

Table S5: GO process analysis of top 100 signals, when compared to all signals, from CEU population using the T_1 test statistic.

Description	p -value	Enrichment	Genes
Interferon-gamma-mediated signaling pathway	1.7×10^{-12}	28.6	HLA-A, HLA-B, HLA-C, HLA-DPA1, HLA-DPB1, HLA-DQA1, HLA-DQB1, HLA-DRA, HLA-DRB1, HLA-DRB5
Cellular response to interferon-gamma	1.5×10^{-11}	23.1	HLA-A, HLA-B, HLA-C, HLA-DPA1, HLA-DPB1, HLA-DQA1, HLA-DQB1, HLA-DRA, HLA-DRB1, HLA-DRB5
Response to interferon-gamma	1.1×10^{-10}	19.0	HLA-A, HLA-B, HLA-C, HLA-DPA1, HLA-DPB1, HLA-DQA1, HLA-DQB1, HLA-DRA, HLA-DRB1, HLA-DRB5
Antigen processing and presentation of peptide antigen	2.2×10^{-9}	11.8	ERAP1, HLA-A, HLA-B, HLA-C, HLA-DPA1, HLA-DPB1, HLA-DQA1, HLA-DQB1, HLA-DRA, HLA-DRB1, HLA-DRB5
Antigen processing and presentation	8.8×10^{-9}	10.3	ERAP1, HLA-A, HLA-B, HLA-C, HLA-DPA1, HLA-DPB1, HLA-DQA1, HLA-DQB1, HLA-DRA, HLA-DRB1, HLA-DRB5
Antigen processing and presentation of exogenous peptide antigen	1.6×10^{-8}	11.5	HLA-A, HLA-B, HLA-C, HLA-DPA1, HLA-DPB1, HLA-DQA1, HLA-DQB1, HLA-DRA, HLA-DRB1, HLA-DRB5
Antigen processing and presentation of exogenous antigen	1.8×10^{-8}	11.3	HLA-A, HLA-B, HLA-C, HLA-DPA1, HLA-DPB1, HLA-DQA1, HLA-DQB1, HLA-DRA, HLA-DRB1, HLA-DRB5
T cell costimulation	4.4×10^{-8}	20.7	HLA-DPA1, HLA-DPB1, HLA-DQA1, HLA-DQB1, HLA-DRA, HLA-DRB1, HLA-DRB5
Lymphocyte costimulation	4.9×10^{-8}	20.4	HLA-DPA1, HLA-DPB1, HLA-DQA1, HLA-DQB1, HLA-DRA, HLA-DRB1, HLA-DRB5
T cell receptor signaling pathway	2.0×10^{-7}	16.6	HLA-DPA1, HLA-DPB1, HLA-DQA1, HLA-DQB1, HLA-DRA, HLA-DRB1, HLA-DRB5
Antigen processing and presentation of exogenous peptide antigen via MHC class II	4.1×10^{-7}	15.0	HLA-DPA1, HLA-DPB1, HLA-DQA1, HLA-DQB1, HLA-DRA, HLA-DRB1, HLA-DRB5
Protein localization to membrane	4.6×10^{-7}	20.4	ANK2, ANK3, CPE, DLG2, MAGI2, SCP2
Antigen processing and presentation of peptide or polysaccharide antigen via MHC class II	4.8×10^{-7}	14.7	HLA-DPA1, HLA-DPB1, HLA-DQA1, HLA-DQB1, HLA-DRA, HLA-DRB1, HLA-DRB5
Antigen processing and presentation of peptide antigen via MHC class II	4.8×10^{-7}	14.7	HLA-DPA1, HLA-DPB1, HLA-DQA1, HLA-DQB1, HLA-DRA, HLA-DRB1, HLA-DRB5
Detection of bacterium	6.1×10^{-7}	55.5	HLA-A, HLA-B, HLA-DRB1, HLA-DRB5
Immune response-activating signal transduction	6.8×10^{-7}	9.0	DMBT1, HLA-DPA1, HLA-DPB1, HLA-DQA1, HLA-DQB1, HLA-DRA, HLA-DRB1, HLA-DRB5, MAP2K3
Immune response-regulating signaling pathway	1.2×10^{-6}	8.5	DMBT1, HLA-DPA1, HLA-DPB1, HLA-DQA1, HLA-DQB1, HLA-DRA, HLA-DRB1, HLA-DRB5, MAP2K3
Antigen receptor-mediated signaling pathway	1.2×10^{-6}	12.9	HLA-DPA1, HLA-DPB1, HLA-DQA1, HLA-DQB1, HLA-DRA, HLA-DRB1, HLA-DRB5
Immune response-activating cell surface receptor signaling pathway	1.8×10^{-6}	12.1	HLA-DPA1, HLA-DPB1, HLA-DQA1, HLA-DQB1, HLA-DRA, HLA-DRB1, HLA-DRB5
Regulation of immune response	2.3×10^{-6}	4.9	DMBT1, ERAP1, HLA-A, HLA-B, HLA-C, HLA-DPA1, HLA-DPB1, HLA-DQA1, HLA-DQB1, HLA-DRA, HLA-DRB1, HLA-DRB5, MAP2K3
Immune response-regulating cell surface receptor signaling pathway	3.2×10^{-6}	11.1	HLA-DPA1, HLA-DPB1, HLA-DQA1, HLA-DQB1, HLA-DRA, HLA-DRB1, HLA-DRB5
Immunoglobulin production involved in immunoglobulin mediated immune response	3.3×10^{-6}	90.1	HLA-DQB1, HLA-DRB1, HLA-DRB5
Humoral immune response mediated by circulating immunoglobulin	3.3×10^{-6}	90.1	HLA-DQB1, HLA-DRB1, HLA-DRB5
Cytokine-mediated signaling pathway	4.0×10^{-6}	6.3	HLA-A, HLA-B, HLA-C, HLA-DPA1, HLA-DPB1, HLA-DQA1, HLA-DQB1, HLA-DRA, HLA-DRB1, HLA-DRB5
Activation of immune response	4.5×10^{-6}	7.2	DMBT1, HLA-DPA1, HLA-DPB1, HLA-DQA1, HLA-DQB1, HLA-DRA, HLA-DRB1, HLA-DRB5, MAP2K3
Detection of biotic stimulus	7.2×10^{-6}	31.4	HLA-A, HLA-B, HLA-DRB1, HLA-DRB5
Immunoglobulin production	9.1×10^{-6}	67.6	HLA-DQB1, HLA-DRB1, HLA-DRB5
Antigen processing and presentation of exogenous peptide antigen via MHC class I TAP-independent	1.4×10^{-5}	60.1	HLA-A, HLA-B, HLA-C
Positive regulation of T cell activation	2.3×10^{-5}	8.2	HLA-DPA1, HLA-DPB1, HLA-DQA1, HLA-DQB1, HLA-DRA, HLA-DRB1, HLA-DRB5

GO categories in which false discovery rate is less than 0.01.