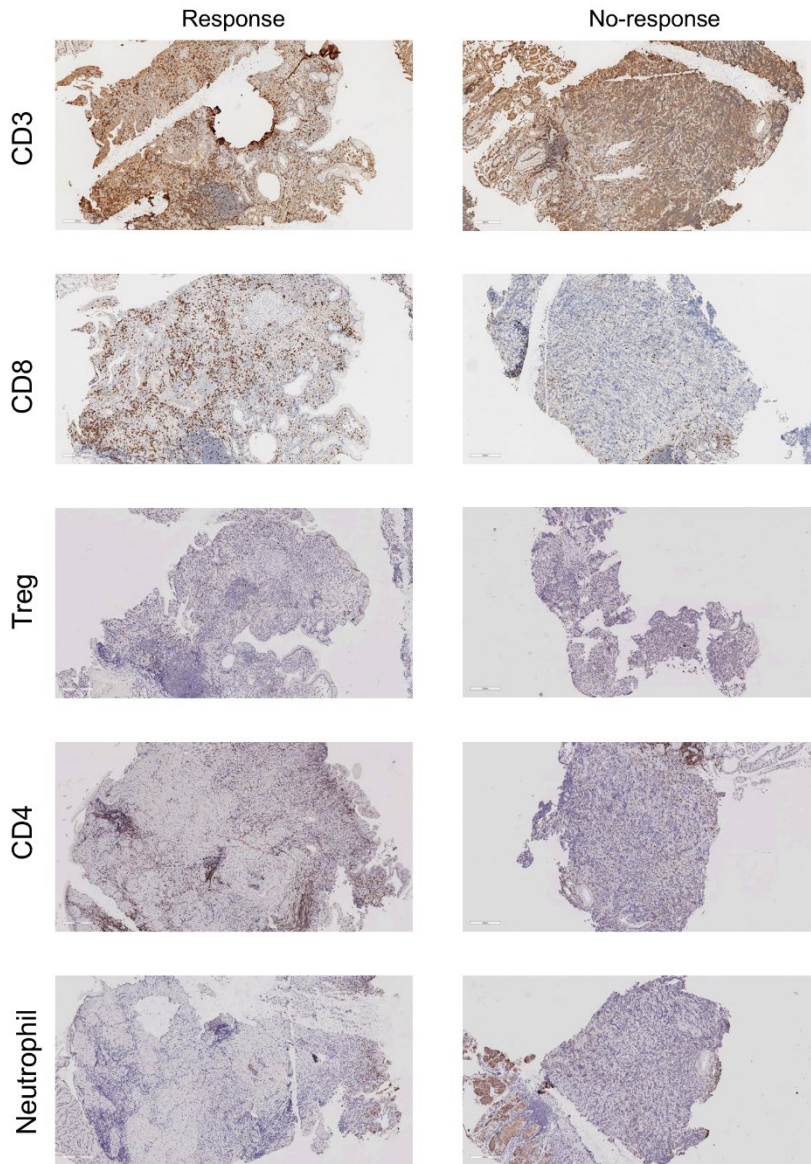


Figure S1 *The high-resolution images and original uncropped IHC images*

CRTAM	54.8891	66.107	54.0563	1443.48	308.561	114.059	661.277	42.1529	47.769	829.669	261.162	652.858	212.042	761.032	38.2227	85.709	126.64	153.961	15.5496	106.159	78.306	83.9649
CYRBB1	8.51088	9.16028	16.7768	6.78945	20.228	10.6391	8.2771	10.1849	10.5526	7.1682	9.60236	7.97278	9.39615	9.7069	12.1272	166.955	9.01675	8.79661	38.3769	16.7892	9.49799	9.57671
CSF1	22.1079	21.8152	14.6424	22.9942	21.9402	32.271	23.5559	24.1776	19.733	39.1235	21.7205	24.4852	24.9689	687.884	35.2885	23.1222	112.582	93.5364	28.2172	61.8445	73.5934	22.9227
CSF2	24.2483	23.2441	43.3558	24.7537	40.9524	28.014	22.9588	26.2622	62.7588	29.2781	741.315	70.4189	28.5239	39.5245	26.2936	40.0303	27.7372	47.0269	22.7372	47.8889	29.8643	45.985
CSFSR	97.7663	29.9336	22.2778	24.3859	10.7207	32.1651	25.6594	38.9319	85.4434	38.8482	115.644	45.2333	233.915	214.543	860.337	737.86	92.4844	67.2519	186.085	121.256	248.397	217.736
CSF7	29.1177	21.3348	14.0215	5.8181	19.8755	14.7061	746.27	322.062	1323.23	12102.6	11514.7	10179.8	63.6732	254.88	186.806	292.562	149.042	4059.44	2285.36	2487.6	61.261	23.733
CTLA4	19.3916	12.0548	12.4	19.9927	282.31	606.104	1865.8	2019.94	40.7745	22.9841	11.0147	18.7122	18.6198	14.3167	18.58076	18.0367	16.4825	12.4936	18.0804	14.8006	62.2224	38.6936
CTSG	247.771	204.703	205.376	113.0328	133.496	81.239	73.6946	38.0918	224.974	156.87	309.079	105.314	88.1262	65.3185	68.9828	42.0002	5638.07	54.7519	91.1776	185.008	10.1276	185.008
CTSW	16.6579	14.0511	16.2618	48.9422	487.068	963.277	23.0875	14.6382	12.8332	41.44	6980.78	108.114	16.9373	15.9499	13.082	26.7636	16.2395	11.5167	111.469	277.466	41.7898	20.4914
CXCL10	761.394	396.638	246.244	157.227	120.499	152.796	529.512	127.922	256.618	488.545	201.111	150.919	500.93	163.398	312.773	278.343	163.718	113.024	112.809	313.919	232.122	486.967
CXCL11	20.2483	20.2483	13.0354	13.0354	13.0354	13.0354	13.0354	13.0354	13.0354	13.0354	13.0354	13.0354	13.0354	13.0354	13.0354	13.0354	13.0354	13.0354	13.0354	13.0354	13.0354	13.0354
CXCL13	50.1801	22.7708	17.2471	22.3574	6.02497	8.95714	280.53	95.7894	13.5049	5.77276	10.0284	15.3178	11.7535	62.7931	18.7608	12.7441	21.2033	60.5655	25.7094	10.9463	10.9033	79.7905
CXCL3	73.0704	28.0636	56.4475	26.7117	17.0206	30.0279	26.8418	27.6975	136.624	45.9066	17.0284	30.2181	175.883	1496.82	271.247	233.33	81.0368	157.022	149.961	19.464	44.0016	75.2692
CXCL5	94.1649	83.049	43.3658	18.4202	7.7559	41.216	24.9405	18.9365	73.8583	78.8889	25.0801	29.0739	32.9447	5315.27	91.9805	46.3814	37.3928	387.404	49.5741	62.1747	29.2575	69.6139
CXCL9	597.584	438.209	268.399	125.836	77.4588	151.504	259.461	143.577	159.218	220.911	186.924	590.362	265.083	168.497	38944	199.436	179.981	291.812	123.556	99.7602	193.921	403.504
CXCR1	260.578	187.059	146.678	214.684	320.96	258.821	76.3549	71.4853	61.869	691.731	515.916	417.187	82.7814	72.0059	61.2698	53.221	65.5299	64.4227	263.789	267.968	229.476	5613.08
CXCR2	26.7636	12.646	20.805	73.8171	57.0167	20.9995	11.1583	23.9973	74.6466	11.5823	26.6187	96.317	280.002	408.353	115.551	174.121	64.0791	176.836	48.427	126.094	56.9347	176.014
CXCR5	368.781	286.684	10.1478	37.708	29.7922	181.825	20.1227	2508.08	32.4652	37.6659	31.9392	16.0338	15.131	14.6125	17.3637	212.275	14.4311	17.5363	26.9192	13.7321	16.885	55.8564
CXCR6	143.967	137.922	129.418	239.578	92.277	190.125	1140.29	187.523	914.309	1037.9	187.523	914.309	1037.9	187.523	914.309	1037.9	187.523	914.309	1037.9	187.523	914.309	1037.9
CXCR7	39.2654	19.4445	10.6258	102.172	236.764	111.244	152.511	14.2424	12.4948	294.272	54.6113	77.3874	8.0249	11.2973	6.98447	10.4459	7.42938	5.9091	7.40007	6.59899	73.8682	112.951
CYP27A1	28.1703	29.9301	40.8098	35.1156	57.8008	119.211	20.989	60.3011	55.8977	98.197	36.9152	30.4051	761.596	9212.24	72.621	75.7109	807.582	190.712	731.246	853	17.578	52.9684
CYP2B1	839.569	393.123	544.742	123.385	89.2151	182.605	99.2151	182.605	99.2151	182.605	99.2151	182.605	99.2151	182.605	99.2151	182.605	99.2151	182.605	99.2151	182.605	99.2151	182.605
DACH1	8.11027	6.61425	7.01931	6.07293	26.6485	6.33289	3.96099	4.92986	16.7488	14.2475	34.1615	18.5566	63.0408	7.8212	4.27362	8.23249	5.41845	6.05427	30.5528	11.696	22.9445	80.6245
DAPK2	50.4923	52.6611	24.9337	36.7782	35.9388	53.0877	21.0963	20.1996	71.8305	55.1124	75.1908	65.9825	50.3688	36.2955	35.1452	76.6887	50.6405	57.8225	260.259	126.567	113.077	494.764
DCSTAMF	36.9534	36.9534	36.9534	36.9534	36.9534	36.9534	36.9534	36.9534	36.9534	36.9534	36.9534	36.9534	36.9534	36.9534	36.9534	36.9534	36.9534	36.9534	36.9534	36.9534	36.9534	36.9534
DEFNA	47.9634	47.9634	47.9634	47.9634	47.9634	47.9634	47.9634	47.9634	47.9634	47.9634	47.9634	47.9634	47.9634	47.9634	47.9634	47.9634	47.9634	47.9634	47.9634	47.9634	47.9634	47.9634
DDNDM5E	39.6533	82.4734	338.955	4.937	3.55474	6.17151	8.63943	2.14073	5.5009	5.92817	28.7555	42.9286	5.01965	14.5868	7.80832	36.7156	12.8774	28.4484	6.1105	12.8888	9.43945	11.6656
DDPCD5	23.0637	33.4668	30.008	42.1083	192.018	41.8509	38.5346	136.495	19.6555	53.645	74.5348	143.26	40.1779	96.6174	168.283	190.192	106.052	38.1782	110.334	32.0167	57.2456	37.3192
DGKA	42.9688	46.001	20.024	22.2302	30.6625	26.9002	25.851	26.9002	25.851	26.9002	25.851	26.9002	25.851	26.9002	25.851	26.9002	25.851	26.9002	25.851	26.9002	25.851	26.9002
DHRS11	53.99	69.5507	10.1676	86.8181	123.952	27.1775	149.367	72.385	59.3323	34.7728	61.6241	48.5534	49.6566	296.501	18.6003	242.691	109.034	299.29	69.967	69.967	32.7403	53.3034
DHRS13	13.8636	16.8936	12.8368	67.9571	29.9959	30.9959	14.8007	86.5691	85.1508	19.0155	126.714	29.6458	66.4278	21.9598	1394.31	233.583	34.0158	13.5113	27.3948	21.8459	18.0591	20.0978
DHSPF2	695.874	239.634	11.8007	37.708	29.7922	181.825	20.1227	2508.08	32.4652	37.6659	31.9392	16.0338	15.131	14.6125	17.3637	212.275	14.4311	17.5363	26.9192	13.7321	16.885	55.8564
DHSPF3	19.4517	16.9722	17.9877	68.9639	92.277	190.125	1140.29	187.523	914.309	1037.9	187.523	914.309	1037.9	187.523	914.309	1037.9	187.523	914.309	1037.9	187.523	914.309	1037.9
DSC1	82.2625	48.0259	44.0095	40.8664	788.019	104.235	10.2183	7.63183	23.3228	82.601	21.9733	29.9658	14.9389	11.6692	6.70774	45.603	14.7399	41.2673	34.5126	35.7068	71.0654	15.3762
DUSP2	13.2983	139.275	32.3402	40.834	318.017	2005.43	2312.35	2300.26	319.738	4596.06	494.213	30.717	404.895	490.424	567.664	261.495	292.319	536.691	39.9044	758.67	101.32	88.769
EAF2	3181.18	2020.34	4989.76	219.018	240.986	138.142	265.175	197.165	208.077	181.162	198.017	184.102	683.962	281.012	284.13	281.422	239.812	468.074	401.726	399.882	742.534	240.854
EBI3	10.5027	16.9365	8.99776	12.214	15.0571	11.5325	11.0999	11.6348	16.4032	4.36811	10.1243	16.8555	12.4947	14.1884	20.4377	31.206	18.6168	6.96924	8.95988	13.9474	9.4973	11.626
EFNA5	54.2766	91.7102	8.93037	12.032	116.925	24.2995	13.9593	76.6587	240.324	77.7319	29.8512	43.7964	16.8739	14.6804	64.2662	56.8071	19.848	35.5319	59.9418	12.0728	81.9448	38.5877
EGR2	122.34	98.2452	54.4716	35.9598	35.243	36.2384	210.011	1667.33	131.119	151.242	155.235	133.91	94.593	39.9137	23.0875	21.7576	4531.29	221.579	293.156	190.673	196.075	196.075
EGR3	398.874	132.863	113.881	61.9545	47.9228	19.5126	12.6152	701.542	1031.19	62.6659	75.719	69.6267	96.6299	13.12	75.4039	130.622	115.702	14.713	15.63	230.763	24.613	45.985
EMR1	499.011	383.061	194.387	195.986	428.065	312.812	400.218	182.939	333.835	447.367	349.079	188.521	181.51	20.312	35.828	21.4394	178.678	27.221	287.379	24.713	16.3307	12.531
EMR2	145.977	105.654	67.1749	43.0595	56.1857	83.2635	72.5369	21.2498	96.2723	165.095	174.829	87.4389	1319.42	1045.04	1516.79	36.8316	863.002	35.7602	82.2941	1558.48	38.71	39.526
EMR3	55.17	124.342	135.326	104.17	89.373	63.1996	89.5376	139.759	112.602	136.763	63.6421	64.877	379.624	38.8751	13.536	5.69071	17.831	19.1505	185.983	32.169	47.723	30.1599
EPHA1	21.9842	67.0092	15.2096	235.335	12.9366	385.634	34.0714	89.9421	45.4788	9.63975	105.983	97.8029	25.1046	51.9155	7.16549	25.5659	17.9134	73.2098	9.70802	71.5572	104.632	16.4749
EPHA4	47.0294	46.7689	52.0337	400.048	763.401	292.884	35.878	43.9325	61.8302	155.783	99.2117	63.8017	58.1182	45.6196	38.9035	60.0842	58.6478	39.1638	38.9647	56.7356	11.7426	11.7426
EPOR2	46.9																					

IL26	6.12067	7.62384	26.2663	7.41092	7.90237	9.52339	273.571	116.598	20.8208	10.7375	7.69138	5.13666	3.24256	2.49113	4.33019	4.36618	4.35573	4.5319	3.03223	38.0155	4.7763	4.55767		
IL28A	21.1625	19.4552	848.687	40.0022	818.793	2988.61	7562.49	2779.25	1382.55	1.19584	18.0264	19.9186	32.4112	25.1911	33.9872	39.6377	146.46	44.9608	22.219	193.265	31.0005	133.808	31.2229	
IL28B	21.1846	19.4552	848.687	40.0022	818.793	2988.61	7562.49	2779.25	1382.55	1.19584	18.0264	19.9186	32.4112	25.1911	33.9872	39.6377	146.46	44.9608	22.219	193.265	31.0005	133.808	31.2229	
IL3	20.1275	15.5855	15.8149	15.7023	34.4825	6.60381	1.6896	1.5626	3.9922	5.97339	13.5921	28.8125	11.5263	12.9627	8.7234	7.66457	6.76457	7.42909	9.04952	9.2942	7.2625	10.1454	52.5888	34.5858
IL4R	11.0093	1.88367	291.13	884.659	2125.33	1148.81	864.196	414.23	3102.32	913.588	85.13	16.099	19.9222	1054.29	3007.59	846.614	1093.75	2410.48	3106.48	10452.79	1117.61	2809.1	11.2809	
IL5	6.16825	11.6119	9.69458	18.7116	11.3691	35.0736	159.955	28.0728	86.1697	34.7039	8.1695	13.8149	11.479	11.3283	48.5858	18.8379	15.9633	22.5392	12.5706	31.6791	72.8151	13.259	11.6552	
IL5RA	122.289	101.543	24.937	42.9451	26.5887	60.9311	43.6207	32.2031	103.2	114.832	45.6795	44.2707	41.0237	36.1397	43.7397	22.0447	51.5829	58.662	154.524	105.685	71.1216	256.057	11.8919	
IL7	250.925	11.452	40.9006	41.5794	34.707	60.255	68.388	43.1569	27.3943	24.7613	26.2285	51.3943	93.5078	133.487	79.2008	68.8808	143.507	55.5905	25.3031	18.1319	14.8919	11.8919	14.8919	
IL7R	277.716	454.55	126.908	15.952	195.133	18.0859	1965.11	3066.25	50.17	21.8833	115.94	341.629	163.305	50.729	21.6337	85.5914	215.618	77.9965	36.5611	325.729	358.084	742.672	11.8919	
IL8	60.029	7.008	65.44	41.0483	16.7027	65.44	41.0483	16.7027	65.44	41.0483	16.7027	65.44	41.0483	16.7027	65.44	41.0483	16.7027	65.44	41.0483	16.7027	65.44	41.0483	16.7027	65.44
IRF8	956.39	7886.09	38.1214	350.349	279.688	45.4123	87.5646	610.549	196.616	99.7567	25.9847	2458.71	1929.66	1211.19	3495.42	1652.36	2798.26	363.726	798.945	519.985	281.068	161.068	161.068	
ITK	468.999	409.756	129.212	6471.89	9578.94	7704.63	3954.85	9006.84	7176.36	597.506	3056.94	3984.74	124.101	115.022	90.2245	171.2657	102.448	167.178	134.448	103.589	654.698	380.47	380.47	
KCNJA3	306.276	411.387	121.648	57.905	465.48	97.655	324.103	263.915	74.9929	40.6051	41.1394	577.173	143.553	102.942	129.913	20.6166	23.5447	15.0007	13.8169	18.0042	120.507	65.0552	65.0552	
KCNKG2	12.531	21.6233	20.722	18.1524	7.92416	12.0781	12.531	13.0927	7.9358	7.28188	17.8817	18.5688	18.8429	21.2862	32.6523	15.9312	16.3577	25.2255	18.1724	21.5578	26.699	11.7302	11.7302	
KIAA0276	7209.22	5267.69	47.131	41.6978	82.7923	64.877	50.3667	26.5348	87.2938	97.0527	54.3441	30.3631	176.396	104.6	210.47	71.669	61.8126	43.4273	108.407	90.2151	435.451	204.63	204.63	
KIAA0754	9780.55	716598	448.803	147.381	11.805	80.9645	7.8792	4.36618	76.1196	60.2282	151.046	100.259	44.7905	7.81907	44.8005	157.755	7.9256	4.64923	7.69025	90.2151	435.451	85.3978	7.87007	
KIR2DL1	7.40644	5.13713	4.49318	8.01647	12.7924	6.32889	1.2623	6.19852	24.5539	24.1777	281.984	532.252	5.11644	4.75183	8.60388	9.52212	4.5319	10.7248	30.9029	25.6528	7.45318	12.3442	12.3442	
KIR2DL4	331.776	242.597	326.566	122.225	125.324	79.0053	62.5414	71.0029	119.611	247.045	602.973	1892.52	128.825	99.7435	300.013	75.0782	110.773	151.831	97.222	116.901	187.147	289.809	289.809	
KIR2DS4	6.6244	4.15745	5.12456	28.6117	113.605	120.499	87.8165	129.462	189.826	544.822	1172.83	3011.55	129.085	114.125	136.085	62.9641	137.386	106.756	147.352	135.055	121.447	344.854	344.854	
KIR3DL2	12.2458	10.5791	7.59574	22.0604	14.1669	9.25105	13.1648	9.26245	30.0312	31.4491	511.294	1163.92	11.3889	6.90889	28.0155	13.7678	10.6414	9.63754	17.2002	14.7244	13.6424	20.0196	20.0196	
KIR3DL1	15.5289	13.7066	28.1314	23.2035	24.7683	9.96458	12.9556	23.9529	171.466	30.4286	18.2087	12.139	13.6408	10.8753	22.7438	37.9632	14.3057	11.3124	42.1158	19.7889	34.1017	15.7352	15.7352	
KLRB1	119.573	241.325	39.3735	8818.27	317.566	1006.26	500.689	4477.73	11.4425	10.26	126.364	12957.4	5576.72	90.2462	26.6851	33.3991	13.5124	94.7988	37.0027	37.4871	72.1378	276.44	322.616	
KLRC3	13.8407	44.6164	9.037	724.776	13.1886	32.0205	12.4117	5.74725	47.2092	586.938	1485.99	662.143	12.5886	6.24598	14.4442	9.75315	18.6764	9.44773	8.28115	15.2143	34.5013	87.7366	87.7366	
KLRC4	68.2502	85.0751	24.4663	213.175	48.8011	17.6763	22.2069	9.62447	33.7634	124.802	205.178	18.985	20.049	24.9315	10.4049	6.45883	10.4049	5.35637	13.7068	12.2503	44.9008	44.9008		
KLRD1	204.007	67.8236	244.895	107.813	25.1217	10.7829	7.38294	5.6925	14.026	33.3082	1596.94	1837.52	103.003	85.5472	207.81	88.796	63.9483	91.8998	59.9817	59.9817	125.25	95.137	95.137	
KLRF1	153.15	198.61	116.866	851.188	11.9277	12.3277	37.0575	13.0244	8.5397	36.62	10475.8	5911.21	100.115	21.904	76.1597	182.536	75.1535	65.8283	69.5823	59.5979	107.425	121.908	121.908	
KLRG1	1351.16	1076.36	482.771	385.915	46.472	1939.94	275.52	283.204	373.325	4631.81	1700.86	912.267	305.447	270.204	253.101	148.566	25.008	22.2402	13.1019	13.1333	44.8751	60.5395	60.5395	
KLRK1	670.271	860.471	77.8429	8228.46	353.846	476.276	26.246	69.1446	44.3235	519.592	8790.5	5454.73	78.9162	44.1476	38.5609	62.472	71.2242	47.2592	88.0196	77.9887	44.1242	246.444	246.444	
KRT18P50	23.9704	28.1515	87.6165	23.2008	44.1209	22.8749	18.7122	30.4705	73.2104	162.088	20.747	16.9179	58.2603	20.181	56.9721	20.1721	10.0553	51.6255	14.9773	18.0663	163.038	68.388	68.388	
KYNU	296.299	57.2525	97.4243	45.9486	41.3564	39.2061	27.3782	22.7438	128.328	117.086	70.765	66.7065	858.745	30.899	63.1557	105.912	19.736	73.0858	132.062	32.7691	62.4804	100.100	100.100	
LAS3	36.2549	8.73253	10.1036	121.304	226.927	175.186	99.9494	129.673	659.213	1296.73	659.213	1296.73	659.213	1296.73	659.213	1296.73	659.213	1296.73	659.213	1296.73	659.213	659.213	659.213	
LAR2	32.4479	67.9233	106.955	107.813	25.1217	10.7829	7.38294	5.6925	14.026	33.3082	1596.94	1837.52	103.003	85.5472	207.81	88.796	63.9483	91.8998	59.9817	59.9817	125.25	95.137	95.137	
LAMP3	47.2828	46.6682	128.432	134.784	120.257	130.305	368.632	165.584	264.04	132.201	120.826	418.71	38.7623	31.7717	113.141	104.114	235.653	81.9463	130.06	54.070	260.821	260.821		
LAT	157.413	133.151	111.423	322.948	566.61	3282.26	1447.74	8480.62	6300.77	2738.32	1722.58	1282.25	239.583	603.686	162.813	181.953	205.265	21.7147	37.876	247.747	405.203	209.655	209.655	
LCK	337.44	327.11	40.8098	8763.86	9848.35	7786.12	4042.38	9578.94	37.674	42.9961	3604.57	260.216	80.7588	64.4552	25.9955	22.8597	43.7917	51.636	33.996	20.9497	245.733	186.869	186.869	
LEF1	30.9082	28.4666	56.4812	120.84	270.472	1154.22	41.9288	495.873	364.873	144.315	115.833	12.5416	11.5183	11.8316	15.8062	11.6118	16.181	20.3309	18.4944	10.7102	82.1975	82.1975		
LHCGR	154.689	195.379	59.3994	93.9874	24.4663	8.2558	5.9899	9.91794	139.079	126.934	21.748	26.0678	11.4701	31.589	23.0381	22.0316	20.6374	21.3651	31.7528	22.2362	51.2046	116.416	116.416	
LLR2A	20.8919	19.1715	13.2373	20.1625	27.3996	18.0226	15.7237	14.6382	15.5879	151.849	101.395	38.7711	1764.82	852.08	317.686	220.179	135.314	67.5687	133.875	101.1	283.331	249.738	249.738	
LLR2B	17.1504	17.1504	17.1504	9.2114	17.1504	9.2114	17.1504	9.2114	17.1504	9.2114	17.1504	9.2114	17.1504	9.2114	17.1504	9.2114	17.1504	9.2114	17.1504	9.2114	17.1504	9.2114	9.2114	
LLR4A	33.0212	11.7108	65.0787	12.7827	17.4575	57.8488	50.0191	40.1593	19.8483	18.1212	65.6877	44.9159	42.9501	38.5861	34.1614	31.114	15.2038	8.33105	10.3711	10.5327	63.1084	63.1084	63.1084	
LLR4B	30.8866	28.114	15.5661	25.5472	6.64369	9.99668	9.08561	12.4368	61.8932	357.619	20.172	36.9093	3344.12	541.407	47.965	118.853	250.193	292.791	334.358	328.451	101.335	290.594	290.594	
LIME1	23.9209	43.8231	1021.39	128.773	99.055	122.616	171.907	801.887	81.3714	666.809	181.478	47.4626	78.1625	41.8288	34.537	50.3354	42.4277	48.5118	45.0411	104.288	52.9652	79.5383	79.5383	
LINC0059	15.983	18.3267	7.21404	6.84173	60.4387	3.68102	3.72054	33.9572	12.935	65.4169	128.014	72.7276	23.1863	11.3705	87.5607	126.347	7.57251	6.36978	66.9801	31.3742	142.381	20.7146	20.7146	
LINC0092	675.122	227.587	145.956	136.812	10.4641	146.144	22.7915</																	

RALGPS2	1597.11	1305.48	112.819	57.0268	40.2571	23.4223	36.8021	28.212	98.9013	85.4811	54.5636	32.5413	44.86	27.2458	22.0316	63.4436	37.7035	39.5414	44.0888	47.5618	56.9276	109.43
RAS3A	10.5615	24.235	13.1402	27.0981	156.482	327.847	24.5742	71.2289	79.6063	98.9799	21.79	65.3311	93.3435	21.3644	14.4311	115.94	17.299	12.3276	15.3721	19.0983	26.6479	19.4265
RASGRP2	5911.21	5135.51	68.8116	2427.95	4016.52	2855.39	121.34	169.599	1173.44	1363.76	256.538	759.799	41.209	120.84	102.042	65.8803	130.574	281.324	209.593	156.499	1260.17	1260.17
RASGRP3	458.36	578.453	325.41	16.228	28.7949	13.6687	13.7435	15.3904	35.1489	16.027	15.5115	19.0711	11.4392	74.317	552.033	1.32217	986.072	1037.51	57.225	90.1858	77.0018	15.8927
RASFA	22.6771	18.661	15.1179	22.9819	29.2554	16.6696	23.4877	25.7631	87.8215	20.6472	228.528	146.196	672.104	501.626	3036.44	560.785	657.841	2481.69	39.5302	30.1934	15.5773	37.7189
RANSA	46.6661	40.6645	41.2995	155.03	219.644	99.8666	193.094	28.8125	32.67	28.3536	7.23561	25.0117	41.6834	54.9882	37.6006	28.6715	30.5551	10.627	6.23015	35.0728	10.9194	5.26993
REN	63.7557	51.2803	391.964	30.7495	76.8134	42.4701	37.2987	35.7949	74.051	25.6337	26.149	246.263	31.4489	30.597	29.9437	26.0311	25.3695	25.1865	18.8759	51.6107	33.5244	43.9834
RENBP	53.6055	41.6905	23.1549	45.5491	37.113	34.3453	40.6149	18.3336	33.375	37.6646	20.4386	34.3453	215.088	433.093	777.77	1584.31	205.937	113.646	101.644	192.926	306.39	77.276
REPS2	40.3629	27.9527	79.2029	13.8876	12.0895	18.9522	8.28887	18.5713	22.28	19.4309	16.0062	21.7177	153.288	14.4958	9.78903	117.231	46.4036	43.1156	108.25	19.052	735.572	1345.64
RGSI	180.199	246.272	92.0202	646.722	215.673	1496.611	1321.5	1981.05	1384.65	110.307	147.042	255.51	64.4417	147.149	184.994	63.8235	62.1036	33.5357	507.24	474.485	6082.81	111.35
RGS13	71.2657	70.4943	269.813	26.821	11.2333	22.227	7.84398	79.7229	37.7212	60.0098	38.2712	59.0437	78.736	9.04132	3.82861	4.0249	34.6737	2306.94	34.6737	2306.94	15.733	19.8344
RNASE2	186.472	164.907	350.768	216.873	156.133	189.7636	102.519	83.759	107.063	600.512	663.055	230.075	361.284	144.229	407.223	677.714	143.263	145.714	1975.14	222.69	85.275	672.191
RNASE5	1799.68	1157.23	2281.11	17.0513	21.1314	64.4438	8.63635	22.1728	11.3732	77.722	84.5879	14.3677	4038.45	2527.65	306.169	5075.1	8418.34	853.615	681.365	506.467	144.002	213.003
RPL10L	36.0087	70.343	311.315	321.35	328.074	588.702	346.941	160.245	144.445	184.475	91.2767	98.9284	95.7049	57.3155	53.6494	70.3334	26.9817	75.5232	182.734	140.712	24.8215	13.6945
RPL3P7	76.8505	379.486	1151.46	1290.95	447.773	3370.86	1067.78	2289.14	142.679	649.198	256.676	55.1036	109.461	25.6758	39.6473	31.9351	20.7984	74.7272	459.178	150.247	266.182	142.538
RPLP2	12.8152	12.6725	546.135	10.8322	10.2629	14.3173	378.729	17.2718	29.8665	9.38933	20.597	75.4449	288.345	98.8497	11.7281	14.5147	35.4971	11.8487	26.9147	173.353	930.231	274.094
RRP9	95.4453	16.3321	11.4758	92.3651	116.424	49.5309	524.282	82.5653	11.6719	62.7399	53.2923	186.620	36.1323	164.951	183.181	91.1632	29.2975	16.3481	11.0627	126.396	49.908	9.94509
RSAD2	215.228	211.215	215.517	164.102	230.681	222.858	149.426	101.608	852.591	390.708	300.348	666.804	334.986	78.8724	6976.48	140.167	113.741	132.553	399.435	312.62	1070.32	713.359
RYS1	108.558	115.914	61.532	134.679	13.3104	134.919	161.981	214.172	1289.51	142.581	38.1114	76.7444	128.932	205.797	72.9949	102.3	117.169	105.54	15.7971	55.4883	75.752	199.924
S100A12	190.663	205.61	206.614	103.089	122.046	79.9668	77.6091	114.327	93.8562	67.5556	1088.21	220.626	111.497	143.016	25.83	123.701	132.82	138.87	105.417	976.508	374.452	8781.77
S1PMS	7.99712	7.02749	7.65618	41.049	8.4517	6.54773	6.84333	8.88663	5.61564	10.0671	587.658	175.698	4.90063	6.63364	6.43369	6.92011	7.66804	8.97421	9.12493	8.09185	9.35291	
SAMSNS1	197.088	441.901	574.922	794.816	609.276	1660.13	2859.41	577.401	1973.85	1571.7	1266.57	2876.6	1412.29	645.689	5090.53	3133.9	2070.55	707.18	6327.08	4.9609	11409.5	1654.1
SCN9A	7.19229	7.90594	8.49398	5.5994	20.4394	6.40933	6.27698	22.1418	39.6939	56.5436	11.2458	10.5941	6.12899	6.72086	11.1605	88.1004	304.809	6.08488	61.2251	108.671	17.7601	15.2382
SEC31B	64.8014	51.0818	110.239	42.4732	539.266	63.7902	23.5721	163.901	10.735	58.5038	248.32	30.9473	136.549	33.1826	58.5085	492.069	38.3377	29.7514	207.473	231.166	179.502	40.6762
SELL	111.022	8002.61	376.905	7418.86	8005.46	710.611	2531.5	4188.18	5165.45	10585.6	5741.49	1590.26	74.734	103.92	234.172	93.9412	121.954	137.33	355.99	286.717	3001.39	1374.94
S- Sep	10.8993	18.0659	29.873	37.8866	37.8866	16.12	92.097	18.9654	14.394	14.394	115.127	107.755	16.504	14.4027	17.4563	14.7934	14.3202	25.8689	23.9839	51.899	15.733	15.733
S- Sep	27.7175	22.8798	37.6536	31.0278	35.0009	35.9388	27.6167	126.645	33.1677	30.066	26.9758	67.2842	15.6221	27.1893	183.066	72.0103	34.6678	19.3327	41.7782	267.468	24.112	21.7778
SERGEF	15.6914	11.986	11.0903	63.6079	264.236	235.879	16.2288	189.143	18.5212	17.2702	64.8189	41.5765	20.4217	24.0606	113.605	103.011	16.8398	19.0611	89.9832	39.4062	19.9948	16.7439
SH2D1A	30.8664	23.7458	17.0246	12.0249	91.037	158.549	1484.48	2984.36	2057.44	1522.34	1.296	844.708	18.418	17.338	17.5347	11.3907	16.5125	27.6285	22.1716	43.9516	29.1315	41.8751
SIGLEC1	258.3	149.399	98.7201	81.5005	55.5443	91.0726	46.5724	55.1357	132.288	118.122	98.8058	88.8159	279.322	116.43	620.279	3457.59	404.608	2742.91	185.663	145.666	126.374	245.932
SIK1	5471.7	5620.45	55.225	12.192	49.4207	41.0037	162.041	4922.27	942.261	393.187	457.652	248.295	544.809	146.153	292.992	111.244	100.718	228.177	59.768	326.996	2371.94	401.547
SIRPG	74.1126	71.7336	55.7452	1310.34	1078.57	1148.81	1393.21	3092.33	32.278	73.827	94.3654	57.8927	18.3654	11.737	234.172	93.9412	121.954	137.33	355.99	286.717	3001.39	1374.94
SIT1	759.159	18.0659	15.8787	16.12	92.097	16.12	92.097	18.9654	14.394	14.394	115.127	107.755	16.504	14.4027	17.4563	14.7934	14.3202	25.8689	23.9839	51.899	15.733	15.733
SITA	4.91436	2.77047	3.23618	2.22603	15.8936	1.65886	353.189	5.8275	19.2067	10.1915	41.3564	3.19489	4.37549	6.57229	15.6035	2.81889	4.75106	30.7677	18.0182	5.45324	2.0938	
SKAMP1	1378.74	556.927	875.146	2273.26	2670.87	2395.68	814.249	2389.17	5831.85	2886.35	2037.38	153.144	155.106	188.029	115.435	100.357	168.339	153.529	498.346	490.989	445.017	388.847
SLAMF1	762.035	515.487	1019.77	496.422	449.836	1081.53	2005.43	1074.94	1504.85	1075.82	114.124	115.62	111.909	131.709	6057.92	845.507	126.411	801.522	58.056	157.558	243.983	260.858
SLAMFR	156.65	135.992	97.4207	107.641	72.6907	101.406	85.9785	48.4924	37.2438	21.1302	17.0426	95.174	166.406	2.483	663.473	1407.52	2859.32	358.466	237.642	389.302	111.152	120.650
SLC12A1	89.4899	48.9366	9.17429	10.7794	13.5972	11.2033	1.8637	3.0215	31.2921	31.9203	31.9203	31.9203	3.35313	3.69927	5.19909	17.1207	2.70881	1.78681	5.25015	18.1912	24.7591	82.9922
SLC12A6	7.25582	8.43487	52.0634	32.11921	3.74022	3.74022	3.74022	3.74022	3.74022	3.74022	3.74022	3.74022	3.74022	3.74022	3.74022	3.74022	3.74022	3.74022	3.74022	3.74022	3.74022	3.74022
SLC15A3	9.05817	20.2449	10.2839	10.576	27.125	19.3645	13.0927	19.7654	9.87289	74.5084	11.452	34.089	82.9364	45.6407	3860.54	3890.34	3688.67	4650.12	321.295	43.816	50.988	143.04
SLC22A	112.564	313.23	42.9022	43.856	80.5592	15.5899	24.8858	11.0789	11.5414	21.3152	10.7367	125.466	623.894	328.746	6057.92	579.734	500.226	192.818	552.658	528.636	14.116	12.747
SLC7A10	66.7807	84.617	10.2633	33.201	19.6695	53.1212	44.819	62.6562	23.5688	14.7767	31.8504	24.3686	34.3089	5.2921	34.7291	26.3219	37.7982	105.054	47.677	11.7442	34.6614	50.9434
SLC05A1	118.73	108.129	82.9399	30.0687	55.6925	70.9767	41.7937	15.5781	11.3233	35.3305	73.0234	49.927	40.6934	42.8667	954.038	39.7571	42.9359	105.068	14.9805	26.3143	29.1103	31.437
SMPD3	70.721	140.541	328.737	70.1268	148.972	47.6216	17.2585	51.6154	27.3493	99.227	89.684	154.573	35.663	44.175	66.6362	116.467	23.594	53.3365	15.1724	30.9053	168.573	246.551
SMPDL3B	2.74237	3.0344	6.71178	3.73038	5.87719	3.84718	4.62442	4.91436	6.38705	9.07379	4.98851	4.18249	4.61674	4.12578	4.75106	4.03108	3.67896	4.24831	4.79592	5.2825	15.265	63.9158
SOC1	27.1479	25.0917	16.8555	160.803	64.4438	118.717	1034.18</															

Table S3 Geneset for ssGSEA

Metagene	Cell type	Immunity
ADAM28	Activated	Adaptive
CD180	Activated	Adaptive
CD79B	Activated	Adaptive
BLK	Activated	Adaptive
CD19	Activated	Adaptive
MS4A1	Activated	Adaptive
TNFRSF17	Activated	Adaptive
IGHM	Activated	Adaptive
GNG7	Activated	Adaptive
MICAL3	Activated	Adaptive
SPIB	Activated	Adaptive
HLA-DOB	Activated	Adaptive
IGKC	Activated	Adaptive
PNOC	Activated	Adaptive
FCRL2	Activated	Adaptive
BACH2	Activated	Adaptive
CR2	Activated	Adaptive
TCL1A	Activated	Adaptive
AKNA	Activated	Adaptive
ARHGAP25	Activated	Adaptive
CCL21	Activated	Adaptive
CD27	Activated	Adaptive
CD38	Activated	Adaptive
CLEC17A	Activated	Adaptive
CLEC9A	Activated	Adaptive
CLECL1	Activated	Adaptive
AIM2	Activated	Adaptive
BIRC3	Activated	Adaptive
BRIP1	Activated	Adaptive
CCL20	Activated	Adaptive
CCL4	Activated	Adaptive
CCL5	Activated	Adaptive
CCNB1	Activated	Adaptive
CCR7	Activated	Adaptive
DUSP2	Activated	Adaptive
ESCO2	Activated	Adaptive
ETS1	Activated	Adaptive
EXO1	Activated	Adaptive
EXOC6	Activated	Adaptive
IARS	Activated	Adaptive
ITK	Activated	Adaptive
KIF11	Activated	Adaptive
KNTC1	Activated	Adaptive
NUF2	Activated	Adaptive
PRC1	Activated	Adaptive
PSAT1	Activated	Adaptive
RGS1	Activated	Adaptive
RTKN2	Activated	Adaptive
SAMSN1	Activated	Adaptive
SELL	Activated	Adaptive

TRAT1	Activated Adaptive
ADRM1	Activated Adaptive
AHSA1	Activated Adaptive
C1GALT1C1	Activated Adaptive
CCT6B	Activated Adaptive
CD37	Activated Adaptive
CD3D	Activated Adaptive
CD3E	Activated Adaptive
CD3G	Activated Adaptive
CD69	Activated Adaptive
CD8A	Activated Adaptive
CETN3	Activated Adaptive
CSE1L	Activated Adaptive
GEMIN6	Activated Adaptive
GNLY	Activated Adaptive
GPT2	Activated Adaptive
GZMA	Activated Adaptive
GZMH	Activated Adaptive
GZMK	Activated Adaptive
IL2RB	Activated Adaptive
LCK	Activated Adaptive
MPZL1	Activated Adaptive
NKG7	Activated Adaptive
PIK3IP1	Activated Adaptive
PTRH2	Activated Adaptive
TIMM13	Activated Adaptive
ZAP70	Activated Adaptive
ABHD3	Central mεAdaptive
AHNAK	Central mεAdaptive
ANXA2P2	Central mεAdaptive
AQP3	Central mεAdaptive
ATHL1	Central mεAdaptive
BMI1	Central mεAdaptive
BZW2	Central mεAdaptive
CD63	Central mεAdaptive
COL4A1	Central mεAdaptive
CYLD	Central mεAdaptive
ELMO2	Central mεAdaptive
FYN	Central mεAdaptive
GLIPR1	Central mεAdaptive
GSS	Central mεAdaptive
IFITM2	Central mεAdaptive
ITGB1	Central mεAdaptive
ITGB2	Central mεAdaptive
KLF5	Central mεAdaptive
LSP1	Central mεAdaptive
NDUFB9	Central mεAdaptive
PKM2	Central mεAdaptive
SFXN3	Central mεAdaptive
SIRPG	Central mεAdaptive
SMAD4	Central mεAdaptive

STX4	Central mAdaptive
TRADD	Central mAdaptive
VIM	Central mAdaptive
XRCC6	Central mAdaptive
ACTN4	Central mAdaptive
ADAM12	Central mAdaptive
ADCY9	Central mAdaptive
F13A1	Central mAdaptive
FCER1G	Central mAdaptive
FCGR3B	Central mAdaptive
FGF7	Central mAdaptive
FKBP4	Central mAdaptive
GLUD1	Central mAdaptive
GM2A	Central mAdaptive
GUSB	Central mAdaptive
IL1RN	Central mAdaptive
NOL11	Central mAdaptive
NTRK1	Central mAdaptive
RARA	Central mAdaptive
RNF128	Central mAdaptive
SIGLEC1	Central mAdaptive
TNFRSF11A	Central mAdaptive
TOX4	Central mAdaptive
UBA52	Central mAdaptive
ULBP1	Central mAdaptive
ATM	Effector nAdaptive
CASP3	Effector nAdaptive
CASQ1	Effector nAdaptive
CD300E	Effector nAdaptive
DARS	Effector nAdaptive
DOCK9	Effector nAdaptive
EXOSC9	Effector nAdaptive
EZH2	Effector nAdaptive
GDE1	Effector nAdaptive
IL34	Effector nAdaptive
NCOA4	Effector nAdaptive
NEFL	Effector nAdaptive
PDGFRL	Effector nAdaptive
PTGS1	Effector nAdaptive
REPS1	Effector nAdaptive
SCG2	Effector nAdaptive
SDPR	Effector nAdaptive
SIGLEC14	Effector nAdaptive
SIGLEC6	Effector nAdaptive
TAL1	Effector nAdaptive
TFEC	Effector nAdaptive
TIPIN	Effector nAdaptive
TPK1	Effector nAdaptive
UQCRB	Effector nAdaptive
USP9Y	Effector nAdaptive
WIPF1	Effector nAdaptive

ZCRB1	Effector nAdaptive
ACAP1	Effector nAdaptive
APOL3	Effector nAdaptive
ARHGAP10	Effector nAdaptive
ATP10D	Effector nAdaptive
C3AR1	Effector nAdaptive
CCR5	Effector nAdaptive
CD160	Effector nAdaptive
CD55	Effector nAdaptive
CFLAR	Effector nAdaptive
CMKLR1	Effector nAdaptive
DAPP1	Effector nAdaptive
FCRL6	Effector nAdaptive
FLT3LG	Effector nAdaptive
GZMM	Effector nAdaptive
HAPLN3	Effector nAdaptive
HLA-DMB	Effector nAdaptive
HLA-DPA1	Effector nAdaptive
HLA-DPB1	Effector nAdaptive
IFI16	Effector nAdaptive
LIME1	Effector nAdaptive
LTK	Effector nAdaptive
NFKBIA	Effector nAdaptive
SETD7	Effector nAdaptive
SIK1	Effector nAdaptive
TRIB2	Effector nAdaptive
ACP5	Gamma deltAdaptive
AQP9	Gamma deltAdaptive
BTN3A2	Gamma deltAdaptive
Clorf54	Gamma deltAdaptive
CARD8	Gamma deltAdaptive
CCL18	Gamma deltAdaptive
CD209	Gamma deltAdaptive
CD33	Gamma deltAdaptive
CD36	Gamma deltAdaptive
CDK5	Gamma deltAdaptive
IL10RB	Gamma deltAdaptive
KLRF1	Gamma deltAdaptive
LGALS1	Gamma deltAdaptive
MAPK7	Gamma deltAdaptive
KLHL7	Gamma deltAdaptive
KRT80	Gamma deltAdaptive
LAMC1	Gamma deltAdaptive
LCORL	Gamma deltAdaptive
LMNB1	Gamma deltAdaptive
MEIS3P1	Gamma deltAdaptive
MPL	Gamma deltAdaptive
FABP1	Gamma deltAdaptive
FABP5	Gamma deltAdaptive
FADD	Gamma deltAdaptive
MFAP3L	Gamma deltAdaptive

MINPP1	Gamma del	Adaptive
RPS24	Gamma del	Adaptive
RPS7	Gamma del	Adaptive
RPS9	Gamma del	Adaptive
DBNL	Gamma del	Adaptive
CCL13	Gamma del	Adaptive
CD22	Immature	Adaptive
CYBB	Immature	Adaptive
FAM129C	Immature	Adaptive
FCRL1	Immature	Adaptive
FCRL3	Immature	Adaptive
FCRL5	Immature	Adaptive
FCRLA	Immature	Adaptive
HDAC9	Immature	Adaptive
HLA-DQA1	Immature	Adaptive
HVCN1	Immature	Adaptive
KIAA0226	Immature	Adaptive
NCF1	Immature	Adaptive
NCF1B	Immature	Adaptive
P2RY10	Immature	Adaptive
SP100	Immature	Adaptive
TXNIP	Immature	Adaptive
STAP1	Immature	Adaptive
TAGAP	Immature	Adaptive
ZCCHC2	Immature	Adaptive
AICDA	Memory B	cAdaptive
CCNA2	Memory B	cAdaptive
CDKN3	Memory B	cAdaptive
CLCN5	Memory B	cAdaptive
ENPP1	Memory B	cAdaptive
FCER1A	Memory B	cAdaptive
FCRL4	Memory B	cAdaptive
MYC	Memory B	cAdaptive
RUNX2	Memory B	cAdaptive
SORL1	Memory B	cAdaptive
SOX5	Memory B	cAdaptive
STAT5A	Memory B	cAdaptive
STAT5B	Memory B	cAdaptive
TLR9	Memory B	cAdaptive
CCL3L1	Regulatory	Adaptive
CD72	Regulatory	Adaptive
CLEC5A	Regulatory	Adaptive
FOXP3	Regulatory	Adaptive
ITGA4	Regulatory	Adaptive
L1CAM	Regulatory	Adaptive
LIPA	Regulatory	Adaptive
LRP1	Regulatory	Adaptive
LRRC42	Regulatory	Adaptive
MARCO	Regulatory	Adaptive
MMP12	Regulatory	Adaptive
MNDA	Regulatory	Adaptive

MRC1	RegulatoryAdaptive
MS4A6A	RegulatoryAdaptive
PELO	RegulatoryAdaptive
PLEK	RegulatoryAdaptive
PRSS23	RegulatoryAdaptive
PTGIR	RegulatoryAdaptive
ST8SIA4	RegulatoryAdaptive
STAB1	RegulatoryAdaptive
B3GAT1	T folliculAdaptive
CDK5R1	T folliculAdaptive
PDCD1	T folliculAdaptive
BCL6	T folliculAdaptive
CD200	T folliculAdaptive
CD83	T folliculAdaptive
CD84	T folliculAdaptive
FGF2	T folliculAdaptive
GPR18	T folliculAdaptive
CEBPA	T folliculAdaptive
CECR1	T folliculAdaptive
CLEC10A	T folliculAdaptive
CLEC4A	T folliculAdaptive
CSF1R	T folliculAdaptive
CTSS	T folliculAdaptive
DMN	T folliculAdaptive
DPP4	T folliculAdaptive
LRRRC32	T folliculAdaptive
MC5R	T folliculAdaptive
MICA	T folliculAdaptive
NCAM1	T folliculAdaptive
NCR2	T folliculAdaptive
NRP1	T folliculAdaptive
PDCD1LG2	T folliculAdaptive
PDCD6	T folliculAdaptive
PRDX1	T folliculAdaptive
RAE1	T folliculAdaptive
RAET1E	T folliculAdaptive
SIGLEC7	T folliculAdaptive
SIGLEC9	T folliculAdaptive
TYRO3	T folliculAdaptive
CHST12	T folliculAdaptive
CLIC3	T folliculAdaptive
IVNS1ABP	T folliculAdaptive
KIR2DL2	T folliculAdaptive
LGMN	T folliculAdaptive
CD70	Type 1 T fAdaptive
TBX21	Type 1 T fAdaptive
ADAM8	Type 1 T fAdaptive
AHCYL2	Type 1 T fAdaptive
ALCAM	Type 1 T fAdaptive
B3GALNT1	Type 1 T fAdaptive
BBS12	Type 1 T fAdaptive

BST1	Type 1 T fAdaptive
CD151	Type 1 T fAdaptive
CD47	Type 1 T fAdaptive
CD48	Type 1 T fAdaptive
CD52	Type 1 T fAdaptive
CD53	Type 1 T fAdaptive
CD59	Type 1 T fAdaptive
CD6	Type 1 T fAdaptive
CD68	Type 1 T fAdaptive
CD7	Type 1 T fAdaptive
CD96	Type 1 T fAdaptive
CFHR3	Type 1 T fAdaptive
CHRM3	Type 1 T fAdaptive
CLEC7A	Type 1 T fAdaptive
COL23A1	Type 1 T fAdaptive
COL4A4	Type 1 T fAdaptive
COL5A3	Type 1 T fAdaptive
DAB1	Type 1 T fAdaptive
DLEU7	Type 1 T fAdaptive
DOC2B	Type 1 T fAdaptive
EMP1	Type 1 T fAdaptive
F12	Type 1 T fAdaptive
FURIN	Type 1 T fAdaptive
GAB3	Type 1 T fAdaptive
GATM	Type 1 T fAdaptive
GFPT2	Type 1 T fAdaptive
GPR25	Type 1 T fAdaptive
GREM2	Type 1 T fAdaptive
HAVCR1	Type 1 T fAdaptive
HSD11B1	Type 1 T fAdaptive
HUNK	Type 1 T fAdaptive
IGF2	Type 1 T fAdaptive
RCSD1	Type 1 T fAdaptive
RYR1	Type 1 T fAdaptive
SAV1	Type 1 T fAdaptive
SELE	Type 1 T fAdaptive
SELP	Type 1 T fAdaptive
SH3KBP1	Type 1 T fAdaptive
SIT1	Type 1 T fAdaptive
SLC35B3	Type 1 T fAdaptive
SIGLEC10	Type 1 T fAdaptive
SKAP1	Type 1 T fAdaptive
THUMPD2	Type 1 T fAdaptive
TIGIT	Type 1 T fAdaptive
ZEB2	Type 1 T fAdaptive
ENC1	Type 1 T fAdaptive
FAM134B	Type 1 T fAdaptive
FBX030	Type 1 T fAdaptive
FCGR2C	Type 1 T fAdaptive
STAC	Type 1 T fAdaptive
LTC4S	Type 1 T fAdaptive

MAN1B1	Type 1 T fAdaptive
MDH1	Type 1 T fAdaptive
MMD	Type 1 T fAdaptive
RGS16	Type 1 T fAdaptive
IL12A	Type 1 T fAdaptive
P2RX5	Type 1 T fAdaptive
CD97	Type 1 T fAdaptive
ITGB4	Type 1 T fAdaptive
ICAM3	Type 1 T fAdaptive
METRNL	Type 1 T fAdaptive
TNFRSF1A	Type 1 T fAdaptive
IRF1	Type 1 T fAdaptive
HTR2B	Type 1 T fAdaptive
CALD1	Type 1 T fAdaptive
MOCOS	Type 1 T fAdaptive
TRAF3IP2	Type 1 T fAdaptive
TLR8	Type 1 T fAdaptive
TRAF1	Type 1 T fAdaptive
DUSP14	Type 1 T fAdaptive
IL17A	Type 17 T Adaptive
IL17RA	Type 17 T Adaptive
C2CD4A	Type 17 T Adaptive
C2CD4B	Type 17 T Adaptive
CA2	Type 17 T Adaptive
CCDC65	Type 17 T Adaptive
CEACAM3	Type 17 T Adaptive
IL17C	Type 17 T Adaptive
IL17F	Type 17 T Adaptive
IL17RC	Type 17 T Adaptive
IL17RE	Type 17 T Adaptive
IL23A	Type 17 T Adaptive
ILDR1	Type 17 T Adaptive
LONRF3	Type 17 T Adaptive
SH2D6	Type 17 T Adaptive
TNIP2	Type 17 T Adaptive
ABCA1	Type 17 T Adaptive
ABCB1	Type 17 T Adaptive
ADAMTS12	Type 17 T Adaptive
ANK1	Type 17 T Adaptive
ANKRD22	Type 17 T Adaptive
B3GALT2	Type 17 T Adaptive
CAMTA1	Type 17 T Adaptive
CCR9	Type 17 T Adaptive
CD40	Type 17 T Adaptive
GPR44	Type 17 T Adaptive
IFT80	Type 17 T Adaptive
ASB2	Type 2 T fAdaptive
CSRP2	Type 2 T fAdaptive
DAPK1	Type 2 T fAdaptive
DLC1	Type 2 T fAdaptive
DNAJC12	Type 2 T fAdaptive

DUSP6	Type 2 T fAdaptive
GNAI1	Type 2 T fAdaptive
LAMP3	Type 2 T fAdaptive
NRP2	Type 2 T fAdaptive
OSBPL1A	Type 2 T fAdaptive
PDE4B	Type 2 T fAdaptive
PHLDA1	Type 2 T fAdaptive
PLA2G4A	Type 2 T fAdaptive
RAB27B	Type 2 T fAdaptive
RBMS3	Type 2 T fAdaptive
RNF125	Type 2 T fAdaptive
TMPRSS3	Type 2 T fAdaptive
GATA3	Type 2 T fAdaptive
BIRC5	Type 2 T fAdaptive
CDC25C	Type 2 T fAdaptive
CDC7	Type 2 T fAdaptive
CENPF	Type 2 T fAdaptive
CXCR6	Type 2 T fAdaptive
DHFR	Type 2 T fAdaptive
EVI5	Type 2 T fAdaptive
GSTA4	Type 2 T fAdaptive
HELLS	Type 2 T fAdaptive
IL26	Type 2 T fAdaptive
LAIR2	Type 2 T fAdaptive
ABCD1	Activated Innate
C1QC	Activated Innate
CAPG	Activated Innate
CCL3L3	Activated Innate
CD207	Activated Innate
CD302	Activated Innate
ATP5B	Activated Innate
ATP5L	Activated Innate
ATP6V1A	Activated Innate
BCL2L1	Activated Innate
C1QB	Activated Innate
SNURF	Activated Innate
SPCS3	Activated Innate
CCNA1	Activated Innate
CEACAM8	Activated Innate
NOS2	Activated Innate
SRA1	Activated Innate
TNFRSF6B	Activated Innate
TREM1	Activated Innate
TREML1	Activated Innate
RHOA	Activated Innate
SLC25A37	Activated Innate
TNFSF14	Activated Innate
TREML4	Activated Innate
VNN2	Activated Innate
XPO6	Activated Innate
CLEC4C	Activated Innate

TNFAIP2	Activated Innate
UBD	Activated Innate
ACTR3	Activated Innate
RAB1A	Activated Innate
SLA	Activated Innate
HLA-DQA2	Activated Innate
SIGLEC5	Activated Innate
SLAMF9	Activated Innate
ABAT	CD56brightInnate
C11orf75	CD56brightInnate
C5orf15	CD56brightInnate
CDHR1	CD56brightInnate
DCAF12	CD56brightInnate
DYNLL1	CD56brightInnate
GPR137B	CD56brightInnate
HCP5	CD56brightInnate
HDGFRP2	CD56brightInnate
KRT86	CD56brightInnate
MLST8	CD56brightInnate
ELMOD3	CD56brightInnate
ENTPD5	CD56brightInnate
FAM119A	CD56brightInnate
FAM179A	CD56brightInnate
CLIC2	CD56brightInnate
COX7A2L	CD56brightInnate
CREB3L4	CD56brightInnate
CSF1	CD56brightInnate
CSNK2A2	CD56brightInnate
CSTA	CD56brightInnate
CSTB	CD56brightInnate
CTPS	CD56brightInnate
CTSD	CD56brightInnate
FST	CD56brightInnate
GATA2	CD56brightInnate
GMPR	CD56brightInnate
HDC	CD56brightInnate
HEY1	CD56brightInnate
HOXA1	CD56brightInnate
HS2ST1	CD56brightInnate
HS3ST1	CD56brightInnate
BCL11B	CD56brightInnate
CDH3	CD56brightInnate
MYL6B	CD56brightInnate
NAA16	CD56brightInnate
C1QA	CD56brightInnate
C1QB	CD56brightInnate
CYP27B1	CD56brightInnate
EIF3M	CD56brightInnate
CYP27A1	CD56dim n ϵ Innate
DDX55	CD56dim n ϵ Innate
DYRK2	CD56dim n ϵ Innate

RPL37A	CD56dim n�Innate
NOTCH3	CD56dim n�Innate
AKR7A3	CD56dim n�Innate
GPRC5C	CD56dim n�Innate
GRIN1	CD56dim n�Innate
HLA-E	CD56dim n�Innate
PORCN	CD56dim n�Innate
PSMC4	CD56dim n�Innate
UPP1	CD56dim n�Innate
IL21R	CD56dim n�Innate
KIR2DS1	CD56dim n�Innate
KIR2DS2	CD56dim n�Innate
KIR2DS5	CD56dim n�Innate
GIPR	EosinophilInnate
KRT18P50	EosinophilInnate
LRMP	EosinophilInnate
FOSB	EosinophilInnate
RRP12	EosinophilInnate
GPR183	EosinophilInnate
NR4A3	EosinophilInnate
ST3GAL6	EosinophilInnate
DEPDC5	EosinophilInnate
PDE6C	EosinophilInnate
PKD2L2	EosinophilInnate
GPR65	EosinophilInnate
IL5RA	EosinophilInnate
P2RY14	EosinophilInnate
DACH1	EosinophilInnate
DAPK2	EosinophilInnate
EMR3	EosinophilInnate
ACADM	Immature cInnate
AHCYL1	Immature cInnate
ALDH1A2	Immature cInnate
ALDH3A2	Immature cInnate
ALDH9A1	Immature cInnate
ALOX15	Immature cInnate
AMT	Immature cInnate
ARL1	Immature cInnate
ATIC	Immature cInnate
ATP5A1	Immature cInnate
CAPZA1	Immature cInnate
LILRA5	Immature cInnate
RDX	Immature cInnate
RRAGD	Immature cInnate
TACSTD2	Immature cInnate
INPP5F	Immature cInnate
RAB38	Immature cInnate
PLAU	Immature cInnate
CSF3R	Immature cInnate
SLC18A2	Immature cInnate
AMPD2	Immature cInnate

CLTB	Immature cInnate
Clorf162	Immature cInnate
AIF1	Macrophage Innate
CCL1	Macrophage Innate
CCL14	Macrophage Innate
CCL23	Macrophage Innate
CCL26	Macrophage Innate
CD300LB	Macrophage Innate
CNR1	Macrophage Innate
CNR2	Macrophage Innate
EIF1	Macrophage Innate
EIF4A1	Macrophage Innate
FPR1	Macrophage Innate
FPR2	Macrophage Innate
FRAT2	Macrophage Innate
GPR27	Macrophage Innate
GPR77	Macrophage Innate
RNASE2	Macrophage Innate
MS4A2	Macrophage Innate
BASP1	Macrophage Innate
IGSF6	Macrophage Innate
HK3	Macrophage Innate
VNN1	Macrophage Innate
FES	Macrophage Innate
NPL	Macrophage Innate
FZD2	Macrophage Innate
FAM198B	Macrophage Innate
HNMT	Macrophage Innate
SLC15A3	Macrophage Innate
CD4	Macrophage Innate
TXNDC3	Macrophage Innate
FRMD4A	Macrophage Innate
CRYBB1	Macrophage Innate
HRH1	Macrophage Innate
WNT5B	Macrophage Innate
ADAMTS3	Mast cell Innate
CPA3	Mast cell Innate
CMA1	Mast cell Innate
CTSG	Mast cell Innate
ARHGAP15	Mast cell Innate
CPM	Mast cell Innate
FCN1	Mast cell Innate
FTL	Mast cell Innate
HSPA6	Mast cell Innate
ITGA9	Mast cell Innate
RNASE3	Mast cell Innate
S100A4	Mast cell Innate
SIGLEC8	Mast cell Innate
SLC6A4	Mast cell Innate
PTGS2	Mast cell Innate
EGR3	Mast cell Innate

PILRA	Mast cell	Innate
CCR2	MDSC	Innate
CD14	MDSC	Innate
CD2	MDSC	Innate
CD86	MDSC	Innate
CXCR4	MDSC	Innate
FCGR2A	MDSC	Innate
FCGR2B	MDSC	Innate
FCGR3A	MDSC	Innate
FERMT3	MDSC	Innate
GPSM3	MDSC	Innate
IL18BP	MDSC	Innate
IL4R	MDSC	Innate
ITGAL	MDSC	Innate
ITGAM	MDSC	Innate
PARVG	MDSC	Innate
PSAP	MDSC	Innate
PTGER2	MDSC	Innate
PTGES2	MDSC	Innate
S100A8	MDSC	Innate
S100A9	MDSC	Innate
ASGR2	Monocyte	Innate
CFP	Monocyte	Innate
ASGR1	Monocyte	Innate
CD1D	Monocyte	Innate
UPK3A	Monocyte	Innate
ACTG1	Monocyte	Innate
ANXA5	Monocyte	Innate
ATP6V1B2	Monocyte	Innate
CFL1	Monocyte	Innate
DAZAP2	Monocyte	Innate
CTBS	Monocyte	Innate
EMR4P	Monocyte	Innate
HIVEP2	Monocyte	Innate
MARCKSL1	Monocyte	Innate
MBP	Monocyte	Innate
MMP15	Monocyte	Innate
PNPLA6	Monocyte	Innate
TMBIM6	Monocyte	Innate
PQBP1	Monocyte	Innate
TEX264	Monocyte	Innate
IKZF1	Monocyte	Innate
AKT3	Natural ki	Innate
AXL	Natural ki	Innate
BST2	Natural ki	Innate
CDH2	Natural ki	Innate
CRTAM	Natural ki	Innate
CSF2RA	Natural ki	Innate
CTSZ	Natural ki	Innate
CXCL1	Natural ki	Innate
CYTH1	Natural ki	Innate

DAXX	Natural	kiInnate
DGKH	Natural	kiInnate
DLL4	Natural	kiInnate
DPYD	Natural	kiInnate
ERBB3	Natural	kiInnate
F11R	Natural	kiInnate
FAM27A	Natural	kiInnate
FAM49A	Natural	kiInnate
FASLG	Natural	kiInnate
FCGR1A	Natural	kiInnate
FN1	Natural	kiInnate
FSTL1	Natural	kiInnate
FUCA1	Natural	kiInnate
GBP3	Natural	kiInnate
GLS2	Natural	kiInnate
GRB2	Natural	kiInnate
LST1	Natural	kiInnate
BCL2	Natural	kiInnate
CDC5L	Natural	kiInnate
FGF18	Natural	kiInnate
FUT5	Natural	kiInnate
FZR1	Natural	kiInnate
GAGE2	Natural	kiInnate
IGFBP5	Natural	kiInnate
KANK2	Natural	kiInnate
LDB3	Natural	kiInnate
BTN2A2	Natural	kiInnate
CD101	Natural	kiInnate
CD109	Natural	kiInnate
CNPY3	Natural	kiInnate
CNPY4	Natural	kiInnate
CREB1	Natural	kiInnate
CRTC2	Natural	kiInnate
CRTC3	Natural	kiInnate
CSF2	Natural	kiInnate
KLRC1	Natural	kiInnate
FUT4	Natural	kiInnate
ICAM2	Natural	kiInnate
IL32	Natural	kiInnate
LAMP2	Natural	kiInnate
LILRB5	Natural	kiInnate
KLRG1	Natural	kiInnate
HSPA4	Natural	kiInnate
HSPB6	Natural	kiInnate
ISM2	Natural	kiInnate
ITIH2	Natural	kiInnate
KDM4C	Natural	kiInnate
KIR2DS4	Natural	kiInnate
KIRREL3	Natural	kiInnate
SDCBP	Natural	kiInnate
NFATC2IP	Natural	kiInnate

MICB	Natural kiInnate
KIR2DL1	Natural kiInnate
KIR2DL3	Natural kiInnate
KIR3DL1	Natural kiInnate
KIR3DL2	Natural kiInnate
NCR1	Natural kiInnate
FOSL1	Natural kiInnate
TSLP	Natural kiInnate
SLC7A7	Natural kiInnate
SPP1	Natural kiInnate
TREM2	Natural kiInnate
UBASH3A	Natural kiInnate
YBX2	Natural kiInnate
CCDC88A	Natural kiInnate
CLEC1A	Natural kiInnate
THBD	Natural kiInnate
PDPN	Natural kiInnate
VCAM1	Natural kiInnate
EMR1	Natural kiInnate
CREB5	NeutrophilInnate
CDA	NeutrophilInnate
CHST15	NeutrophilInnate
S100A12	NeutrophilInnate
APOBEC3A	NeutrophilInnate
CASP5	NeutrophilInnate
MMP25	NeutrophilInnate
HAL	NeutrophilInnate
C1orf183	NeutrophilInnate
FFAR2	NeutrophilInnate
MAK	NeutrophilInnate
CXCR1	NeutrophilInnate
STEAP4	NeutrophilInnate
MGAM	NeutrophilInnate
BTNL8	NeutrophilInnate
CXCR2	NeutrophilInnate
TNFRSF10C	NeutrophilInnate
VNN3	NeutrophilInnate
CBX6	PlasmacytcInnate
DAB2	PlasmacytcInnate
DDX17	PlasmacytcInnate
HIGD1A	PlasmacytcInnate
IDH3A	PlasmacytcInnate
IL3RA	PlasmacytcInnate
MAGED1	PlasmacytcInnate
NUCB2	PlasmacytcInnate
OFD1	PlasmacytcInnate
OGT	PlasmacytcInnate
PDIA4	PlasmacytcInnate
SERTAD2	PlasmacytcInnate
SIRPA	PlasmacytcInnate
TMED2	PlasmacytcInnate

ENG	PlasmacytcInnate
FCAR	PlasmacytcInnate
IGF1	PlasmacytcInnate
ITGA2B	PlasmacytcInnate
GABARAP	PlasmacytcInnate
GPX1	PlasmacytcInnate
KRT23	PlasmacytcInnate
PROK2	PlasmacytcInnate
RALB	PlasmacytcInnate
RETNLB	PlasmacytcInnate
RNF141	PlasmacytcInnate
SEC14L1	PlasmacytcInnate
SEPX1	PlasmacytcInnate
EMP3	PlasmacytcInnate
CD300LF	PlasmacytcInnate
ABTB1	PlasmacytcInnate
KLHL21	PlasmacytcInnate
PHRF1	PlasmacytcInnate