Gene Ontology term	Cluster frequency	Genome frequency	Corrected P-value	FDR	False Positives	Genes annotated to the term
defense response to virus	72 of 573 genes, 12.6%	338 of 44712 genes, 0.8%	3.67E-62	0.00%	0	MOV10, MX1, TRIM38, IRF7, IFITM1, IRF9, IFI27, PML, DDX58, OAS2, ISG15, TNFAIP3, IFNL1, PMAIP1, IFNB1, STAT1, RSAD2, SAMHD1, IFIT1B, TICAM1, SHFL, IFNA5, IFI6, OAS3, ZNFX1, IFI44L, MX2, ADAR, GBP3, RTP4, IFITM2, TRIM25, GBP5, NLRC5, IFNL2, DTX3L, APOBEC3A, DDX60, TLR3, CXCL9, TRIM5, IFIT5, ISG20, GBP1, ZC3HAV1, IFNL3, TRIM21, APOBEC3G, STAT2, IFIH1, TRIM56, PLSCR1, MYD88, APOBEC3F, OASL, IFITM3, EIF2AK2, HERC5, USP18, DHX58, IRF1, NT5C3A, OAS1, UNC93B1, IFIT3, IFIT2, IFIT1, DDX60L, BST2, MLKL, PARP9, ZBP1
response to virus	79 of 573 genes, 13.8%	471 of 44712 genes, 1.1%	5.76E-60	0.00%	0	IFIT1, IFIT2, IFIT3, UNC93B1, CCL5, OAS1, NT5C3A, IRF1, ZBP1, PARP9, LGALS9, BST2, MLKL, DDX60L, OASL, IFITM3, APOBEC3F, MYD88, DHX58, USP18, EIF2AK2, HERC5, TRIM21, IFNL3, ZC3HAV1, ISG20, IFIT5, GBP1, PLSCR1, TRIM56, STAT2, IFIH1, APOBEC3G, IFNL2, DTX3L, NLRC5, TRIM5, CXCL9, TLR3, DDX60, APOBEC3A, MX2, ADAR, GBP3, CCL4, IFI44L, ZNFX1, OAS3, IFI6, IFNA5, GBP5, TRIM25, IFITM2, RTP4, RSAD2, IFNB1, STAT1, PMAIP1, SHFL, TICAM1, IFI44, IFIT1B, SAMHD1, OAS2, DDX58, IFI27, PML, IRF9, IFITM1, IFNL1, TNFAIP3, ISG15, JAK2, IRF7, HEATR9, NMI, TRIM38, MX1, MOV10
unannotated	284 of 573 genes, 49.6%	8490 of 44712 genes, 19.0%	1.38E-58	0.00%	0	AC131944.1, U62317.4, RPL7P4, IRF1-AS1, AL592146.2, AL355075.4, AC012459.1, AC104389.5, AC090377.1, AL031133.1, AP001042.3, FAM122C, AC018737.2, LINC01127, RPL23AP90, AL449283.1, EPSTI1, AL354919.1, KIAA0040, MIR7515HG, AC110615.1, LINC01138, AL021707.1, AL356981.1, AL158064.1, DACT3-AS1, AL137918.1, AL353135.2, FAM124A, AC068860.1, AC007342.5, LINC00243, RN7SL51P, SNRPGP1, AC103858.1, AC011816.1, AC099791.4, LINC01050, RPL12P6, AC116407.2, AC005593.1, LINC02427, AL354809.1, AC092066.1, RPS6P8, AL109806.2, AC015849.1, AC007899.1, AC078860.2, AC012020.1, TSIX, AL357054.4, AL138778.1, LINC02068, AL355512.1, AC008875.3, AL590068.4, AL136295.17, ANKRD26P1, AC079336.5, SMCO2, VTRNA1-3, HMGB1P40, AL445490.1, AC005840.1, AL034417.4, LINC02362, AC136475.5, IMMP1LP2, TRANK1, LINC02574, CKAP2P1, AC108134.2, AL357520.1, AC007750.1, PAIP1P1, LINC0
response to biotic stimulus	133 of 573 genes, 23.2%	1828 of 44712 genes, 4.1%	4.69E-58	0.00%	0	PMAIP1, IDO1, IFNB1, CLEC7A, PARP14, IFI44, TICAM1, OAS3, IFI6, TRIM14, B2M, ZNFX1, CCL4, GBP3, MX2, RNF213, EREG, ABCD2, IFITM2, LY6E, TRIM25, GBP5, KLRC1, TAP2, NEURL3, JAK2, FAP, MX1, MOV10, SERPING1, HEATR9, HLA-F, IRF7, UBA7, IFITM1, IRF9, PML, GBP4, CFB, CMPK2, ISG15, IFNL1, APOBEC3F, GSDMB, OASL, SP100, HERC5, DHX58, IRF1, UNC93B1, OAS1, CNR2, PTGIR, HLA-B, HERC6, BST2, LGALS9, RBCK1, NLRC5, IFNL2, CD274, DDX60, TRIM5, CXCL11, GBP1, ISG20, ZC3HAV1, UBE2L6, TRIM21, SLC15A3, IFIH1, HLA-C, OPTN, STAT1, IFI35, GHSR, RSAD2, SAMHD1, IFIT1B, SHFL, IFNA5, IFI44L, ADAR, NUB1, RTP4, CSF3, CCL20, NOS2, HLA-
response to other organism	131 of 573 genes, 22.9%	1779 of 44712 genes, 4.0%	1.09E-57	0.00%	0	NEURL3, JAK2, TAP2, KLRC1, HLA-F, IRF7, MOV10, MX1, SERPING1, HEATR9, GBP4, PML, IFITM1, UBA7, IRF9, IFNL1, CFB, CMPK2, ISG15, IDO1, IFNB1, CLEC7A, PMAIP1, IFI44, TICAM1, PARP14, CCL4, MX2, GBP3, RNF213, OAS3, IFI6, TRIM14, ZNFX1, B2M, EREG, ABCD2, IFITM2, GBP5, TRIM25, LY6E, IFNL2, NLRC5, TRIM5, CD274, DDX60, UBE2L6, TRIM21, SLC15A3, CXCL11, ISG20, GBP1, ZC3HAV1, HLA-C, IFIH1, SP100, APOBEC3F, GSDMB, OASL, DHX58, HERC5, PTGIR, HLA-B, IRF1, UNC93B1, CNR2, OAS1, LGALS9, RBCK1, HERC6, BST2, NOS2, HLA-E, CASP7, NMI, TRIM38, APOL1, DDX58, OAS2, IFI27, CARD16, C5AR1, BATF2, CASP8, TNFAIP3, TMEM229B, SELE, OPTN, STAT1, IFI35, GHSR, RSAD2, IFIT1B, SHFL, SAMHD1,
response to external biotic stimulus	131 of 573 genes, 22.9%	1782 of 44712 genes, 4.0%	1.33E-57	0.00%	0	PIK3AP1, CD68, CEACAM1, EIF2AK2, USP18, MYD88, IFITM3, TRIM69, PARP9, ZBP1, MLKL, DDX60L, IFIT2, IFIT3, IFIT1, NT5C3A, CCL5, CXCL9, TLR3, APOBEC3A, DTX3L, CXCL8, PLSCR1, STAT2, SAMD9, APOBEC3G, TRIM56, IFNL3, IFIT5, IFIT1B, SHFL, SAMHD1, OPTN, STAT1, GHSR, IFI35, RSAD2, CCL20, NUB1, CSF3, RTP4, IFI44L, ADAR, IFNA5, CASP7, NMI, TRIM38, NOS2, HLA-E, CASP8, TNFAIP3, TMEM229B, SELE, APOL1, DDX58, OAS2, IFI27, C5AR1, CARD16, BATF2, DHX58, HERC5, SP100, APOBEC3F, GSDMB, OASL, RBCK1, LGALS9, HERC6, BST2, HLA-B, PTGIR, IRF1, UNC93B1, OAS1, CNR2, TRIM5, CD274, DDX60, IFNL2, NLRC5, HLA-
defense response to other organism	116 of 573 genes, 20.2%	1416 of 44712 genes, 3.2%	3.26E-55	0.00%	0	TNFAIP3, ISG15, CASP8, CFB, IFNL1, BATF2, IRF9, UBA7, IFITM1, C5AR1, OAS2, DDX58, IFI27, GBP4, PML, APOL1, SERPING1, NMI, TRIM38, MX1, MOV10, IRF7, HLA-F, CASP7, KLRC1, JAK2, HLA-E, NOS2, NEURL3, NUB1, RTP4, GBP5, LY6E, TRIM25, EREG, CCL20, IFITM2, ZNFX1, B2M, IFI6, OAS3, TRIM14, IFNA5, ADAR, MX2, GBP3, RNF213, CCL4, IFI44L, SAMHD1, PARP14, SHFL, TICAM1, IFIT1B, PMAIP1, RSAD2, STAT1, IFNB1, OPTN, IFI35, CLEC7A, TRIM56, STAT2, IFIH1, SAMD9, APOBEC3G, HLA-C, PLSCR1, ZC3HAV1, IFIT5, ISG20, CXCL11, GBP1, SLC15A3, UBE2L6, TRIM21, IFNL3, TLR3, APOBEC3A, DDX60, CD274, TRIM5, CXCL9, NLRC5, CXCL8, DTX3L, IFNL2, MLKL, B
biological process involved in interspecies interaction between organisms	132 of 573 genes, 23.0%	1955 of 44712 genes, 4.4%	9.44E-54	0.00%	0	CLEC7A, IFNB1, IDO1, PMAIP1, TICAM1, IFI44, PARP14, RNF213, MX2, GBP3, CCL4, B2M, ZNFX1, TRIM14, OAS3, IFI6, TRIM25, LY6E, GBP5, IFITM2, EREG, ABCD2, JAK2, NEURL3, KLRC1, TAP2, IRF7, HLA-F, HEATR9, SERPING1, MOV10, MX1, GBP4, PML, IRF9, IFITM1, UBA7, IFNL1, ISG15, CMPK2, CFB, SP100, OASL, GSDMB, APOBEC3F, DHX58, HERC5, PTGIR, HLA-B, OAS1, CNR2, UNC93B1, IRF1, LGALS9, RBCK1, BST2, HERC6, IFNL2, NLRC5, TRIM5, DDX60, CD274, LAMP3, SLC15A3, TRIM21, UBE2L6, ZC3HAV1, ISG20, CXCL11, GBP1, HLA-C, IFIH1, RSAD2, GHSR, IFI35, OPTN, STAT1, SHFL, IFIT1B, SAMHD1, ADAR, IFI44L, IFNA5, CCL20, NUB1, CSF3, RTP4, HLA-
defense response	131 of 573 genes, 22.9%	2126 of 44712 genes, 4.8%	9.55E-49	0.00%	0	C5AR1, BATF2, APOL1, IFI27, DDX58, OAS2, CASP8, SELE, TNFAIP3, NOS2, APOL2, HLA-E, TRIM38, NMI, CASP7, IFNA5, IFI44L, ADAR, NUB1, RTP4, CCL20, THEMIS2, GHSR, IFI35, OPTN, STAT1, RSAD2, SAMHD1, IFIT1B, SHFL, IFIT5, IFNL3, APOBEC3G, SAMD9, STAT2, TRIM56, PLSCR1, CXCL8, DTX3L, APOBEC3A, TLR3, CXCL9, NT5C3A, CCL5, IFIT3, IFIT2, NUPR1, IFIT1, DDX60L, MLKL, PARP9, TRIM69, ZBP1, MYD88, IFITM3, DUOXA2, EIF2AK2, USP18, PIK3AP1, CEACAM1, CD68, UBA7, IFITM1, IRF9, GBP4, PML, CFB, APOL3, ISG15, IFNL1, KLRC1, NEURL3, JAK2, MX1, MOV10, TAP1, SERPING1, HLA-F, IRF7, TRIM14, IFI6, OAS3, B2M, ZNFX1, CCL4, RNF213, MX2, GBP3, IFITM2, ABCD2, EREG, LY6E, GBP5, TRIM25, PMAIP1, CLEC7A, IFNB1, IDO1, PARP14, TICAM1, ISG20, CX
defense response to symbiont	102 of 573 genes, 17.8%	1227 of 44712 genes, 2.7%	1.70E-48	0.00%	0	IRF7, HLA-F, TRIM38, SERPING1, NMI, MX1, HLA-E, JAK2, NOS2, NEURL3, KLRC1, IFNL1, ISG15, TNFAIP3, CFB, CASP8, IFI27, PML, GBP4, DDX58, OAS2, APOL1, IFITM1, UBA7, SHFL, TICAM1, SAMHD1, PARP14, RSAD2, CLEC7A, IFI35, STAT1, OPTN, IFNB1, LY6E, TRIM25, GBP5, IFITM2, CCL20, EREG, NUB1, GBP3, MX2, ADAR, CCL4, ZNFX1, B2M, TRIM14, IFNA5, OAS3, IFI6, TRIM5, CXCL9, DDX60, APOBEC3A, TLR3, CD274, IFNL2, DTX3L, NLRC5, CXCL8, HLA-C, PLSCR1, TRIM56, APOBEC3G, SAMD9, STAT2, IFIH1, SLC15A3, IFNL3, TRIM21, UBE2L6, ZC3HAV1, IFIT5, GBP1, CXCL11, ISG20, DHX58, CEACAM1, PIK3AP1, USP18, EIF2AK
innate immune response	96 of 573 genes, 16.8%	1115 of 44712 genes, 2.5%	1.04E-46	0.00%	0	SHFL, TICAM1, PARP14, SAMHD1, RSAD2, CLEC7A, IFI35, IFNB1, STAT1, OPTN, TRIM25, LY6E, GBP5, IFITM2, EREG, NUB1, MX2, ADAR, GBP3, B2M, ZNFX1, IFNA5, TRIM14, IFI6, OAS3, IRF7, HLA-F, TRIM38, SERPING1, NMI, MX1, HLA-E, JAK2, NOS2, NEURL3, KLRC1, IFNL1, ISG15, TNFAIP3, CFB, CASP8, IFI27, PML, GBP4, DDX58, OAS2, APOL1, UBA7, IFITM1, CEACAM1, DHX58, PIK3AP1, USP18, HERC5, EIF2AK2, SP100, IFITM3, OASL, MYD88, APOBEC3F, ZBP1, LGALS9, PARP9, TRIM69, BST2, HLA-B, IFIT1, IFIT3, IFIT2, CCL5, OAS1, UNC93B1, IRF1, TRIM5, APOBEC3A, DDX60, TLR3, CD274, DTX3L, IFNL2, NLRC5, PLSCR1, HLA-
response to external stimulus	141 of 573 genes, 24.6%	2689 of 44712 genes, 6.0%	1.29E-44	0.00%	0	IRF1, UNC93B1, CNR2, OAS1, PTGIR, HLA-B, HERC6, BST2, RBCK1, LGALS9, DDR2, APOBEC3F, GSDMB, OASL, SP100, HERC5, DHX58, GBP1, CXCL11, ISG20, ZC3HAV1, UBE2L6, TRIM21, SLC15A3, IFIH1, HLA-C, NLRC5, TYMP, IFNL2, CD274, DDX60, TRIM5, IFI6, OAS3, TRIM14, ZNFX1, B2M, CCL4, GBP3, MX2, RNF213, ABCD2, EREG, IFITM2, LY6E, TNFSF14, TRIM25, GBP5, PMAIP1, IDO1, IFNB1, ACKR4, CLEC7A, PARP14, TICAM1, IFI44, IFITM1, UBA7, IRF9, PML, GBP4, CFB, CMPK2, ISG15, IFNL1, KLRC1, TAP2, NEURL3, JAK2, FAP, MX1, MOV10, SERPING1, HEATR9, HLA-

immune response	133 of 573 genes, 23.2%	2418 of 44712 genes, 5.4%	5.29E-44	0.00%	0	HLA-C, IFIH1, SLC15A3, TRIM21, UBE2L6, BTN3A1, ZC3HAV1, GBP1, CXCL11, ISG20, TRIM5, DDX60, CD274, LAMP3, IFNL2, TNFSF10, NLRC5, LGALS9, RBCK1, HLA-DQB2, BST2, HLA-B, CNR2, OAS1, UNC93B1, IRF1, DHX58, HERC5, SP100, OASL, GTPBP1, APOBEC3F, IFNL1, ISG15, MS4A2, CFB, PKHD1L1, PML, GBP4, SECTM1, IFITM1, UBA7, IRF7, LST1, HLA-F, TAP1, SERPING1, MX1, JAK2, NEURL3, TAP2, KLRC1, LY6E, TNFSF14, GBP5, TRIM25, IFITM2, EREG, MX2, GBP3, CCL4, B2M, ZNFX1, BTN3A2, TRIM14, IFI6, OAS3, TICAM1, I
immune system process	149 of 573 genes, 26.0%	3276 of 44712 genes, 7.3%	4.74E-40	0.00%	0	BTN3A2, B2M, ZNFX1, OAS3, IFI6, TRIM14, CLEC2B, GBP3, MX2, RNF213, CCL4, TNFSF14, TRIM25, GBP5, LY6E, EREG, IFITM2, PMAIP1, CD38, IDO1, IFNB1, ACKR4, CLEC7A, MIR155HG, PARP14, SELL, TICAM1, IFI44, IRF9, IFITM1, UBA7, SECTM1, GBP4, PML, MS4A2, ISG15, PKHD1L1, CFB, IFNL1, TAP2, KLRC1, JAK2, NEURL3, PSMB9, SERPING1, TAP1, MX1, IRF7, HLA-F, LST1, UNC93B1, CNR2, OAS1, IRF1, HSH2D, HLA-B, BST2, HLA-DQB2, LGALS9, RBCK1, OASL, APOBEC3F, GTPBP1, SP100, HERC5, DHX58, ZC3HAV1, ISG20, CXCL11, GBP1, SLC15A3, TNFRSF9, UBE2L6, BTN3A1, TRIM21, IFIH1, HLA-C, NLRC5, IFNL2, TNFSF10, DDX60, CD274, LAMP3, TRIM5, IFNA5, ADAR, IFI44L, CSF3, IL15RA, TNFSF13B, NUB1, CCL20, THEMIS2, CR1L, RSAD2, OPTN, STAT1, IFI35, SAMHD
regulation of viral process	37 of 573 genes, 6.5%	143 of 44712 genes, 0.3%	4.65E-34	0.00%	0	SHFL, EIF2AK2, SP100, RSAD2, STAT1, IFNB1, IFITM3, OASL, APOBEC3F, TRIM25, IFITM2, LGALS9, BST2, ADAR, IFIT1, ZNFX1, OAS1, CCL5, TRIM14, OAS3, TRIM5, TRIM38, APOBEC3A, LAMP3, MX1, CXCL8, PLSCR1, ISG15, APOBEC3G, IFIH1, OAS2, TRIM21, IFNL3, ZC3HAV1, IFIT5, ISG20, IFITM1
negative regulation of viral process	30 of 573 genes, 5.2%	77 of 44712 genes, 0.2%	2.13E-33	0.00%	0	IFITM3, OASL, APOBEC3F, RSAD2, SP100, STAT1, IFNB1, APOBEC3A, MX1, EIF2AK2, SHFL, CCL5, ZNFX1, OAS1, ZC3HAV1, OAS3, IFITM1, ISG20, IFIT5, TRIM14, OAS2, IFIT1, TRIM21, IFNL3, BST2, ISG15, IFIH1, APOBEC3G, PLSCR1, IFITM2
regulation of viral life cycle	34 of 573 genes, 5.9%	116 of 44712 genes, 0.3%	3.48E-33	0.00%	0	SHFL, EIF2AK2, IFNB1, RSAD2, APOBEC3F, OASL, IFITM3, LGALS9, IFITM2, TRIM25, BST2, IFIT1, ADAR, OAS3, OAS1, ZNFX1, CCL5, TRIM5, MX1, LAMP3, APOBEC3A, TRIM38, CXCL8, PLSCR1, IFIH1, APOBEC3G, ISG15, IFNL3, TRIM21, OAS2, IFITM1, IFIT5, ISG20, ZC3HAV1
negative regulation of viral genome replication	26 of 573 genes, 4.5%	51 of 44712 genes, 0.1%	1.46E-32	0.00%	0	IFNL3, IFIT1, OAS2, OAS3, IFITM1, IFIT5, ISG20, CCL5, OAS1, ZNFX1, ZC3HAV1, IFITM2, PLSCR1, IFIH1, APOBEC3G, BST2, ISG15, IFNB1, RSAD2, APOBEC3F, IFITM3, OASL, SHFL, MX1, EIF2AK2, APOBEC3A
regulation of viral genome replication	29 of 573 genes, 5.1%	81 of 44712 genes, 0.2%	6.34E-31	0.00%	0	PLSCR1, IFITM2, ISG15, BST2, APOBEC3G, IFIH1, IFIT1, OAS2, ADAR, IFNL3, CCL5, OAS1, ZNFX1, ZC3HAV1, ISG20, IFIT5, IFITM1, OAS3, SHFL, TRIM38, APOBEC3A, MX1, EIF2AK2, RSAD2, IFNB1, IFITM3, OASL, CXCL8, APOBEC3F
regulation of response to biotic stimulus	60 of 573 genes, 10.5%	636 of 44712 genes, 1.4%	4.12E-30	0.00%	0	GBP5, ZBP1, TRIM25, PARP9, LGALS9, EREG, HLA-B, ADAR, ZNFX1, CCL5, OAS1, UNC93B1, IRF1, OAS3, DHX58, CEACAM1, TICAM1, PIK3AP1, USP18, PARP14, SAMHD1, EIF2AK2, HERC5, RSAD2, CLEC7A, IFI35, STAT1, IFNB1, OPTN, OASL, MYD88, APOBEC3F, PLSCR1, ISG15, TRIM56, TNFAIP3, APOBEC3G, IFIH1, STAT2, CASP8, PML, DDX58, SLC15A3, TRIM21, ZC3HAV1, CARD16, TRIM5, IRF7, HLA-F, TRIM38, DDX60, NMI, SERPING1, TLR3, IL4I1, CD274, DTX3L, HLA-E, NLRC5, KLRC1
regulation of immune response	76 of 573 genes, 13.3%	1175 of 44712 genes, 2.6%	8.62E-28	0.00%	0	MYD88, OASL, PIK3AP1, HLA-DOB, DHX58, CEACAM1, EIF2AK2, USP18, HLA-B, IRF1, UNC93B1, CCL5, OAS1, PARP9, LGALS9, RBCK1, ZBP1, PRKD2, HLA-DQB2, NCKAP1L, IFNL2, NLRC5, TRIM5, CD274, TLR3, BTN3A3, DDX60, BTN3A1, TRIM21, IFNL3, SLC15A3, GBP1, ZC3HAV1, PLSCR1, HLA-C, STAT2, IFIH1, TRIM56, IDO1, IFNB1, CLEC7A, IFI35, CD38, RSAD2, CR1L, THEMIS2, TICAM1, PARP14, SAMHD1, ADAR, OAS3, BTN3A2, B2M, ZNFX1, EREG, GBP5, TRIM25, TNFSF13B, NOS2, JAK2, HLA-E, TAP2, KLRC1, HLA-F, IRF7, IL4I1, NMI, SERPING1, DDX58, C5AR1, SECTM1, IFNL1, CASP8, CFB, TNFAIP3, ISG15
positive regulation of immune response	67 of 573 genes, 11.7%	934 of 44712 genes, 2.1%	9.39E-27	0.00%	0	IFIH1, TRIM56, HLA-C, PLSCR1, GBP1, ZC3HAV1, IFNL3, BTN3A1, SLC15A3, CD274, DDX60, BTN3A3, TLR3, TRIM5, NLRC5, NCKAP1L, IFNL2, HLA-DQB2, PRKD2, PARP9, LGALS9, RBCK1, ZBP1, IRF1, CCL5, OAS1, UNC93B1, HLA-B, EIF2AK2, PIK3AP1, DHX58, CEACAM1, HLA-DOB, MYD88, OASL, CFB, TNFAIP3, IFNL1, SECTM1, C5AR1, DDX58, NMI, SERPING1, HLA-F, IRF7, KLRC1, TAP2, NOS2, HLA-E, JAK2, TNFSF13B, EREG, TRIM25, GBP5, OAS3, B2M, ZNFX1, BTN3A2, TICAM1, CR1L, THEMIS2, CLEC7A, IFI35, IDO1, IFNB1, RSAD2, CD38
response to cytokine	72 of 573 genes, 12.6%	1120 of 44712 genes, 2.5%	5.33E-26	0.00%	0	SELE, ISG15, TNFAIP3, CASP8, IFNL1, IFITM1, CARD16, PML, IFI27, GBP4, DDX58, OAS2, XAF1, HEATR9, MX1, IRF7, JAK2, NOS2, CSF3, TNFSF13B, NUB1, IL15RA, GBP5, TRIM25, IFITM2, EREG, IFNA5, OAS3, ADAR, MX2, GBP3, CCL4, SAMHD1, PARP14, SHFL, SELL, CD38, ACKR4, IFNB1, STAT1, TRIM56, SOCS1, IFIH1, STAT2, PLSCR1, CXCL11, GBP1, IFNL3, TRIM21, TLR3, LAMP3, CD274, CXCL9, CXCL8, NLRC5, IFNL2, BST2, ZBP1, PARP9, LGALS9, CCL5, OAS1, IRF1, IFIT1, USP18, EIF2AK2, PNPT1, CEACAM1, IFITM3, OASL, MYD88, SP100
viral genome replication	30 of 573 genes, 5.2%	127 of 44712 genes, 0.3%	6.59E-26	0.00%	0	PLSCR1, IFITM2, BST2, ISG15, IFIH1, APOBEC3G, ADAR, OAS2, IFIT1, IFI27, IFNL3, CCL5, OAS1, ZNFX1, ZC3HAV1, OAS3, IFITM1, ISG20, IFIT5, SHFL, APOBEC3A, TRIM38, EIF2AK2, MX1, RSAD2, IFNB1, IFITM3, OASL, APOBEC3F, CXCL8
response to peptide	72 of 573 genes, 12.6%	1137 of 44712 genes, 2.5%	1.34E-25	0.00%	0	IRF1, CCL5, OAS1, IFIT1, BST2, LGALS9, PARP9, ZBP1, MYD88, OASL, IFITM3, SP100, PNPT1, EIF2AK2, USP18, CEACAM1, CXCL11, GBP1, TRIM21, IFNL3, IFIH1, STAT2, SOCS1, TRIM56, PLSCR1, CXCL8, NLRC5, IFNL2, CD274, LAMP3, TLR3, CXCL9, OAS3, IFNA5, CCL4, GBP3, MX2, ADAR, TNFSF13B, NUB1, IL15RA, CSF3, EREG, IFITM2, TRIM25, GBP5, ACKR4, IFNB1, STAT1, CD38, SAMHD1, PARP14, SHFL, SELL, CARD16, IFITM1, OAS2, DDX58, IFI27, PML, GBP4, CASP8, TNFAIP3, ISG15, SELE, IFNL1, NOS2, JAK2, MX1, HEATR9, XAF1, IRF7

regulation of response to external stimulus	75 of 573 genes, 13.1%	1257 of 44712 genes, 2.8%	3.77E-25	0.00%	0	TNFAIP3, SELE, ISG15, CASP8, DDX58, PML, CARD16, C5AR1, IRF7, HLA-F, NMI, SERPING1, TRIM38, FAP, HLA-E, JAK2, KLRC1, TNFSF14, TRIM25, GBP5, EREG, GBP3, ADAR, CCL4, ZNFX1, OAS3, TICAM1, SAMHD1, PARP14, RSAD2, IDO1, STAT1, OPTN, IFNB1, CLEC7A, GHSR, IFI35, PLSCR1, TRIM56, STAT2, IFIH1, APOBEC3G, SLC15A3, TRIM21, ZC3HAV1, GBP1, TRIM5, TLR3, DDX60, CD274, DTX3L, NCKAP1L, CXCL8, NLRC5, ZBP1, PARP9, LGALS9, PRKD2, NUPR1, HLA-B, UNC93B1, AIPL1, CCL5, OAS1, IRF1, DHX58, CEACAM1, PIK3AP1, USP18, DUOXA2, HERC5, EIF2AK2, OASL, APOBEC3F, MYD88
positive regulation of immune system process	76 of 573 genes, 13.3%	1301 of 44712 genes, 2.9%	6.09E-25	0.00%	0	IFNL3, BTN3A1, SLC15A3, GBP1, ZC3HAV1, PLSCR1, HLA-C, SOCS1, IFIH1, TRIM56, NCKAP1L, IFNL2, CXCL8, NLRC5, TRIM5, CD274, BTN3A3, DDX60, TLR3, HLA-B, IRF1, OAS1, CCL5, UNC93B1, LGALS9, PARP9, RBCK1, ZBP1, HLA-DQB2, PRKD2, MYD88, OASL, PIK3AP1, HLA-DOB, DHX58, CEACAM1, EIF2AK2, DDX58, SECTM1, C5AR1, IFNL1, CFB, CASP8, SELE, TNFAIP3, NOS2, HLA-E, JAK2, KLRC1, TAP2, HLA-F, IRF7, IL4I1, NMI, SERPING1, CCL4, OAS3, ZNFX1, B2M, BTN3A2, CCL20, EREG, GBP5, TNFSF14, TRIM25, TNFSF13B, IL15RA, CLEC7A, IFI35, IFNB1, IDO1, CD38, RSAD2, CR1L, THEMIS2, TICAM1
regulation of immune system process	91 of 573 genes, 15.9%	1852 of 44712 genes, 4.1%	6.10E-25	0.00%	0	STAT1, IFNB1, IDO1, CLEC7A, IFI35, CD38, RSAD2, CR1L, THEMIS2, TICAM1, MIR155HG, PARP14, SAMHD1, CCL4, ADAR, OAS3, BTN3A2, ZNFX1, B2M, EREG, CCL20, GBP5, TNFSF14, TRIM25, TNFSF13B, IL15RA, CSF3, NOS2, JAK2, HLA-E, TAP2, KLRC1, HLA-F, LST1, IRF7, IL4I1, SERPING1, NMI, DDX58, C5AR1, SECTM1, IFNL1, CASP8, CFB, TNFAIP3, ISG15, SELE, MYD88, OASL, PIK3AP1, CD68, HLA-DOB, DHX58, CEACAM1, EIF2AK2, USP18, HLA-B, IRF1, UNC93B1, CCL5, OAS1, CNR2, LGALS9, PARP9, RBCK1, ZBP1, BST2, HLA-DQB2, PRKD2, NCKAP1L, IFNL2, NLRC5, CXCL8, TRIM5, CD274, TLR3, BTN3A3, DDX60, BTN3A1, TNFRSF9, TRIM21, IFNL3, SLC15A3, GBP1, ZC3HAV1, HLA-
regulation of defense response	66 of 573 genes, 11.5%	976 of 44712 genes, 2.2%	7.76E-25	0.00%	0	IRF7, HLA-F, TRIM38, NMI, SERPING1, HLA-E, JAK2, KLRC1, SELE, ISG15, TNFAIP3, CASP8, PML, DDX58, TICAM1, PARP14, SAMHD1, RSAD2, CLEC7A, IFI35, GHSR, IDO1, OPTN, IFNB1, STAT1, GBP5, TRIM25, EREG, ADAR, GBP3, ZNFX1, OAS3, TRIM5, DDX60, TLR3, CD274, DTX3L, NLRC5, PLSCR1, TRIM56, APOBEC3G, IFIH1, STAT2, SLC15A3, TRIM21, ZC3HAV1, GBP1, CEACAM1, DHX58, PIK3AP1, USP18, DUOXA2, HERC5, EIF2AK2, OASL, MYD88, APOBEC3F, ZBP1, PARP9, LGALS9, HLA-B, NUPR1, OAS1, CCL5, UNC93B1, IRF1
regulation of innate immune response	50 of 573 genes, 8.7%	533 of 44712 genes, 1.2%	1.50E-24	0.00%	0	MYD88, OASL, IFI35, CLEC7A, IFNB1, RSAD2, SAMHD1, PARP14, EIF2AK2, USP18, TICAM1, PIK3AP1, CEACAM1, DHX58, IRF1, OAS3, CCL5, ZNFX1, OAS1, UNC93B1, HLA-B, ADAR, PARP9, LGALS9, EREG, TRIM25, ZBP1, GBP5, NLRC5, KLRC1, HLA-E, CD274, DDX60, NMI, TLR3, SERPING1, HLA-F, IRF7, TRIM5, ZC3HAV1, TRIM21, DDX58, SLC15A3, IFIH1, CASP8, STAT2, ISG15, TNFAIP3, TRIM56, PLSCR1
interferon-mediated signaling pathway	30 of 573 genes, 5.2%	141 of 44712 genes, 0.3%	1.91E-24	0.00%	0	IRF7, USP18, SAMHD1, PARP14, SP100, IFNL2, JAK2, IFNB1, STAT1, IFITM3, OASL, MYD88, NLRC5, IFNL1, ZBP1, PARP9, IFITM2, ISG15, TRIM56, STAT2, IFIH1, IFI27, OAS2, ADAR, IFNL3, OAS1, IRF1, IFNA5, IFITM1, OAS3
response to stress	148 of 573 genes, 25.8%	4488 of 44712 genes, 10.0%	3.30E-24	0.00%	0	EIF2AK2, DUOXA2, PNPT1, USP18, PIK3AP1, CEACAM1, CD68, MYD88, IFITM3, MT1M, DDX60L, MLKL, PARP9, TRIM69, ZBP1, NT5C3A, CCL5, IFIT3, IFIT2, KCNB1, IFIT1, NUPR1, APOBEC3A, TLR3, CXCL9, TOR1B, CXCL8, DTX3L, SAMD9, APOBEC3G, STAT2, TRIM56, PLSCR1, IFIT5, IFNL3, SAMHD1, IFIT1B, SHFL, THEMIS2, FBXO6, GHSR, IFI35, PARP8, STAT1, OPTN, RSAD2, RTP4, NUB1, CCL20, PARP10, IFNA5, IFI44L, ADAR, TRIM38, NMI, CASP7, NOS2, APOL2, HLA-E, GMPR, CASP8, SELE, TNFAIP3, C5AR1, BATF2, APOL1, IFI27, OAS2, DDX58, HERC5, NCOA7, MASTL, DHX58, GSDMB, DDR2, APOBEC3F, OASL, OOEP, LGALS3BP, SP100, BST2, LGALS9, RBCK1, IRF1, CNR2, OAS1, UNC93B1, PTGIR, HLA-B, CD274, DDX60, TRIM5, NLRC5, IFNL2, IFIH1, HLA-
response to type I interferon	26 of 573 genes, 4.5%	117 of 44712 genes, 0.3%	1.96E-21	0.00%	0	USP18, SAMHD1, MX1, IRF7, SHFL, OASL, IFITM3, NLRC5, MYD88, SP100, STAT1, IFNB1, ISG15, TRIM56, IFIH1, STAT2, ZBP1, IFITM2, OAS1, IFNA5, IFITM1, OAS3, IFI27, ADAR, OAS2, IFIT1
viral process	42 of 573 genes, 7.3%	450 of 44712 genes, 1.0%	3.65E-20	0.00%	0	IFITM3, OASL, APOBEC3F, SP100, RSAD2, STAT1, IFNB1, EIF2AK2, SHFL, CCL5, ZNFX1, OAS1, TRIM14, PARP10, OAS3, ADAR, IFIT1, CCL4, BST2, TRIM25, PARP9, LGALS9, IFITM2, CXCL8, APOBEC3A, TRIM38, MX1, LAMP3, IRF7, TRIM5, ZC3HAV1, ISG20, IFIT5, IFITM1, IFI27, OAS2, IFNL3, TRIM21, ISG15, APOBEC3G, IFIH1, PLSCR1
viral life cycle	35 of 573 genes, 6.1%	304 of 44712 genes, 0.7%	1.92E-19	0.00%	0	EIF2AK2, SHFL, APOBEC3F, OASL, IFITM3, IFNB1, RSAD2, BST2, IFITM2, LGALS9, TRIM25, OAS3, CCL5, OAS1, ZNFX1, IFIT1, ADAR, LAMP3, MX1, APOBEC3A, TRIM38, TRIM5, CXCL8, IFIH1, APOBEC3G, ISG15, PLSCR1, IFITM1, ISG20, IFIT5, ZC3HAV1, IFNL3, TRIM21, OAS2, IFI27
cellular response to type I interferon	24 of 573 genes, 4.2%	111 of 44712 genes, 0.2%	2.52E-19	0.00%	0	SP100, STAT1, IFNB1, OASL, IFITM3, NLRC5, MYD88, IRF7, USP18, SAMHD1, IFI27, IFIT1, OAS2, ADAR, OAS1, IFNA5, IFITM1, OAS3, ZBP1, IFITM2, ISG15, TRIM56, STAT2, IFIH1
type I interferon-mediated signaling pathway	23 of 573 genes, 4.0%	107 of 44712 genes, 0.2%	2.25E-18	0.00%	0	SAMHD1, USP18, IRF7, MYD88, NLRC5, IFITM3, OASL, IFNB1, STAT1, SP100, STAT2, IFIH1, TRIM56, ISG15, IFITM2, ZBP1, OAS3, IFITM1, IFNA5, OAS1, OAS2, ADAR, IFI27
positive regulation of response to external stimulus	50 of 573 genes, 8.7%	734 of 44712 genes, 1.6%	2.49E-18	0.00%	0	DHX58, TICAM1, PIK3AP1, EIF2AK2, RSAD2, IDO1, OPTN, IFNB1, CLEC7A, IFI35, OASL, MYD88, TNFSF14, ZBP1, TRIM25, GBP5, EREG, LGALS9, PARP9, PRKD2, NUPR1, GBP3, CCL4, UNC93B1, CCL5, OAS1, ZNFX1, OAS3, IRF1, TRIM5, IRF7, HLA-F, NMI, TLR3, DDX60, CD274, HLA-E, NCKAP1L, KLRC1, CXCL8, NLRC5, PLSCR1, TRIM56, TNFAIP3, IFIH1, DDX58, SLC15A3, ZC3HAV1, C5AR1, GBP1

positive regulation of innate immune response	39 of 573 genes, 6.8%	443 of 44712 genes, 1.0%	1.16E-17	0.00%	0	TICAM1, PIK3AP1, DHX58, EIF2AK2, IFNB1, IFI35, CLEC7A, RSAD2, MYD88, OASL, EREG, LGALS9, PARP9, GBP5, TRIM25, ZBP1, OAS3, IRF1, UNC93B1, OAS1, ZNFX1, CCL5, HLA-F, TRIM5, IRF7, CD274, TLR3, NMI, DDX60, HLA-E, KLRC1, NLRC5, PLSCR1, IFIH1, TNFAIP3, TRIM56, DDX58, SLC15A3, ZC3HAV1
positive regulation of defense response	44 of 573 genes, 7.7%	600 of 44712 genes, 1.3%	4.42E-17	0.00%	0	MYD88, OASL, IDO1, OPTN, IFNB1, CLEC7A, IFI35, RSAD2, EIF2AK2, TICAM1, PIK3AP1, DHX58, OAS3, IRF1, UNC93B1, OAS1, CCL5, ZNFX1, NUPR1, GBP3, EREG, LGALS9, PARP9, TRIM25, GBP5, ZBP1, KLRC1, NLRC5, HLA-E, CD274, NMI, TLR3, DDX60, HLA-F, IRF7, TRIM5, GBP1, ZC3HAV1, DDX58, SLC15A3, IFIH1, TRIM56, TNFAIP3, PLSCR1
cellular response to cytokine stimulus	57 of 573 genes, 9.9%	1025 of 44712 genes, 2.3%	5.24E-17	0.00%	0	IFITM1, CARD16, GBP1, CXCL11, IFNL3, OAS2, PML, IFI27, GBP4, IFIH1, CASP8, STAT2, SOCS1, TNFAIP3, TRIM56, ISG15, IFNL1, NLRC5, CXCL8, NOS2, IFNL2, JAK2, MX1, TLR3, CXCL9, IRF7, OAS3, IFNA5, IRF1, OAS1, CCL5, CCL4, IFIT1, ADAR, GBP3, TNFSF13B, CSF3, IL15RA, EREG, IFITM2, LGALS9, PARP9, TRIM25, ZBP1, GBP5, MYD88, OASL, IFITM3, STAT1, IFNB1, ACKR4, SP100, PNPT1, PARP14, SAMHD1, USP18, CEACAM1
negative regulation of response to biotic stimulus	24 of 573 genes, 4.2%	138 of 44712 genes, 0.3%	5.96E-17	0.00%	0	LGALS9, STAT2, ISG15, TNFAIP3, TRIM21, HLA-B, ADAR, CARD16, OAS3, OAS1, HLA-F, DHX58, CEACAM1, PARP14, SAMHD1, IL4I1, CD274, USP18, TRIM38, SERPING1, NMI, HLA-E, NLRC5, KLRC1
positive regulation of response to biotic stimulus	39 of 573 genes, 6.8%	476 of 44712 genes, 1.1%	1.47E-16	0.00%	0	TRIM25, GBP5, ZBP1, PARP9, LGALS9, EREG, OAS1, ZNFX1, CCL5, UNC93B1, IRF1, OAS3, EIF2AK2, DHX58, PIK3AP1, TICAM1, OASL, MYD88, RSAD2, IFI35, CLEC7A, IFNB1, TNFAIP3, TRIM56, IFIH1, PLSCR1, ZC3HAV1, DDX58, SLC15A3, DDX60, NMI, TLR3, CD274, TRIM5, IRF7, HLA-F, NLRC5, KLRC1, HLA-E
response to bacterium	49 of 573 genes, 8.6%	778 of 44712 genes, 1.7%	1.72E-16	0.00%	0	GHSR, IDO1, OPTN, MYD88, GSDMB, TICAM1, IFI44, DHX58, CD68, USP18, HLA-B, RNF213, PTGIR, GBP3, OAS3, OAS1, ZNFX1, B2M, CNR2, LGALS9, RBCK1, CCL20, ABCD2, GBP5, HERC6, CSF3, NOS2, HLA-E, JAK2, CXCL8, NLRC5, TAP2, CASP7, CXCL9, TRIM5, CD274, TLR3, GBP4, OAS2, GBP1, C5AR1, CARD16, CFB, CASP8, SELE, ISG15, TMEM229B, TNFAIP3, CMPK2
cytokine-mediated signaling pathway	45 of 573 genes, 7.9%	665 of 44712 genes, 1.5%	3.73E-16	0.00%	0	JAK2, IFNL2, NLRC5, CXCL9, IRF7, MX1, IFNL3, IFI27, OAS2, CXCL11, IFITM1, CARD16, IFNL1, SOCS1, CASP8, IFIH1, STAT2, ISG15, TNFAIP3, TRIM56, STAT1, IFNB1, ACKR4, SP100, MYD88, IFITM3, OASL, CEACAM1, PARP14, SAMHD1, USP18, CCL4, ADAR, IRF1, IFNA5, OAS3, CCL5, OAS1, PARP9, IFITM2, EREG, ZBP1, CSF3, IL15RA, TNFSF13B
regulation of cytokine production	53 of 573 genes, 9.2%	946 of 44712 genes, 2.1%	8.78E-16	0.00%	0	HLA-E, JAK2, NCKAP1L, NOS2, IRF7, HLA-F, TLR3, NMI, XAF1, BTN3A3, TRIM38, CD274, DDX58, OAS2, PML, BTN3A1, TRIM21, ZC3HAV1, C5AR1, CARD16, SECTM1, GBP1, IFNL1, TNFAIP3, TRIM56, ISG15, CASP8, IFIH1, SOCS1, RSAD2, IDO1, STAT1, IFNB1, GHSR, CLEC7A, MYD88, DHX58, CEACAM1, TICAM1, EIF2AK2, HLA-B, UNC93B1, BTN3A2, OAS1, B2M, OAS3, IRF1, GBP5, ABCD2, EREG, LGALS9, BST2, PRKD2
regulation of response to stress	71 of 573 genes, 12.4%	1642 of 44712 genes, 3.7%	1.04E-15	0.00%	0	GBP1, ZC3HAV1, TRIM21, SLC15A3, IFIH1, STAT2, APOBEC3G, TRIM56, PLSCR1, NLRC5, DTX3L, CD274, TLR3, DDX60, TRIM5, IRF1, UNC93B1, CCL5, OAS1, NUPR1, HLA-B, PARP9, LGALS9, ZBP1, DDR2, APOBEC3F, MYD88, OASL, OOEP, HERC5, NCOA7, EIF2AK2, DUOXA2, USP18, PIK3AP1, CEACAM1, DHX58, DDX58, PML, CASP8, TNFAIP3, SELE, ISG15, KLRC1, HLA-E, JAK2, FAP, NMI, SERPING1, TRIM38, HLA-F, IRF7, OAS3, ZNFX1, GBP3, ADAR, EREG, TRIM25, GBP5, PMAIP1, IDO1, STAT1, OPTN, IFNB1, IFI35, CLEC7A, GHSR, RSAD2, SAMHD1, PARP14, TICAM1
cytokine production	53 of 573 genes, 9.2%	953 of 44712 genes, 2.1%	1.21E-15	0.00%	0	BTN3A2, UNC93B1, B2M, OAS1, OAS3, IRF1, HLA-B, BST2, PRKD2, GBP5, ABCD2, EREG, LGALS9, MYD88, RSAD2, STAT1, IDO1, IFNB1, CLEC7A, GHSR, EIF2AK2, CEACAM1, DHX58, TICAM1, ZC3HAV1, C5AR1, CARD16, GBP1, SECTM1, DDX58, OAS2, PML, BTN3A1, TRIM21, TNFAIP3, TRIM56, ISG15, CASP8, IFIH1, SOCS1, IFNL1, JAK2, HLA-E, NCKAP1L, NOS2, NMI, TLR3, BTN3A3, XAF1, TRIM38, CD274, IRF7, HLA-F
activation of immune response	46 of 573 genes, 8.0%	730 of 44712 genes, 1.6%	2.39E-15	0.00%	0	IRF1, OAS3, OAS1, ZNFX1, UNC93B1, BTN3A2, PRKD2, RBCK1, LGALS9, TRIM25, ZBP1, GBP5, MYD88, CR1L, THEMIS2, OASL, IFI35, CLEC7A, RSAD2, CD38, EIF2AK2, PIK3AP1, TICAM1, DHX58, CEACAM1, GBP1, C5AR1, ZC3HAV1, BTN3A1, DDX58, SLC15A3, CFB, IFIH1, TNFAIP3, PLSCR1, KLRC1, NOS2, NCKAP1L, CD274, DDX60, BTN3A3, TLR3, NMI, SERPING1, IRF7, TRIM5
negative regulation of innate immune response	20 of 573 genes, 3.5%	100 of 44712 genes, 0.2%	4.70E-15	0.00%	0	STAT2, TNFAIP3, ISG15, LGALS9, OAS3, OAS1, TRIM21, ADAR, HLA-B, SAMHD1, PARP14, SERPING1, NMI, USP18, HLA-F, DHX58, CEACAM1, KLRC1, NLRC5, HLA-E
response to type II interferon	22 of 573 genes, 3.8%	132 of 44712 genes, 0.3%	5.88E-15	0.00%	0	SHFL, PARP14, TLR3, STAT1, NOS2, JAK2, SP100, NLRC5, IFITM3, LGALS9, IFITM2, PARP9, GBP5, NUB1, BST2, TRIM21, GBP3, GBP4, IFITM1, IRF1, GBP1, CCL5

negative regulation of immune response	26 of 573 genes, 4.5%	225 of 44712 genes, 0.5%	5.92E-14	0.00%	0	STAT2, TNFAIP3, ISG15, LGALS9, IFNL1, OAS3, OAS1, TRIM21, ADAR, HLA-B, CD274, PARP14, SAMHD1, IL4I1, NMI, SERPING1, USP18, HLA-F, DHX58, CEACAM1, CR1L, KLRC1, NLRC5, IFNB1, NCKAP1L, HLA-E
response to stimulus	220 of 573 genes, 38.4%	10221 of 44712 genes, 22.9%	7.32E-14	0.00%	0	IFNL1, DACT3, RGS22, XRN1, PKHD1L1, APOL3, CFB, MS4A2, CMPK2, MAK, ISG15, OR52K2, MSH4, PML, GBP4, IFITM1, UBA7, SECTM1, MOB3C, IRF9, HLA-F, LST1, IRF7, MOV10, MX1, FAP, HEATR9, SERPING1, TAP1, NEURL3, OR4D9, JAK2, TAP2, KLRC1, CPNE5, GRIP2, EREG, ABCD2, IFITM2, TRIM25, LY6E, TNFSF14, GBP5, CCL4, GBP3, MX2, RNF213, IFI6, OAS3, CLEC2B, TRIM14, BTN3A2, B2M, ZNFX1, TICAM1, IFI44, SELL, PARP14, HESX1, IFNB1, IDO1, ACKR4, PPEF2, CLEC7A, CD38, PLEKHA4, PMAIP1, RASGRP3, HLA-C, IFIH1, CACNG8, BTN3A1, UBE2L6, TRIM21, SLC15A3, CXCL11, ISG20, GBP1, RBM11, ZC3HAV1, SP140, TRIM5, LAMP3, CD274, GNB4, DDX60, TNFSF10, IFNL2, NLRC5, TYMP,
positive regulation of response to stimulus	90 of 573 genes, 15.7%	2691 of 44712 genes, 6.0%	1.75E-13	0.00%	0	THEMIS2, PMAIP1, PLEKHA4, CR1L, RSAD2, CD38, IFI35, GHSR, CLEC7A, IFNB1, IDO1, OPTN, PARP14, TICAM1, B2M, ZNFX1, BTN3A2, OAS3, GBP3, CCL4, CSF3, TNFSF13B, GBP5, TNFSF14, TRIM25, EREG, KLRC1, TAP2, JAK2, HLA-E, NOS2, TRIM38, SERPING1, NMI, IRF7, HLA-F, SECTM1, CARD16, C5AR1, PML, DDX58, TNFAIP3, CFB, APOL3, CASP8, TBX1, IFNL1, OASL, MYD88, DDR2, OOEP, EIF2AK2, DHX58, HLA-DOB, CEACAM1, PIK3AP1, OAS1, CCL5, UNC93B1, IRF1, HLA-B, NUPR1, PRKD2, HLA-DQB2, BST2, ZBP1, RBCK1, LGALS9, PARP9, CXCL8, NLRC5, IFNL2, TNFSF10, NCKAP1L, DDX60, BTN3A3, TLR3, GCG, CD274, TRIM5, ZC3HAV1, GBP1, IFIT5, SLC15A3, IFNL3,
antiviral innate immune response	16 of 573 genes, 2.8%	67 of 44712 genes, 0.1%	5.85E-13	0.00%	0	IFIH1, ZBP1, TRIM25, OAS3, OAS1, IFIT2, IFIT3, TRIM21, OAS2, DDX58, IFIT1, EIF2AK2, MX1, USP18, DHX58, OASL
immune response-activating signaling pathway	40 of 573 genes, 7.0%	647 of 44712 genes, 1.4%	8.84E-13	0.00%	0	KLRC1, NOS2, NCKAP1L, CD274, DDX60, BTN3A3, TLR3, NMI, IRF7, GBP1, C5AR1, ZC3HAV1, BTN3A1, SLC15A3, DDX58, IFIH1, TNFAIP3, PLSCR1, MYD88, OASL, THEMIS2, CLEC7A, IFI35, CD38, RSAD2, EIF2AK2, PIK3AP1, TICAM1, CEACAM1, DHX58, IRF1, OAS3, OAS1, BTN3A2, UNC93B1, PRKD2, LGALS9, RBCK1, GBP5, TRIM25
response to interferon-beta	13 of 573 genes, 2.3%	38 of 44712 genes, 0.1%	1.96E-12	0.00%	0	IRF1, IFITM1, IFITM3, OAS1, IFNB1, STAT1, PNPT1, XAF1, BST2, TLR3, IFITM2, PLSCR1, SHFL
positive regulation of cytokine production	36 of 573 genes, 6.3%	545 of 44712 genes, 1.2%	3.62E-12	0.00%	0	HLA-E, JAK2, NOS2, IRF7, HLA-F, TLR3, CD274, DDX58, OAS2, BTN3A1, ZC3HAV1, SECTM1, C5AR1, IFNL1, ISG15, TRIM56, IFIH1, CASP8, RSAD2, CLEC7A, STAT1, IDO1, MYD88, DHX58, TICAM1, EIF2AK2, B2M, OAS1, BTN3A2, UNC93B1, IRF1, OAS3, GBP5, LGALS9, EREG, PRKD2
activation of innate immune response	30 of 573 genes, 5.2%	372 of 44712 genes, 0.8%	4.53E-12	0.00%	0	NMI, TLR3, DDX60, EIF2AK2, CD274, DHX58, TRIM5, IRF7, TICAM1, PIK3AP1, OASL, KLRC1, MYD88, RSAD2, IFI35, CLEC7A, TNFAIP3, IFIH1, ZBP1, GBP5, TRIM25, LGALS9, UNC93B1, ZC3HAV1, OAS1, ZNFX1, OAS3, IRF1, DDX58, SLC15A3
negative regulation of immune system process	37 of 573 genes, 6.5%	590 of 44712 genes, 1.3%	7.43E-12	0.00%	0	USP18, SAMHD1, PARP14, MIR155HG, DHX58, HLA-DOB, CEACAM1, CD68, CR1L, IDO1, IFNB1, BST2, LGALS9, CNR2, OAS1, IRF1, OAS3, HLA-B, ADAR, TLR3, NMI, SERPING1, IL4I1, CD274, LST1, HLA-F, NLRC5, KLRC1, HLA-E, NCKAP1L, ISG15, TNFAIP3, SOCS1, STAT2, IFNL1, GBP1, TRIM21
response to chemical	117 of 573 genes, 20.4%	4341 of 44712 genes, 9.7%	1.62E-11	0.00%	0	TRIM5, CXCL9, GCG, TLR3, CD274, LAMP3, IFNL2, NCKAP1L, CACNA1A, TYMP, NLRC5, CXCL8, PLSCR1, TRIM56, SOCS1, STAT2, IFIH1, TRIM21, IFNL3, RBM11, CXCL11, GBP1, CEACAM1, CD68, USP18, OR1I1, NCOA7, EIF2AK2, PNPT1, SP100, OASL, IFITM3, ACTN2, KCNE1, MYD88, DDR2, CNP, ZBP1, LGALS9, PARP9, PRKD2, BST2, MT1M, KCNB1, PTGIR, NUPR1, IFIT1, CCL5, OAS1, CNR2, IRF1, IRF7, CASP7, OR52P1P, XAF1, HEATR9, OR52K1, MX1, JAK2, OR4D9, NOS2, CPNE5, TBX1, XRN1, IFNL1, ISG15, SELE, CMPK2, OR5AU1, TNFAIP3, CASP8, PML, IFI27, GBP4, DDX58, OAS2, ACSM2B, OR52K2, CARD16, IFITM1, C5AR1, SHFL, SELL, TICAM1, CYP2J2, HESX1, SAMHD1, PARP14, CD38, CLEC7A, PPEF2, GHSR, STAT1, IFNB1, ACKR4, IDO1, FBXO6, PMAIP1, GBP5, TRIM25, TNFSF14, LY6E, IFITM2, EREG, CCL20, IL15RA, RTP4, CSF3, NUB1, TNFSF13B, GBP3, MX2, ADA
regulation of type I interferon production	19 of 573 genes, 3.3%	133 of 44712 genes, 0.3%	2.28E-11	0.00%	0	IRF7, DHX58, TICAM1, TLR3, NMI, TRIM38, XAF1, STAT1, MYD88, TRIM56, ISG15, IFIH1, OAS2, DDX58, TRIM21, OAS1, ZC3HAV1, OAS3, IRF1
type I interferon production	19 of 573 genes, 3.3%	133 of 44712 genes, 0.3%	2.28E-11	0.00%	0	STAT1, MYD88, DHX58, IRF7, TICAM1, TLR3, NMI, XAF1, TRIM38, OAS2, DDX58, TRIM21, ZC3HAV1, OAS1, OAS3, IRF1, TRIM56, ISG15, IFIH1
immune response-regulating signaling pathway	40 of 573 genes, 7.0%	718 of 44712 genes, 1.6%	2.78E-11	0.00%	0	DDX60, BTN3A3, NMI, TLR3, CD274, IRF7, KLRC1, NOS2, NCKAP1L, TNFAIP3, IFIH1, PLSCR1, ZC3HAV1, GBP1, C5AR1, SLC15A3, DDX58, BTN3A1, EIF2AK2, DHX58, CEACAM1, PIK3AP1, TICAM1, OASL, THEMIS2, MYD88, CD38, RSAD2, CLEC7A, IFI35, PRKD2, TRIM25, GBP5, RBCK1, LGALS9, OAS1, BTN3A2, UNC93B1, IRF1, OAS3

interferon-beta production	14 of 573 genes, 2.4%	63 of 44712 genes, 0.1%	1.28E-10	0.00%	0	IRF7, TICAM1, TLR3, TRIM56, NMI, ISG15, TRIM38, IFIH1, OAS2, DDX58, ZC3HAV1, OAS1, OAS3, IRF1
regulation of interferon-beta production	14 of 573 genes, 2.4%	63 of 44712 genes, 0.1%	1.28E-10	0.00%	0	TICAM1, IRF7, IFIH1, TLR3, NMI, TRIM56, ISG15, TRIM38, OAS2, DDX58, OAS3, IRF1, OAS1, ZC3HAV1
positive regulation of type I interferon production	15 of 573 genes, 2.6%	77 of 44712 genes, 0.2%	1.29E-10	0.00%	0	MYD88, IRF1, OAS3, ZC3HAV1, OAS1, STAT1, OAS2, DDX58, IFIH1, ISG15, TRIM56, TLR3, TICAM1, IRF7, DHX58
positive regulation of interferon-beta production	12 of 573 genes, 2.1%	42 of 44712 genes, 0.1%	3.01E-10	0.00%	0	DDX58, OAS2, ZC3HAV1, OAS1, IRF1, OAS3, IRF7, TICAM1, ISG15, TRIM56, TLR3, IFIH1
innate immune response-activating signaling pathway	27 of 573 genes, 4.7%	351 of 44712 genes, 0.8%	3.61E-10	0.00%	0	SLC15A3, DDX58, IRF1, OAS3, ZC3HAV1, OAS1, UNC93B1, LGALS9, GBP5, TRIM25, IFIH1, TNFAIP3, IFI35, CLEC7A, RSAD2, MYD88, KLRC1, OASL, TICAM1, PIK3AP1, DHX58, IRF7, EIF2AK2, CD274, DDX60, TLR3, NMI
regulation of response to stimulus	118 of 573 genes, 20.6%	4610 of 44712 genes, 10.3%	4.29E-10	0.00%	0	B2M, ZNFX1, BTN3A2, OAS3, IFI6, RNF213, GBP3, ADAR, CCL4, CSF3, TNFSF13B, TNFSF14, GBP5, TRIM25, EREG, THEMIS2, PMAIP1, PLEKHA4, CR1L, CD38, RSAD2, IFI35, CLEC7A, PPEF2, GHSR, STAT1, IDO1, IFNB1, OPTN, PARP14, SAMHD1, TICAM1, SECTM1, CARD16, C5AR1, PML, DDX58, ISG15, SELE, TNFAIP3, CFB, APOL3, CASP8, RGS22, TBX1, DACT3, IFNL1, TAP2, KLRC1, JAK2, HLA-E, NOS2, TRIM38, NMI, SERPING1, IL4I1, FAP, IRF7, HLA-F, OAS1, CCL5, UNC93B1, AIPL1, IRF1, PTGIR, HLA-B, NUPR1, HLA-DQB2, PRKD2, BST2, ZBP1, LGALS9, PARP9, RBCK1, OASL, MYD88, DDR2, APOBEC3F, SP100, OOEP, USP18, PPM1K, DUOXA2, HERC5, EIF2AK2, NCOA7, CEACAM1, DHX58, HLA-DOB, PIK3AP1, ZC3HAV1, GBP1, IFIT5, SLC15A3, IFNL3, TRIM21, BTN3A1, TRIM56, APOBEC3G, CACNG8, SOCS1, STAT2, IFIH1, HLA-
pattern recognition receptor signaling pathway	26 of 573 genes, 4.5%	335 of 44712 genes, 0.7%	8.31E-10	0.00%	0	DHX58, IRF7, TICAM1, PIK3AP1, TLR3, NMI, DDX60, EIF2AK2, CD274, RSAD2, IFI35, CLEC7A, OASL, MYD88, TRIM25, GBP5, LGALS9, TNFAIP3, IFIH1, DDX58, SLC15A3, UNC93B1, OAS1, ZC3HAV1, OAS3, IRF1
regulation of adaptive immune response	22 of 573 genes, 3.8%	231 of 44712 genes, 0.5%	9.19E-10	0.00%	0	HLA-B, IRF1, SECTM1, B2M, LGALS9, HLA-C, TNFSF13B, TNFAIP3, CLEC7A, NCKAP1L, IFNB1, RSAD2, JAK2, HLA-E, CR1L, TAP2, KLRC1, HLA-F, IRF7, CEACAM1, IL4I1, CD274
T cell mediated immunity	18 of 573 genes, 3.1%	142 of 44712 genes, 0.3%	9.50E-10	0.00%	0	UNC93B1, BTN3A2, B2M, SECTM1, HLA-B, HLA-C, CR1L, KLRC1, TAP2, HLA-E, RSAD2, IFNB1, NCKAP1L, BTN3A3, CD274, IL4I1, CEACAM1, HLA-F
cytoplasmic pattern recognition receptor signaling pathway	20 of 573 genes, 3.5%	200 of 44712 genes, 0.4%	4.33E-09	0.00%	0	SLC15A3, DDX58, UNC93B1, ZC3HAV1, OAS1, OAS3, TRIM25, GBP5, TNFAIP3, IFIH1, RSAD2, OASL, MYD88, DHX58, IRF7, TICAM1, PIK3AP1, TLR3, DDX60, EIF2AK2
response to interferon-alpha	9 of 573 genes, 1.6%	22 of 44712 genes, 0.0%	8.30E-09	0.00%	0	EIF2AK2, LAMP3, BST2, IFITM2, IFITM1, OAS1, IFITM3, MX2, ADAR
leukocyte activation	45 of 573 genes, 7.9%	1073 of 44712 genes, 2.4%	1.23E-08	0.00%	0	NMI, TLR3, IL4I1, CD274, LST1, HLA-F, CXCL8, KLRC1, JAK2, HLA-E, NCKAP1L, TMEM229B, TNFAIP3, SOCS1, CASP8, PLSCR1, IFNL1, BATF2, C5AR1, TNFRSF9, BTN3A1, HLA-DOB, CEACAM1, TICAM1, THEMIS2, MYD88, RSAD2, CD38, CLEC7A, IFI35, IFNB1, IDO1, HLA-DQB2, BST2, IL15RA, TNFSF13B, TNFSF14, LGALS9, B2M, CCL5, CNR2, HSH2D, IRF1, IFNA5, CLEC2B
regulation of leukocyte mediated immunity	22 of 573 genes, 3.8%	263 of 44712 genes, 0.6%	1.24E-08	0.00%	0	B2M, SECTM1, HLA-B, DDX58, BST2, HLA-C, LGALS9, TAP2, CR1L, KLRC1, HLA-E, RSAD2, CLEC7A, NOS2, IFNB1, NCKAP1L, TLR3, IL4I1, CD274, CEACAM1, HLA-F, TICAM1

cellular response to type II interferon	15 of 573 genes, 2.6%	104 of 44712 genes, 0.2%	1.27E-08	0.00%	0	PARP14, TLR3, LGALS9, PARP9, GBP5, IRF1, NLRC5, GBP1, CCL5, NOS2, STAT1, GBP4, SP100, GBP3, JAK2
cell killing	22 of 573 genes, 3.8%	267 of 44712 genes, 0.6%	1.67E-08	0.00%	0	TAP2, KLRC1, CR1L, CXCL8, GSDMB, MYD88, NCKAP1L, NOS2, HLA-E, CXCL9, HLA-F, CEACAM1, GBP1, CXCL11, B2M, APOL1, GBP3, HLA-B, CCL20, LGALS9, GBP5, HLA-C
regulation of adaptive immune response based on somatic recombination of immune receptors built from immunoglobulin superfamily domains	20 of 573 genes, 3.5%	216 of 44712 genes, 0.5%	1.80E-08	0.00%	0	HLA-F, CEACAM1, CD274, IL4I1, IFNB1, NCKAP1L, CLEC7A, RSAD2, JAK2, HLA-E, TAP2, CR1L, KLRC1, LGALS9, HLA-C, TNFAIP3, TNFSF13B, HLA-B, SECTM1, B2M
response to molecule of bacterial origin	26 of 573 genes, 4.5%	386 of 44712 genes, 0.9%	2.06E-08	0.00%	0	CARD16, C5AR1, CNR2, B2M, PTGIR, GBP3, CASP8, SELE, TNFAIP3, CMPK2, CSF3, LGALS9, GBP5, CXCL8, MYD88, TAP2, GHSR, NOS2, IDO1, JAK2, CD274, CASP7, TICAM1, CXCL9, TRIM5, CD68
regulation of type I interferon-mediated signaling pathway	11 of 573 genes, 1.9%	46 of 44712 genes, 0.1%	2.73E-08	0.00%	0	ZBP1, IRF7, STAT2, SAMHD1, TRIM56, ISG15, USP18, ADAR, OAS3, NLRC5, OAS1
inflammatory response	43 of 573 genes, 7.5%	1029 of 44712 genes, 2.3%	4.16E-08	0.00%	0	TRIM14, CNR2, CCL5, CCL4, PTGIR, NUPR1, GBP3, LGALS9, CCL20, ABCD2, ZBP1, GBP5, GSDMB, MYD88, THEMIS2, CLEC7A, IFI35, GHSR, IDO1, DUOXA2, EIF2AK2, USP18, TICAM1, PIK3AP1, CD68, CXCL11, GBP1, C5AR1, TRIM21, IFI27, CASP8, APOL3, SELE, TNFAIP3, PLSCR1, CXCL8, NOS2, APOL2, JAK2, HLA-E, TLR3, NMI, CXCL9
regulation of immune effector process	27 of 573 genes, 4.7%	448 of 44712 genes, 1.0%	1.04E-07	0.00%	0	KLRC1, TAP2, CR1L, MYD88, HLA-E, RSAD2, IFNB1, NCKAP1L, NOS2, CLEC7A, TLR3, SERPING1, DDX60, CD274, IL4I1, DHX58, CEACAM1, TICAM1, HLA-F, B2M, SECTM1, DDX58, HLA-B, BST2, IFNL1, HLA-C, LGALS9
cell surface receptor signaling pathway	88 of 573 genes, 15.4%	3315 of 44712 genes, 7.4%	1.47E-07	0.00%	0	JAK2, NOS2, GRIP2, KLRC1, BTC, IRF7, NMI, MX1, OAS2, PML, IFI27, ITGA10, IRF9, CARD16, IFITM1, C5AR1, IFNL1, DACT3, MS4A2, TNFAIP3, ISG15, CASP8, CD38, ACKR4, STAT1, IFNB1, CLEC7A, IFI35, GHSR, THEMIS2, PMAIP1, PLEKHA4, TICAM1, SAMHD1, HESX1, PARP14, ADAR, RNF213, CCL4, BTN3A2, OAS3, IFI6, IFNA5, LY6E, TNFSF14, EREG, IFITM2, CSF3, IL15RA, TNFSF13B, DTX3L, IFNL2, NCKAP1L, TNFSF10, NLRC5, TRIM5, CXCL9, TLR3, BTN3A3, CD274, BTN3A1, IFNL3, GBP1, CXCL11, PLSCR1, TRIM56, STAT2, IFIH1, SOCS1, SP100, OASL, IFITM3, DDR2, MYD88, CEACAM1, PIK3AP1, USP18, PTGIR, KCNB1, CCL5, OAS1, IRF1, ZBP1, PARP9, LGALS9, RBCK1, MLKL, PRKD2
regulation of response to cytokine stimulus	19 of 573 genes, 3.3%	217 of 44712 genes, 0.5%	1.58E-07	0.00%	0	NLRC5, USP18, PARP14, SAMHD1, IRF7, OAS1, CCL5, CARD16, OAS3, DDX58, ADAR, ISG15, TRIM56, TNFAIP3, STAT2, IFIH1, CASP8, ZBP1, PARP9
response to lipopolysaccharide	24 of 573 genes, 4.2%	363 of 44712 genes, 0.8%	1.91E-07	0.00%	0	PTGIR, GBP3, CARD16, CNR2, B2M, LGALS9, GBP5, CASP8, SELE, TNFAIP3, CMPK2, CSF3, NOS2, GHSR, IDO1, JAK2, MYD88, CXCL8, CASP7, CXCL9, TICAM1, TRIM5, CD68, CD274
regulation of T cell mediated immunity	14 of 573 genes, 2.4%	108 of 44712 genes, 0.2%	2.82E-07	0.00%	0	B2M, TAP2, KLRC1, SECTM1, RSAD2, HLA-E, HLA-B, NCKAP1L, IFNB1, CD274, IL4I1, HLA-C, CEACAM1, HLA-F
cell activation	46 of 573 genes, 8.0%	1239 of 44712 genes, 2.8%	4.02E-07	0.00%	0	IFNB1, IDO1, CLEC7A, IFI35, CD38, RSAD2, DDR2, MYD88, THEMIS2, TICAM1, CEACAM1, HLA-DOB, HSH2D, IFNA5, CLEC2B, IRF1, CNR2, CCL5, B2M, LGALS9, TNFSF14, BST2, IL15RA, TNFSF13B, HLA-DQB2, NCKAP1L, HLA-E, JAK2, KLRC1, CXCL8, HLA-F, LST1, CD274, IL4I1, NMI, TLR3, BTN3A1, TNFRSF9, C5AR1, BATF2, IFNL1, PLSCR1, CASP8, SOCS1, TNFAIP3, TMEM229B
antigen processing and presentation of endogenous peptide antigen via MHC class I	8 of 573 genes, 1.4%	22 of 44712 genes, 0.0%	4.18E-07	0.00%	0	TAP1, HLA-C, HLA-F, B2M, TAP2, ERAP2, HLA-B, HLA-E

leukocyte mediated immunity	28 of 573 genes, 4.9%	513 of 44712 genes, 1.1%	4.45E-07	0.00%	0	B2M, BTN3A2, UNC93B1, SECTM1, HLA-B, DDX58, BST2, HLA-C, LGALS9, MYD88, KLRC1, TAP2, CR1L, RSAD2, HLA-E, NOS2, CLEC7A, IFNB1, NCKAP1L, BTN3A3, SERPING1, TLR3, IL4I1, CD274, IRF7, CEACAM1, HLA-F, TICAM1
cellular response to virus	14 of 573 genes, 2.4%	112 of 44712 genes, 0.3%	4.63E-07	0.00%	0	OAS1, CCL5, IFNA5, IFI6, JAK2, IFNL2, ADAR, IFNL3, IFNB1, TLR3, IFIH1, IFNL1, LGALS9, IFI44
adaptive immune response based on somatic recombination of immune receptors built from immunoglobulin superfamily domains	26 of 573 genes, 4.5%	448 of 44712 genes, 1.0%	5.37E-07	0.00%	0	SECTM1, B2M, BTN3A2, UNC93B1, HLA-B, TNFSF13B, TNFAIP3, LGALS9, HLA-C, MYD88, KLRC1, TAP2, CR1L, CLEC7A, IFNB1, NCKAP1L, RSAD2, HLA-E, JAK2, IL4I1, CD274, BTN3A3, SERPING1, HLA-F, CEACAM1, IRF7
signal transduction	145 of 573 genes, 25.3%	6839 of 44712 genes, 15.3%	6.27E-07	0.00%	0	NLRC5, TYMP, TNFSF10, IFNL2, CD274, DDX60, GNB4, TRIM5, CXCL11, GBP1, ZC3HAV1, BTN3A1, SLC15A3, CACNG8, IFIH1, GSDMB, GTPBP1, DDR2, OASL, LGALS3BP, SP100, OR1I1, HERC5, MASTL, DHX58, IRF1, HSH2D, CNR2, OAS1, UNC93B1, PTGIR, BST2, LGALS9, RBCK1, KLRC1, GRIP2, OR4D9, JAK2, MX1, IRF7, SECTM1, IFITM1, IRF9, MOB3C, OR52K2, PML, APOL3, MAK, ISG15, MS4A2, RGS22, IFNL1, DACT3, PMAIP1, PLEKHA4, RASGRP3, PPEF2, CLEC7A, ACKR4, IFNB1, CD38, PARP14, HESX1, TICAM1, CLEC2B, OAS3, IFI6, BTN3A2, CCL4, RNF213, IFITM2, EREG, TRIM25, GBP5, TNFSF14, LY6E, CXCL8, NCKAP1L, DTX3L, BTN3A3, GCG, TLR3, RGS20, CXCL9, IFIT5, IFNL3, SOCS1, STAT2, TRIM56, DAPP1, HORMAD1, PLSCR1, MYD88, IFITM3, PPM1J, ACTN2, EIF2AK2, USP18, PPM1K, PIK3AP1, CEACAM1, CCL5, AIPL1, KCNB1, NUPR1, PRKD2, MLKL, PARP9, ZBP1,
negative regulation of type I interferon-mediated signaling pathway	8 of 573 genes, 1.4%	23 of 44712 genes, 0.1%	6.34E-07	0.00%	0	ISG15, USP18, SAMHD1, STAT2, OAS1, NLRC5, OAS3, ADAR
negative regulation of leukocyte mediated immunity	12 of 573 genes, 2.1%	77 of 44712 genes, 0.2%	6.67E-07	0.00%	0	CD274, IL4I1, BST2, HLA-F, LGALS9, CEACAM1, CR1L, KLRC1, IFNB1, NCKAP1L, HLA-E, HLA-B
interleukin-27-mediated signaling pathway	6 of 573 genes, 1.0%	9 of 44712 genes, 0.0%	7.76E-07	0.00%	0	MX1, OAS3, OAS1, OASL, STAT1, OAS2
negative regulation of defense response	22 of 573 genes, 3.8%	326 of 44712 genes, 0.7%	7.93E-07	0.00%	0	GHSR, HLA-E, NLRC5, KLRC1, HLA-F, DHX58, CEACAM1, PARP14, SAMHD1, USP18, TRIM38, NMI, SERPING1, TRIM21, HLA-B, ADAR, OAS3, OAS1, LGALS9, STAT2, ISG15, TNFAIP3
antigen processing and presentation of endogenous peptide antigen	8 of 573 genes, 1.4%	24 of 44712 genes, 0.1%	9.41E-07	0.00%	0	HLA-B, ERAP2, HLA-E, TAP2, B2M, HLA-F, HLA-C, TAP1
immune effector process	35 of 573 genes, 6.1%	812 of 44712 genes, 1.8%	1.47E-06	0.00%	0	CFB, HLA-C, IFNL1, SECTM1, DDX58, IL4I1, CD274, DDX60, BTN3A3, NMI, SERPING1, TLR3, HLA-F, IRF7, TAP2, KLRC1, NOS2, NCKAP1L, HLA-E, BST2, LGALS9, IFNA5, B2M, BTN3A2, UNC93B1, HLA-B, TICAM1, CEACAM1, DHX58, MYD88, CR1L, IFI35, CLEC7A, IFNB1, RSAD2
antigen processing and presentation	14 of 573 genes, 2.4%	123 of 44712 genes, 0.3%	1.63E-06	0.00%	0	TAP2, B2M, UNC93B1, PSMB8, ERAP2, HLA-B, HLA-E, MIR155HG, HLA-DQB2, TAP1, HLA-F, HLA-DOB, HLA-C, CD68
negative regulation of lymphocyte mediated immunity	11 of 573 genes, 1.9%	66 of 44712 genes, 0.1%	1.75E-06	0.00%	0	CR1L, KLRC1, HLA-B, HLA-E, NCKAP1L, IFNB1, IL4I1, CD274, CEACAM1, LGALS9, HLA-F
regulation of multicellular organismal process	85 of 573 genes, 14.8%	3341 of 44712 genes, 7.5%	2.55E-06	0.00%	0	KLRC1, HLA-E, JAK2, NOS2, XAF1, TRIM38, SERPING1, NMI, IL4I1, FAP, IRF7, LST1, HLA-F, SECTM1, C5AR1, CARD16, PML, DDX58, OAS2, ISG15, TNFAIP3, CASP8, DACT3, IFNL1, THEMIS2, CD38, RSAD2, CLEC7A, GHSR, IDO1, STAT1, IFNB1, HESX1, CYP2J2, TICAM1, B2M, BTN3A2, OAS3, IL15RA, CSF3, TNFSF13B, TNN, TNFSF14, GBP5, EREG, ABCD2, TYMP, CXCL8, NCKAP1L, BTN3A3, TLR3, CD274, ZC3HAV1, GBP1, TRIM21, TNFRSF9, ELOVL3, BTN3A1, TRIM56, SOCS1, IFIH1, PLSCR1, WARS1, MYD88, KCNE1, DDR2, SP100, EIF2AK2, DHX58, CEACAM1, HLA-DOB, PLAAT4, CNR2, CCL5, OAS1, UNC93B1, IRF1, HLA-B, LMOD3, NUPR1, PRKD2, HLA-DQB2, BST2, CDK18, LGALS9

regulation of cytokine-mediated signaling pathway	17 of 573 genes, 3.0%	205 of 44712 genes, 0.5%	3.65E-06	0.00%	0	ADAR, CCL5, OAS1, OAS3, CARD16, ZBP1, PARP9, ISG15, TRIM56, TNFAIP3, STAT2, CASP8, NLRC5, IRF7, USP18, SAMHD1, PARP14
lymphocyte activation	36 of 573 genes, 6.3%	890 of 44712 genes, 2.0%	4.50E-06	0.00%	0	TNFAIP3, CASP8, SOCS1, IFNL1, TNFRSF9, BTN3A1, CD274, IL4I1, HLA-F, LST1, KLRC1, JAK2, HLA-E, NCKAP1L, BST2, TNFSF13B, IL15RA, HLA-DQB2, TNFSF14, LGALS9, CCL5, B2M, IFNA5, HSH2D, IRF1, CLEC2B, CEACAM1, HLA-DOB, TICAM1, THEMIS2, MYD88, RSAD2, CD38, IDO1, IFNB1, CLEC7A
cellular response to stimulus	166 of 573 genes, 29.0%	8413 of 44712 genes, 18.8%	4.58E-06	0.00%	0	IL15RA, CSF3, TNFSF13B, CCL20, PLEKHG7, PARP10, IFNA5, ADAR, SAMHD1, CYP2J2, FBXO6, THEMIS2, STAT1, OPTN, PARP8, IFI35, GHSR, RSAD2, CASP8, OR5AU1, TNFAIP3, SELE, MAP3K19, TBX1, C5AR1, CARD16, ITGA10, BATF2, ACSM2B, OAS2, DDX58, IFI27, NMI, OR52K1, TRIM38, OR52P1P, CASP7, BTC, NOS2, HLA-E, MT1M, MLKL, PRKD2, PARP9, ZBP1, AIPL1, CCL5, NUPR1, IFIT1, KCNB1, EIF2AK2, PNPT1, PPM1K, USP18, PIK3AP1, CD68, CEACAM1, KCNE1, MYD88, PPM1J, ACTN2, IFITM3, STAT2, SOCS1, TRIM56, HORMAD1, DAPP1, PLSCR1, IFIT5, IFNL3, TLR3, GCG, BTN3A3, RGS20, CXCL9, CXCL8, CACNA1A, NCKAP1L, DTX3L, EREG, IFITM2, TRIM25, TNFSF14, GBP5, LY6E, OAS3, IFI6, CLEC2B, BTN3A2, B2M, CCL4, GBP3, RNF213, HESX1, PARP14, TICAM1, PLEKHA4, PMAIP1, RASGRP3, ACKR4, IFNB1, PPEF2, CLEC7A, CD38, APOL
positive regulation of canonical NF-kappaB signal transduction	18 of 573 genes, 3.1%	237 of 44712 genes, 0.5%	4.96E-06	0.00%	0	ZC3HAV1, CARD16, IFIT5, SECTM1, TNFSF14, TRIM25, RBCK1, LGALS9, BST2, CASP8, APOL3, TNFSF10, CLEC7A, MYD88, TRIM5, TICAM1, TLR3, TRIM38
cellular response to exogenous dsRNA	7 of 573 genes, 1.2%	19 of 44712 genes, 0.0%	5.33E-06	0.00%	0	IFIH1, OAS3, OAS1, TLR3, IFNB1, IFIT1, DDX58
response to dsRNA	10 of 573 genes, 1.7%	57 of 44712 genes, 0.1%	6.15E-06	0.00%	0	TICAM1, TLR3, IFIH1, DDX58, IFIT1, IFNB1, OAS1, OAS3, IFNA5, PMAIP1
antigen processing and presentation of peptide antigen	11 of 573 genes, 1.9%	74 of 44712 genes, 0.2%	6.20E-06	0.00%	0	HLA-E, HLA-B, ERAP2, UNC93B1, B2M, TAP2, HLA-DOB, HLA-C, HLA-F, HLA-DQB2, TAP1
negative regulation of immune effector process	14 of 573 genes, 2.4%	137 of 44712 genes, 0.3%	6.81E-06	0.00%	0	SERPING1, BST2, CD274, IL4I1, IFNL1, CEACAM1, HLA-F, LGALS9, CR1L, KLRC1, HLA-E, HLA-B, NCKAP1L, IFNB1
cellular response to lipopolysaccharide	18 of 573 genes, 3.1%	242 of 44712 genes, 0.5%	6.91E-06	0.00%	0	TNFAIP3, CMPK2, CSF3, GBP5, B2M, CARD16, GBP3, CD274, TRIM5, CD68, CASP7, TICAM1, CXCL9, CXCL8, MYD88, JAK2, NOS2, GHSR
regulation of cell activation	31 of 573 genes, 5.4%	698 of 44712 genes, 1.6%	7.04E-06	0.00%	0	JAK2, CD38, HLA-E, IDO1, IFNB1, NCKAP1L, CLEC7A, THEMIS2, KLRC1, DDR2, MYD88, CEACAM1, HLA-DOB, TICAM1, LST1, CD274, IL4I1, TNFRSF9, B2M, CCL5, CNR2, IRF1, TNFSF14, IFNL1, PLSCR1, LGALS9, TNFAIP3, TNFSF13B, IL15RA, HLA-DQB2, SOCS1
signaling	150 of 573 genes, 26.2%	7434 of 44712 genes, 16.6%	8.85E-06	0.00%	0	PMAIP1, PLEKHA4, RASGRP3, PPEF2, CLEC7A, IFNB1, ACKR4, CD38, HESX1, PARP14, TICAM1, CLEC2B, OAS3, IFI6, BTN3A2, CCL4, RNF213, IFITM2, EREG, TRIM25, LY6E, TNFSF14, GBP5, KLRC1, GRIP2, JAK2, OR4D9, MX1, IRF7, SECTM1, IFITM1, IRF9, MOB3C, OR52K2, PML, APOL3, ISG15, MAK, MS4A2, RGS22, IFNL1, DACT3, GSDMB, GTPBP1, DDR2, OASL, LGALS3BP, SP100, OR1I1, HERC5, MASTL, DHX58, HSH2D, IRF1, CNR2, OAS1, UNC93B1, PTGIR, BST2, LGALS9, RBCK1, NLRC5, TYMP, TNFSF10, IFNL2, CD274, DDX60, GNB4, TRIM5, GBP1, CXCL11, ZC3HAV1, BTN3A1, SLC15A3, CACNG8, IFIH1, NAPA, THEMIS2, FBXO6, IFI35, GHSR, STAT1, PARP8, OPTN, RSAD2, SAMHD1, IFNA5, ADAR, TNFSF13B, IL15RA, CSF3, PLEKHG7, CCL20, NOS2, HLA-
intracellular receptor signaling pathway	24 of 573 genes, 4.2%	440 of 44712 genes, 1.0%	8.92E-06	0.00%	0	TBX1, TRIM25, GBP5, IFIH1, TNFAIP3, PML, DDX58, SLC15A3, OAS3, ZC3HAV1, OAS1, UNC93B1, PIK3AP1, TICAM1, IRF7, DHX58, EIF2AK2, DDX60, TLR3, SP100, JAK2, RSAD2, MYD88, OASL
antigen processing and presentation of endogenous antigen	8 of 573 genes, 1.4%	31 of 44712 genes, 0.1%	9.33E-06	0.00%	0	HLA-E, ERAP2, HLA-B, TAP2, B2M, HLA-F, HLA-C, TAP1

regulation of leukocyte activation	29 of 573 genes, 5.1%	630 of 44712 genes, 1.4%	1.03E-05	0.00%	0	HLA-DQB2, TNFSF13B, TNFAIP3, IL15RA, SOCS1, PLSCR1, TNFSF14, IFNL1, LGALS9, CNR2, CCL5, B2M, IRF1, TNFRSF9, IL4I1, CD274, HLA-DOB, LST1, TICAM1, THEMIS2, MYD88, KLRC1, CD38, HLA-E, JAK2, CLEC7A, IFNB1, NCKAP1L, IDO1
cell communication	150 of 573 genes, 26.2%	7458 of 44712 genes, 16.7%	1.10E-05	0.00%	0	ADAR, IFNA5, PLEKHG7, CCL20, IL15RA, TNFSF13B, CSF3, IFI35, GHSR, OPTN, STAT1, PARP8, RSAD2, THEMIS2, FBXO6, SAMHD1, IFI27, DDX58, OAS2, CARD16, C5AR1, BATF2, ITGA10, TBX1, MAP3K19, CASP8, SELE, OR5AU1, TNFAIP3, NOS2, HLA-E, OR52P1P, BTC, TRIM38, OR52K1, NMI, KCNB1, NUPR1, CCL5, AIPL1, PARP9, CNP, ZBP1, PRKD2, MLKL, EXOC3L1, MYD88, IFITM3, ACTN2, PPM1J, PIK3AP1, CEACAM1, CD68, EIF2AK2, USP18, PPM1K, IFNL3, IFIT5, DAPP1, PLSCR1, HORMAD1, SOCS1, STAT2, TRIM56, NCKAP1L, DTX3L, CXCL8, CACNA1A, CXCL9, RGS20, BTN3A3, TLR3, GCG, CCL4, RNF213, CLEC2B, IFI6, OAS3, BTN3A2, IFITM2, EREG, GBP5, TRIM25, TNFSF14, LY6E, PPEF2, CLEC7A, IFNB1, ACKR4, CD38, PLEKHA4, PMAIP1, RASGRP3, TICAM1, HESX1,
regulation of canonical NF-kappaB signal transduction	21 of 573 genes, 3.7%	343 of 44712 genes, 0.8%	1.12E-05	0.00%	0	CARD16, IFIT5, SECTM1, ZC3HAV1, APOL3, CASP8, BST2, TNFAIP3, LGALS9, RBCK1, TNFSF14, TRIM25, MYD88, OPTN, STAT1, TNFSF10, CLEC7A, TLR3, TRIM38, TICAM1, TRIM5
regulation of lymphocyte activation	27 of 573 genes, 4.7%	557 of 44712 genes, 1.2%	1.19E-05	0.00%	0	IRF1, CCL5, B2M, TNFRSF9, SOCS1, TNFSF13B, TNFAIP3, IL15RA, HLA-DQB2, LGALS9, TNFSF14, IFNL1, KLRC1, MYD88, THEMIS2, IFNB1, NCKAP1L, IDO1, CLEC7A, JAK2, CD38, HLA-E, CD274, IL4I1, TICAM1, LST1, HLA-DOB
immune response-activating cell surface receptor signaling pathway	23 of 573 genes, 4.0%	419 of 44712 genes, 0.9%	1.66E-05	0.00%	0	MYD88, KLRC1, THEMIS2, CLEC7A, IFI35, NOS2, NCKAP1L, CD38, BTN3A3, NMI, TICAM1, PIK3AP1, CEACAM1, GBP1, C5AR1, OAS1, BTN3A2, BTN3A1, PRKD2, TNFAIP3, LGALS9, RBCK1, PLSCR1
defense response to bacterium	21 of 573 genes, 3.7%	351 of 44712 genes, 0.8%	1.69E-05	0.00%	0	GSDMB, MYD88, OPTN, NOS2, HLA-E, TLR3, CASP7, OAS3, C5AR1, GBP1, OAS1, B2M, ZNFX1, OAS2, GBP3, GBP4, RNF213, ISG15, CCL20, RBCK1, GBP5
cellular response to biotic stimulus	19 of 573 genes, 3.3%	287 of 44712 genes, 0.6%	1.72E-05	0.00%	0	TNFAIP3, CMPK2, CSF3, GBP5, CARD16, B2M, GBP3, CD274, TICAM1, CXCL9, CASP7, CD68, TRIM5, MYD88, CXCL8, CLEC7A, NOS2, GHSR, JAK2
cellular response to molecule of bacterial origin	18 of 573 genes, 3.1%	258 of 44712 genes, 0.6%	1.88E-05	0.00%	0	GBP3, CARD16, B2M, GBP5, CMPK2, CSF3, TNFAIP3, NOS2, GHSR, JAK2, MYD88, CXCL8, CASP7, TICAM1, CXCL9, TRIM5, CD68, CD274
positive regulation of intracellular signal transduction	42 of 573 genes, 7.3%	1213 of 44712 genes, 2.7%	1.92E-05	0.00%	0	CCL5, CCL4, NUPR1, PRKD2, BST2, CSF3, RBCK1, LGALS9, GBP5, TNFSF14, TRIM25, PMAIP1, MYD88, DDR2, OASL, IFI35, CLEC7A, RSAD2, EIF2AK2, PIK3AP1, TICAM1, DHX58, SECTM1, IFIT5, C5AR1, CARD16, ZC3HAV1, PML, SLC15A3, CASP8, APOL3, TRIM56, TBX1, NCKAP1L, TNFSF10, JAK2, TRIM38, DDX60, TLR3, NMI, GCG, TRIM5
regulation of T cell mediated cytotoxicity	9 of 573 genes, 1.6%	48 of 44712 genes, 0.1%	2.08E-05	0.00%	0	CEACAM1, HLA-C, HLA-F, B2M, TAP2, KLRC1, HLA-E, HLA-B, NCKAP1L
adaptive immune response	35 of 573 genes, 6.1%	901 of 44712 genes, 2.0%	2.09E-05	0.00%	0	JAK2, HLA-E, ERAP2, NCKAP1L, TAP2, KLRC1, IRF7, HLA-F, SERPING1, BTN3A3, TAP1, CD274, LAMP3, IL4I1, BTN3A1, SECTM1, HLA-C, TNFAIP3, RSAD2, IFNB1, CLEC7A, CR1L, MYD88, HLA-DOB, CEACAM1, HLA-B, BTN3A2, UNC93B1, B2M, IRF1, IFNA5, LGALS9, TNFSF13B, HLA-DQB2, PRKD2
regulation of lymphocyte mediated immunity	16 of 573 genes, 2.8%	202 of 44712 genes, 0.5%	2.12E-05	0.00%	0	CD274, IL4I1, CEACAM1, HLA-F, KLRC1, CR1L, TAP2, HLA-E, RSAD2, NCKAP1L, IFNB1, HLA-C, LGALS9, B2M, SECTM1, HLA-B
response to exogenous dsRNA	9 of 573 genes, 1.6%	49 of 44712 genes, 0.1%	2.52E-05	0.00%	0	TLR3, IFIH1, TICAM1, OAS1, OAS3, IFNA5, IFIT1, DDX58, IFNB1

canonical NF-kappaB signal transduction	21 of 573 genes, 3.7%	362 of 44712 genes, 0.8%	2.89E-05	0.00%	0	TNFSF14, TRIM25, LGALS9, RBCK1, BST2, TNFAIP3, CASP8, APOL3, ZC3HAV1, IFIT5, SECTM1, CARD16, TRIM5, TICAM1, TRIM38, TLR3, CLEC7A, OPTN, STAT1, TNFSF10, MYD88
negative regulation of response to external stimulus	24 of 573 genes, 4.2%	469 of 44712 genes, 1.0%	3.04E-05	0.00%	0	CARD16, OAS3, OAS1, TRIM21, HLA-B, ADAR, STAT2, ISG15, TNFAIP3, LGALS9, NLRC5, KLRC1, GHSR, HLA-E, SAMHD1, PARP14, FAP, TRIM38, USP18, NMI, SERPING1, HLA-F, CEACAM1, DHX58
regulation of defense response to virus	10 of 573 genes, 1.7%	68 of 44712 genes, 0.2%	3.65E-05	0.00%	0	APOBEC3F, STAT1, PML, DTX3L, DDX58, APOBEC3G, HERC5, TRIM38, TNFAIP3, PARP9
positive regulation of signal transduction	52 of 573 genes, 9.1%	1733 of 44712 genes, 3.9%	3.76E-05	0.00%	0	GBP5, ZBP1, TNFSF14, TRIM25, PARP9, LGALS9, RBCK1, PRKD2, BST2, CSF3, NUPR1, CCL4, CCL5, DHX58, PIK3AP1, TICAM1, PARP14, EIF2AK2, RSAD2, CLEC7A, IFI35, GHSR, IFNB1, OASL, MYD88, PLEKHA4, PMAIP1, DDR2, TBX1, IFNL1, TNFAIP3, TRIM56, CASP8, APOL3, PML, SLC15A3, ZC3HAV1, IFIT5, SECTM1, C5AR1, CARD16, IRF7, TRIM5, DDX60, TRIM38, NMI, GCG, TLR3, JAK2, NCKAP1L, TNFSF10, NLRC5
positive regulation of multicellular organismal process	54 of 573 genes, 9.4%	1837 of 44712 genes, 4.1%	3.89E-05	0.00%	0	DDX58, OAS2, BTN3A1, ELOVL3, ZC3HAV1, C5AR1, SECTM1, IFNL1, TRIM56, ISG15, IFIH1, CASP8, SOCS1, JAK2, HLA-E, NCKAP1L, NOS2, CXCL8, IRF7, HLA-F, TLR3, CD274, IL4I1, LMOD3, BTN3A2, UNC93B1, OAS1, CCL5, B2M, OAS3, IRF1, GBP5, TNFSF14, EREG, LGALS9, TNFSF13B, TNN, IL15RA, PRKD2, HLA-DQB2, CDK18, CD38, RSAD2, IDO1, STAT1, CLEC7A, GHSR, DDR2, MYD88, DHX58, HLA-DOB, PLAAT4, TICAM1, EIF2AK2
cellular response to dsRNA	7 of 573 genes, 1.2%	25 of 44712 genes, 0.1%	4.76E-05	0.00%	0	IFNB1, DDX58, IFIT1, OAS3, IFIH1, OAS1, TLR3
regulation of cell killing	12 of 573 genes, 2.1%	112 of 44712 genes, 0.3%	5.34E-05	0.00%	0	LGALS9, HLA-F, HLA-C, CEACAM1, NOS2, NCKAP1L, HLA-B, HLA-E, CR1L, TAP2, KLRC1, B2M
lymphocyte mediated immunity	22 of 573 genes, 3.8%	411 of 44712 genes, 0.9%	5.52E-05	0.00%	0	HLA-E, RSAD2, NCKAP1L, IFNB1, KLRC1, TAP2, CR1L, MYD88, IRF7, CEACAM1, HLA-F, SERPING1, BTN3A3, CD274, IL4I1, HLA-B, BTN3A2, UNC93B1, B2M, SECTM1, HLA-C, LGALS9
antigen processing and presentation of exogenous peptide antigen via MHC class Ib	4 of 573 genes, 0.7%	4 of 44712 genes, 0.0%	5.90E-05	0.00%	0	HLA-F, HLA-E, TAP2, B2M
antigen processing and presentation of peptide antigen via MHC class I	8 of 573 genes, 1.4%	39 of 44712 genes, 0.1%	6.64E-05	0.00%	0	HLA-F, HLA-C, TAP1, HLA-E, HLA-B, ERAP2, TAP2, B2M
immune response-regulating cell surface receptor signaling pathway	23 of 573 genes, 4.0%	452 of 44712 genes, 1.0%	6.75E-05	0.00%	0	NMI, BTN3A3, PIK3AP1, TICAM1, CEACAM1, KLRC1, MYD88, THEMIS2, NCKAP1L, IFI35, NOS2, CLEC7A, CD38, TNFAIP3, PRKD2, LGALS9, RBCK1, PLSCR1, C5AR1, GBP1, BTN3A2, OAS1, BTN3A1
antigen processing and presentation of peptide antigen via MHC class Ib	6 of 573 genes, 1.0%	16 of 44712 genes, 0.0%	6.85E-05	0.00%	0	HLA-F, HLA-B, HLA-C, HLA-E, TAP2, B2M
positive regulation of tumor necrosis factor production	12 of 573 genes, 2.1%	115 of 44712 genes, 0.3%	7.21E-05	0.00%	0	OAS1, MYD88, OAS3, OAS2, DDX58, JAK2, HLA-E, CLEC7A, TLR3, IFIH1, LGALS9, TICAM1

positive regulation of tumor necrosis factor superfamily cytokine production	12 of 573 genes, 2.1%	119 of 44712 genes, 0.3%	0.0001	0.00%	0	OAS3, MYD88, OAS1, CLEC7A, OAS2, HLA-E, DDX58, JAK2, IFIH1, TLR3, TICAM1, LGALS9
regulation of leukocyte mediated cytotoxicity	11 of 573 genes, 1.9%	99 of 44712 genes, 0.2%	0.00014	0.00%	0	KLRC1, TAP2, B2M, NOS2, NCKAP1L, HLA-B, HLA-E, LGALS9, HLA-F, CEACAM1, HLA-C
positive regulation of immune effector process	18 of 573 genes, 3.1%	295 of 44712 genes, 0.7%	0.00014	0.00%	0	HLA-B, DDX58, B2M, SECTM1, HLA-C, LGALS9, HLA-E, RSAD2, CLEC7A, NOS2, MYD88, KLRC1, TAP2, DHX58, TICAM1, HLA-F, DDX60, TLR3
cellular response to interferon-beta	7 of 573 genes, 1.2%	29 of 44712 genes, 0.1%	0.00014	0.00%	0	IFNB1, STAT1, IFITM2, TLR3, OAS1, PNPT1, IRF1
leukocyte proliferation	20 of 573 genes, 3.5%	367 of 44712 genes, 0.8%	0.00017	0.00%	0	TNFRSF9, BTN3A1, IRF1, CCL5, LGALS9, TNFSF14, BST2, TNFSF13B, TNFAIP3, NCKAP1L, IDO1, IFNB1, JAK2, HLA-E, CD38, MYD88, LST1, TICAM1, IL4I1, CD274
RIG-I signaling pathway	7 of 573 genes, 1.2%	30 of 44712 genes, 0.1%	0.00019	0.00%	0	DHX58, DDX58, TRIM25, OAS3, ZC3HAV1, OASL, DDX60
type II interferon-mediated signaling pathway	7 of 573 genes, 1.2%	30 of 44712 genes, 0.1%	0.00019	0.00%	0	STAT1, PARP9, JAK2, SP100, NLRC5, IRF1, PARP14
tumor necrosis factor superfamily cytokine production	15 of 573 genes, 2.6%	207 of 44712 genes, 0.5%	0.00019	0.00%	0	CD274, IFIH1, TNFAIP3, TLR3, LGALS9, TICAM1, MYD88, OAS3, OAS1, GHSR, CLEC7A, OAS2, JAK2, DDX58, HLA-E
regulation of tumor necrosis factor superfamily cytokine production	15 of 573 genes, 2.6%	207 of 44712 genes, 0.5%	0.00019	0.00%	0	TLR3, TNFAIP3, IFIH1, CD274, TICAM1, LGALS9, OAS1, OAS3, MYD88, OAS2, HLA-E, DDX58, JAK2, CLEC7A, GHSR
T cell activation	27 of 573 genes, 4.7%	640 of 44712 genes, 1.4%	0.0002	0.00%	0	CD274, IL4I1, HLA-DOB, CEACAM1, KLRC1, RSAD2, HLA-E, JAK2, NCKAP1L, IFNB1, IDO1, CLEC7A, TNFSF13B, HLA-DQB2, CASP8, SOCS1, IFNL1, TNFSF14, LGALS9, CCL5, B2M, HSH2D, IFNA5, IRF1, CLEC2B, TNFRSF9, BTN3A1
T cell mediated cytotoxicity	9 of 573 genes, 1.6%	62 of 44712 genes, 0.1%	0.00021	0.00%	0	HLA-B, HLA-E, NCKAP1L, B2M, TAP2, KLRC1, HLA-C, CEACAM1, HLA-F
regulation of defense response to virus by host	8 of 573 genes, 1.4%	45 of 44712 genes, 0.1%	0.00021	0.00%	0	PARP9, TNFAIP3, APOBEC3G, PML, DTX3L, DDX58, STAT1, APOBEC3F
negative regulation of leukocyte mediated cytotoxicity	7 of 573 genes, 1.2%	31 of 44712 genes, 0.1%	0.00024	0.00%	0	KLRC1, NCKAP1L, HLA-F, LGALS9, HLA-E, CEACAM1, HLA-B

interleukin-6 production	14 of 573 genes, 2.4%	182 of 44712 genes, 0.4%	0.00025	0.00%	0	DDX58, HLA-B, NCKAP1L, CLEC7A, NOS2, GHSR, UNC93B1, MYD88, EREG, TICAM1, LGALS9, TLR3, TNFAIP3, IFIH1
regulation of interleukin-6 production	14 of 573 genes, 2.4%	182 of 44712 genes, 0.4%	0.00025	0.00%	0	EREG, TICAM1, LGALS9, TNFAIP3, TLR3, IFIH1, DDX58, HLA-B, NCKAP1L, GHSR, NOS2, CLEC7A, UNC93B1, MYD88
regulation of DNA-binding transcription factor activity	15 of 573 genes, 2.6%	211 of 44712 genes, 0.5%	0.00025	0.00%	0	LGALS9, RBCK1, TRIM25, TRIM5, EIF2AK2, PRKD2, TRIM38, TRIM21, NUPR1, DDR2, CARD16, NLRC5, PARP10, TRIM14, MYD88
pyroptotic inflammatory response	8 of 573 genes, 1.4%	46 of 44712 genes, 0.1%	0.00026	0.00%	0	CASP8, ZBP1, GBP5, GSDMB, GBP1, IFI27, GBP3, TRIM21
positive regulation of leukocyte mediated immunity	13 of 573 genes, 2.3%	156 of 44712 genes, 0.3%	0.00028	0.00%	0	KLRC1, TAP2, SECTM1, B2M, NOS2, CLEC7A, HLA-E, RSAD2, DDX58, HLA-B, TICAM1, HLA-F, HLA-C
cellular response to chemical stimulus	62 of 573 genes, 10.8%	2388 of 44712 genes, 5.3%	0.00028	0.00%	0	CXCL8, CPNE5, CACNA1A, NCKAP1L, NOS2, JAK2, CD274, TLR3, GCG, CXCL9, CASP7, TRIM5, CARD16, C5AR1, CXCL11, RBM11, TRIM21, DDX58, ACSM2B, PML, IFIH1, SOCS1, CMPK2, TNFAIP3, XRN1, TBX1, DDR2, KCNE1, MYD88, PMAIP1, ACTN2, ACKR4, STAT1, IFNB1, PPEF2, CLEC7A, GHSR, SP100, NCOA7, PNPT1, HESX1, TICAM1, CYP2J2, CD68, CEACAM1, OAS3, CCL5, OAS1, CNR2, B2M, CCL4, IFIT1, GBP3, KCNB1, MT1M, CSF3, PRKD2, CCL20, LGALS9, TNFSF14, LY6E, GBP5
negative regulation of cytokine production	21 of 573 genes, 3.7%	416 of 44712 genes, 0.9%	0.0003	0.00%	0	OAS1, GBP1, CARD16, OAS3, PML, TNFAIP3, BST2, IFNL1, LGALS9, ABCD2, JAK2, GHSR, NCKAP1L, IDO1, IFNB1, XAF1, NMI, CD274, CEACAM1, DHX58, HLA-F
interferon-alpha production	7 of 573 genes, 1.2%	32 of 44712 genes, 0.1%	0.0003	0.00%	0	IFIH1, ZC3HAV1, NMI, TLR3, STAT1, IRF7, DDX58
regulation of interferon-alpha production	7 of 573 genes, 1.2%	32 of 44712 genes, 0.1%	0.0003	0.00%	0	TLR3, NMI, ZC3HAV1, IFIH1, DDX58, IRF7, STAT1
MDA-5 signaling pathway	5 of 573 genes, 0.9%	11 of 44712 genes, 0.0%	0.00032	0.00%	0	DHX58, IRF7, DDX60, OAS3, IFIH1
cytokine production involved in immune response	12 of 573 genes, 2.1%	132 of 44712 genes, 0.3%	0.00033	0.00%	0	CLEC7A, IFNB1, HLA-E, RSAD2, DDX58, MYD88, SECTM1, B2M, HLA-F, TICAM1, TLR3, BST2
regulation of cytokine production involved in immune response	12 of 573 genes, 2.1%	132 of 44712 genes, 0.3%	0.00033	0.00%	0	HLA-F, TICAM1, TLR3, BST2, RSAD2, DDX58, HLA-E, IFNB1, CLEC7A, B2M, SECTM1, MYD88
positive regulation of DNA-binding transcription factor activity	12 of 573 genes, 2.1%	133 of 44712 genes, 0.3%	0.00036	0.00%	0	CARD16, DDR2, MYD88, TRIM14, TRIM21, EIF2AK2, PRKD2, TRIM38, LGALS9, RBCK1, TRIM25, TRIM5

positive regulation of defense response to virus by host	7 of 573 genes, 1.2%	33 of 44712 genes, 0.1%	0.00038	0.00%	0	APOBEC3G, APOBEC3F, PML, DTX3L, DDX58, PARP9, STAT1
positive regulation of cytokine production involved in immune response	10 of 573 genes, 1.7%	88 of 44712 genes, 0.2%	0.00045	0.00%	0	TLR3, TICAM1, HLA-F, B2M, SECTM1, MYD88, DDX58, RSAD2, HLA-E, CLEC7A
negative regulation of T cell mediated immunity	7 of 573 genes, 1.2%	34 of 44712 genes, 0.1%	0.00048	0.00%	0	HLA-F, IFNB1, NCKAP1L, CEACAM1, IL4I1, CD274, KLRC1
negative regulation of cell killing	7 of 573 genes, 1.2%	34 of 44712 genes, 0.1%	0.00048	0.00%	0	NCKAP1L, HLA-F, LGALS9, HLA-E, HLA-B, CEACAM1, KLRC1
positive regulation of cell communication	54 of 573 genes, 9.4%	1988 of 44712 genes, 4.4%	0.00049	0.00%	0	DHX58, TICAM1, PIK3AP1, EIF2AK2, PARP14, RSAD2, CD38, IFNB1, GHSR, IFI35, CLEC7A, OASL, DDR2, PMAIP1, MYD88, PLEKHA4, TNFSF14, ZBP1, TRIM25, GBP5, PARP9, LGALS9, RBCK1, BST2, CSF3, PRKD2, NUPR1, CCL4, CCL5, IRF7, TRIM5, GCG, NMI, TLR3, DDX60, TRIM38, JAK2, NCKAP1L, TNFSF10, NLRC5, IFNL1, TBX1, TRIM56, TNFAIP3, CASP8, APOL3, CACNG8, SLC15A3, PML, ZC3HAV1, CARD16, C5AR1, SECTM1, IFIT5
negative regulation of cytokine-mediated signaling pathway	11 of 573 genes, 1.9%	112 of 44712 genes, 0.3%	0.0005	0.00%	0	ADAR, CARD16, OAS3, NLRC5, OAS1, CCL5, STAT2, PARP14, SAMHD1, USP18, ISG15
intracellular signal transduction	77 of 573 genes, 13.4%	3286 of 44712 genes, 7.3%	0.0005	0.00%	0	LGALS9, RBCK1, PARP9, BST2, PRKD2, NUPR1, UNC93B1, OAS1, CCL5, PIK3AP1, MASTL, CEACAM1, DHX58, HERC5, EIF2AK2, PPM1K, SP100, DDR2, MYD88, OASL, HORMAD1, IFIH1, SOCS1, TRIM56, SLC15A3, IFIT5, GBP1, ZC3HAV1, TRIM5, GCG, TLR3, DDX60, NCKAP1L, TNFSF10, DTX3L, CXCL8, PLEKHG7, CCL20, GBP5, TNFSF14, TRIM25, CSF3, CCL4, IFI6, OAS3, TICAM1, HESX1, ACKR4, PARP8, STAT1, OPTN, PPEF2, CLEC7A, IFI35, RSAD2, PMAIP1, FBXO6, RASGRP3, MAP3K19, TBX1, CASP8, APOL3, TNFAIP3, SELE, MAK, DDX58, IFI27, PML, CARD16, C5AR1, SECTM1, BATF2, IRF7, NMI, TRIM38, NOS2, JAK2
positive regulation of signaling	54 of 573 genes, 9.4%	1990 of 44712 genes, 4.5%	0.00051	0.00%	0	TICAM1, PIK3AP1, DHX58, EIF2AK2, PARP14, IFNB1, CLEC7A, IFI35, GHSR, RSAD2, CD38, DDR2, PMAIP1, MYD88, PLEKHA4, OASL, PARP9, LGALS9, RBCK1, TNFSF14, ZBP1, GBP5, TRIM25, CSF3, BST2, PRKD2, CCL4, NUPR1, CCL5, TRIM5, IRF7, NMI, GCG, TLR3, TRIM38, DDX60, TNFSF10, NCKAP1L, JAK2, NLRC5, IFNL1, TBX1, APOL3, CASP8, CACNG8, TRIM56, TNFAIP3, SLC15A3, PML, C5AR1, CARD16, IFIT5, SECTM1, ZC3HAV1
lymphocyte proliferation	18 of 573 genes, 3.1%	321 of 44712 genes, 0.7%	0.00051	0.00%	0	IRF1, CCL5, TNFRSF9, BTN3A1, TNFSF13B, LGALS9, TNFSF14, MYD88, IFNB1, NCKAP1L, IDO1, JAK2, HLA-E, CD38, CD274, IL4I1, TICAM1, LST1
negative regulation of adaptive immune response based on somatic recombination of immune receptors built from immunoglobulin superfamily domains	9 of 573 genes, 1.6%	70 of 44712 genes, 0.2%	0.00062	0.00%	0	KLRC1, CR1L, IFNB1, NCKAP1L, IL4I1, CD274, LGALS9, HLA-F, CEACAM1
endolysosomal toll-like receptor signaling pathway	8 of 573 genes, 1.4%	52 of 44712 genes, 0.1%	0.0007	0.00%	0	TNFAIP3, TLR3, PIK3AP1, TICAM1, OAS1, UNC93B1, MYD88, RSAD2
mononuclear cell proliferation	18 of 573 genes, 3.1%	328 of 44712 genes, 0.7%	0.00071	0.00%	0	MYD88, NCKAP1L, IDO1, IFNB1, JAK2, HLA-E, CD38, IL4I1, CD274, LST1, TICAM1, IRF1, CCL5, TNFRSF9, BTN3A1, TNFSF13B, LGALS9, TNFSF14
regulation of signal transduction	78 of 573 genes, 13.6%	3374 of 44712 genes, 7.5%	0.00071	0.00%	0	SECTM1, CARD16, C5AR1, PML, CASP8, APOL3, ISG15, TNFAIP3, TBX1, RGS22, IFNL1, DACT3, JAK2, TRIM38, NMI, IRF7, OAS3, IFI6, CCL4, RNF213, ADAR, CSF3, TNFSF14, GBP5, TRIM25, PMAIP1, PLEKHA4, PPEF2, CLEC7A, GHSR, IFI35, STAT1, OPTN, IFNB1, RSAD2, SAMHD1, PARP14, TICAM1, IFIT5, GBP1, ZC3HAV1, SLC15A3, CACNG8, SOCS1, STAT2, TRIM56, PLSCR1, NLRC5, CXCL8, TNFSF10, NCKAP1L, DDX60, GCG, TLR3, RGS20, TRIM5, IRF1, CCL5, OAS1, AIPL1, PTGIR, NUPR1, PRKD2, BST2, LGALS9, RBCK1, PARP9, ZBP1, MYD88, DDR2, OASL, SP100, EIF2AK2, USP18, PPM1K, PIK3AP1, DHX58, CEACAM1

regulation of leukocyte proliferation	17 of 573 genes, 3.0%	294 of 44712 genes, 0.7%	0.00072	0.00%	0	TICAM1, LST1, CD274, IL4I1, NCKAP1L, IDO1, HLA-E, CD38, JAK2, MYD88, LGALS9, BST2, TNFSF13B, TNFAIP3, TNFRSF9, IRF1, CCL5
positive regulation of biological process	143 of 573 genes, 25.0%	7492 of 44712 genes, 16.8%	0.00073	0.00%	0	TLR3, GCG, APOBEC3A, BTN3A3, CXCL9, CXCL8, DTX3L, NCKAP1L, TRIM56, STAT2, SOCS1, PLSCR1, IFIT5, IFNL3, PNPT1, EIF2AK2, DUOXA2, CEACAM1, HLA-DOB, PIK3AP1, ACTN2, MYD88, KCNE1, PRKD2, ZBP1, PARP9, CCL5, LMOD3, IFIT1, NUPR1, KCNB1, IFIT2, NMI, TRIM38, IL4I1, BTC, CASP7, HLA-E, NOS2, TNFAIP3, SELE, CASP8, TBX1, CARD16, C5AR1, OAS2, DDX58, PATL2, THEMIS2, CR1L, RSAD2, STAT1, OPTN, GHSR, IFI35, NUB1, IL15RA, CSF3, TNFSF13B, CCL20, ADAR, DDX60, LAMP3, CD274, TRIM5, NLRC5, IFNL2, TNFSF10, IFIH1, CACNG8, HLA-C, ATP10A, ZC3HAV1, CXCL11, GBP1, SLC15A3, BTN3A1, ELOVL3, TRIM21, NCOA7, DHX58, PLAAT4, SYNPO2, WARS1, OASL, DDR2, APOBEC3F, GTPBP1, SP100, OOEP, BST2
negative regulation of response to cytokine stimulus	11 of 573 genes, 1.9%	117 of 44712 genes, 0.3%	0.00078	0.00%	0	CCL5, OAS1, NLRC5, OAS3, CARD16, ADAR, USP18, ISG15, SAMHD1, PARP14, STAT2
antigen processing and presentation via MHC class Ib	6 of 573 genes, 1.0%	23 of 44712 genes, 0.1%	0.0008	0.00%	0	TAP2, B2M, HLA-F, HLA-B, HLA-C, HLA-E
positive regulation of NF-kappaB transcription factor activity	10 of 573 genes, 1.7%	94 of 44712 genes, 0.2%	0.00084	0.00%	0	CARD16, MYD88, TRIM14, LGALS9, RBCK1, TRIM25, TRIM5, EIF2AK2, PRKD2, TRIM38
tumor necrosis factor production	14 of 573 genes, 2.4%	201 of 44712 genes, 0.4%	0.00086	0.00%	0	TNFAIP3, TLR3, IFIH1, LGALS9, TICAM1, OAS1, MYD88, OAS3, DDX58, OAS2, HLA-E, JAK2, CLEC7A, GHSR
regulation of tumor necrosis factor production	14 of 573 genes, 2.4%	201 of 44712 genes, 0.4%	0.00086	0.00%	0	LGALS9, TICAM1, IFIH1, TLR3, TNFAIP3, CLEC7A, GHSR, OAS2, DDX58, JAK2, HLA-E, MYD88, OAS3, OAS1
ISG15-protein conjugation	4 of 573 genes, 0.7%	6 of 44712 genes, 0.0%	0.00086	0.00%	0	HERC5, UBA7, ISG15, UBE2L6
negative regulation of adaptive immune response	9 of 573 genes, 1.6%	75 of 44712 genes, 0.2%	0.00114	0.00%	0	CEACAM1, HLA-F, LGALS9, CD274, IL4I1, NCKAP1L, IFNB1, KLRC1, CR1L
regulation of molecular function	34 of 573 genes, 5.9%	1025 of 44712 genes, 2.3%	0.00136	0.00%	0	IFIT1, NUPR1, ADAR, IFIT2, OAS1, OAS3, PARP10, TRIM14, TRIM25, EREG, PARP9, LGALS9, RBCK1, PRKD2, ACTN2, WARS1, SYNPO2, DDR2, MYD88, KCNE1, CEACAM1, PLAAT4, EIF2AK2, HERC5, TRIM21, CARD16, PLSCR1, CACNG8, JAK2, DTX3L, NLRC5, TRIM5, TLR3, TRIM38
negative regulation of natural killer cell mediated cytotoxicity	6 of 573 genes, 1.0%	25 of 44712 genes, 0.1%	0.00137	0.00%	0	KLRC1, HLA-E, CEACAM1, HLA-B, HLA-F, LGALS9
host-mediated suppression of symbiont invasion	6 of 573 genes, 1.0%	25 of 44712 genes, 0.1%	0.00137	0.00%	0	IFITM1, IFITM3, IFITM2, TRIM25, LY6E, TRIM5
negative regulation of natural killer cell mediated immunity	6 of 573 genes, 1.0%	26 of 44712 genes, 0.1%	0.00176	0.00%	0	HLA-E, HLA-B, CEACAM1, HLA-F, LGALS9, KLRC1

positive regulation of interferon-alpha production	6 of 573 genes, 1.0%	26 of 44712 genes, 0.1%	0.00176	0.00%	0	STAT1, DDX58, IRF7, IFIH1, TLR3, ZC3HAV1
antigen processing and presentation of exogenous peptide antigen	7 of 573 genes, 1.2%	41 of 44712 genes, 0.1%	0.00186	0.00%	0	B2M, HLA-DQB2, UNC93B1, TAP2, HLA-DOB, HLA-E, HLA-F
antigen processing and presentation of endogenous peptide antigen via MHC class Ib	5 of 573 genes, 0.9%	15 of 44712 genes, 0.0%	0.00202	0.00%	0	HLA-C, HLA-B, HLA-E, HLA-F, TAP2
antigen processing and presentation of endogenous peptide antigen via MHC class I via ER pathway	5 of 573 genes, 0.9%	15 of 44712 genes, 0.0%	0.00202	0.00%	0	TAP2, HLA-F, HLA-B, HLA-C, HLA-E
leukocyte mediated cytotoxicity	12 of 573 genes, 2.1%	156 of 44712 genes, 0.3%	0.00204	0.00%	0	KLRC1, TAP2, MYD88, B2M, NCKAP1L, NOS2, HLA-E, HLA-B, HLA-F, LGALS9, CEACAM1, HLA-C
regulation of biological process involved in symbiotic interaction	7 of 573 genes, 1.2%	42 of 44712 genes, 0.1%	0.00221	0.00%	0	TRIM5, TRIM25, TRIM21, LGALS9, TRIM38, BST2, CXCL8
positive regulation of interleukin-6 production	10 of 573 genes, 1.7%	105 of 44712 genes, 0.2%	0.00237	0.00%	0	EREG, TICAM1, LGALS9, IFIH1, TLR3, NOS2, CLEC7A, DDX58, MYD88, UNC93B1
positive regulation of pattern recognition receptor signaling pathway	9 of 573 genes, 1.6%	82 of 44712 genes, 0.2%	0.00247	0.00%	0	DHX58, GBP5, DDX60, IFI35, SLC15A3, RSAD2, MYD88, OASL, ZC3HAV1
positive regulation of lymphocyte activation	18 of 573 genes, 3.1%	359 of 44712 genes, 0.8%	0.00261	0.00%	0	TICAM1, HLA-DOB, CD274, IL4I1, NCKAP1L, CLEC7A, HLA-E, CD38, JAK2, MYD88, LGALS9, TNFSF14, SOCS1, TNFSF13B, IL15RA, HLA-DQB2, B2M, CCL5
positive regulation of adaptive immune response based on somatic recombination of immune receptors built from immunoglobulin superfamily domains	11 of 573 genes, 1.9%	132 of 44712 genes, 0.3%	0.00263	0.00%	0	SECTM1, TAP2, B2M, CLEC7A, HLA-B, RSAD2, HLA-E, JAK2, TNFSF13B, HLA-F, HLA-C
modulation by symbiont of entry into host	6 of 573 genes, 1.0%	28 of 44712 genes, 0.1%	0.00282	0.00%	0	CXCL8, TRIM38, LGALS9, TRIM21, TRIM5, TRIM25
regulation of cell communication	84 of 573 genes, 14.7%	3885 of 44712 genes, 8.7%	0.00363	0.00%	0	TICAM1, SAMHD1, PARP14, IFI35, PPEF2, GHSR, CLEC7A, IFNB1, STAT1, OPTN, CD38, RSAD2, PLEKHA4, PMAIP1, TNFSF14, GBP5, TRIM25, CSF3, CCL4, RNF213, ADAR, IFI6, OAS3, IRF7, TRIM38, NMI, NOS2, JAK2, TBX1, RGS22, DACT3, IFNL1, APOL3, CASP8, ISG15, TNFAIP3, PML, SECTM1, CARD16, C5AR1, PIK3AP1, DHX58, CEACAM1, EIF2AK2, USP18, PPM1K, SP100, MYD88, DDR2, OASL, RBCK1, LGALS9, PARP9, ZBP1, PRKD2, BST2, PTGIR, KCNB1, NUPR1, IRF1, CCL5, OAS1, CNR2, AIPL1, RGS20, TRIM5, DDX60, GCG, TLR3, NCKAP1L, TNFSF10, CXCL8, NLRC5, TYMP, CACNA1A, PLSCR1, SOCS1, CACNG8, STAT2, TRIM56, SLC15A3, IFIT5, GBP1, ZC3HAV1
regulation of lymphocyte proliferation	15 of 573 genes, 2.6%	262 of 44712 genes, 0.6%	0.00401	0.00%	0	CD38, HLA-E, JAK2, IDO1, NCKAP1L, TNFRSF9, CCL5, MYD88, IRF1, TICAM1, LGALS9, LST1, TNFSF13B, CD274, IL4I1

positive regulation of adaptive immune response	11 of 573 genes, 1.9%	138 of 44712 genes, 0.3%	0.00408	0.00%	0	CLEC7A, HLA-B, HLA-E, RSAD2, JAK2, SECTM1, TAP2, B2M, HLA-F, HLA-C, TNFSF13B
dendritic cell cytokine production	5 of 573 genes, 0.9%	17 of 44712 genes, 0.0%	0.00409	0.00%	0	DDX58, TICAM1, CLEC7A, BST2, TLR3
regulation of dendritic cell cytokine production	5 of 573 genes, 0.9%	17 of 44712 genes, 0.0%	0.00409	0.00%	0	DDX58, CLEC7A, TICAM1, BST2, TLR3
cell surface receptor signaling pathway via JAK-STAT	12 of 573 genes, 2.1%	167 of 44712 genes, 0.4%	0.0042	0.00%	0	IFNL1, PARP9, NMI, IL15RA, SOCS1, PARP14, STAT2, IFNL2, JAK2, IFNL3, IFNB1, STAT1
cell surface receptor signaling pathway via STAT	13 of 573 genes, 2.3%	199 of 44712 genes, 0.4%	0.00459	0.00%	0	CCL5, IFNB1, STAT1, IFNL3, JAK2, IFNL2, STAT2, PARP14, SOCS1, IL15RA, NMI, PARP9, IFNL1
regulation of mononuclear cell proliferation	15 of 573 genes, 2.6%	266 of 44712 genes, 0.6%	0.00484	0.00%	0	TNFSF13B, IL4I1, CD274, LST1, LGALS9, TICAM1, CCL5, IRF1, MYD88, CD38, JAK2, HLA-E, IDO1, TNFRSF9, NCKAP1L
positive regulation of cellular process	132 of 573 genes, 23.0%	7007 of 44712 genes, 15.7%	0.005	0.00%	0	CXCL11, ATP10A, ZC3HAV1, TRIM21, BTN3A1, ELOVL3, SLC15A3, CACNG8, IFIH1, HLA-C, NLRC5, TNFSF10, LAMP3, CD274, DDX60, TRIM5, IRF1, OAS1, UNC93B1, HLA-B, CRX, CDK18, HLA-DQB2, BST2, LGALS9, RBCK1, GTPBP1, DDR2, APOBEC3F, OASL, SYNPO2, WARS1, OOEP, SP100, NCOA7, PLAAT4, DHX58, SECTM1, IFITM1, IRF9, TGM1, PCGF5, PML, APOL3, ISG15, MAK, IFNL1, TAP2, KLRC1, CPNE5, NEURL3, JAK2, FAP, MOV10, HLA-F, IRF7, TRIM14, OAS3, B2M, BTN3A2, CCL4, HELZ2, TNN, EREG, ABCD2, TRIM25, GBP5, TNFSF14, PLEKHA4, PMAIP1, CLEC7A, IFNB1, IDO1, CD38, PARP14, TICAM1, IFIT5, SO
positive regulation of cell activation	19 of 573 genes, 3.3%	417 of 44712 genes, 0.9%	0.00545	0.00%	0	DDR2, MYD88, NCKAP1L, CLEC7A, JAK2, HLA-E, CD38, CD274, IL4I1, TICAM1, HLA-DOB, CCL5, B2M, SOCS1, TNFSF13B, IL15RA, HLA-DQB2, LGALS9, TNFSF14
innate immune response activating cell surface receptor signaling pathway	10 of 573 genes, 1.7%	115 of 44712 genes, 0.3%	0.00546	0.00%	0	CLEC7A, IFI35, MYD88, KLRC1, OAS1, LGALS9, PIK3AP1, TICAM1, NMI, TNFAIP3
positive regulation of leukocyte mediated cytotoxicity	8 of 573 genes, 1.4%	68 of 44712 genes, 0.2%	0.00576	0.00%	0	NOS2, HLA-E, HLA-B, KLRC1, TAP2, B2M, HLA-F, HLA-C
negative regulation of cell population proliferation	28 of 573 genes, 4.9%	809 of 44712 genes, 1.8%	0.00606	0.00%	0	IFNL1, EREG, LGALS9, TNFAIP3, NUPR1, PTGIR, PML, TNFRSF9, IFIT3, B2M, IFITM1, PARP10, IRF1, CEACAM1, PLAAT4, LST1, NMI, CD274, FAP, EIF2AK2, IL4I1, HLA-E, JAK2, STAT1, IDO1, IFI35, WARS1, CXCL8
regulation of signaling	83 of 573 genes, 14.5%	3877 of 44712 genes, 8.7%	0.00621	0.00%	0	NCKAP1L, TNFSF10, CXCL8, NLRC5, CACNA1A, RGS20, TRIM5, TLR3, GCG, DDX60, SLC15A3, IFIT5, GBP1, ZC3HAV1, PLSCR1, STAT2, SOCS1, CACNG8, TRIM56, SP100, DDR2, MYD88, OASL, PIK3AP1, DHX58, CEACAM1, EIF2AK2, PPM1K, USP18, NUPR1, KCNB1, PTGIR, IRF1, AIPL1, CCL5, CNR2, OAS1, RBCK1, LGALS9, PARP9, ZBP1, BST2, PRKD2, NOS2, JAK2, IRF7, NMI, TRIM38, PML, C5AR1, CARD16, SECTM1, DACT3, IFNL1, TBX1, RGS22, CASP8, APOL3, TNFAIP3, ISG15, STAT1, OPTN, IFNB1, IFI35, PPEF2, GHSR, CLEC7A, CD38, RSAD2, PMAIP1, PLEKHA4, TICAM1, PARP14, SAMHD1, CCL4, ADAR, RNF213, IFI6, OAS3, GBP5, TNFSF14, TRIM25, CSF3
cell death	54 of 573 genes, 9.4%	2164 of 44712 genes, 4.8%	0.00637	0.00%	0	TICAM1, EIF2AK2, PPM1K, GHSR, CLEC7A, PPEF2, IFNB1, STAT1, IDO1, OPTN, SP100, CD38, GSDMB, PMAIP1, MYD88, DDR2, ACTN2, LGALS9, RBCK1, TRIM69, TNFSF14, ZBP1, PRKD2, MLKL, IFIT3, IFIT2, KCNB1, NUPR1, ADAR, HSH2D, IRF1, IFI6, CCL5, AIPL1, CASP7, IRF7, BTC, MX1, FAP, CD274, XAF1, GCG, TLR3, TNFSF10, NCKAP1L, JAK2, PLSCR1, TBX1, CASP8, TNFAIP3, TNFRSF9, IFI27, PML, CARD16

interleukin-1 production	11 of 573 genes, 1.9%	145 of 44712 genes, 0.3%	0.00663	0.00%	0	LGALS9, GBP5, CEACAM1, CASP8, TNFAIP3, CLEC7A, GHSR, JAK2, PML, CARD16, MYD88
regulation of interleukin-1 production	11 of 573 genes, 1.9%	145 of 44712 genes, 0.3%	0.00663	0.00%	0	GHSR, CLEC7A, PML, JAK2, MYD88, CARD16, LGALS9, CEACAM1, GBP5, CASP8, TNFAIP3
post-translational protein modification	32 of 573 genes, 5.6%	1005 of 44712 genes, 2.2%	0.00687	0.00%	0	TICAM1, HERC5, PARP14, USP18, PARP8, FBXO6, TRIM69, RBCK1, PARP9, TRIM25, HERC6, NUB1, RNF213, PARP10, TRIM5, NMI, TRIM38, NEURL3, DTX3L, JAK2, PARP12, IFIH1, SOCS1, TRIM56, TNFAIP3, ISG15, UBE2L6, TRIM21, IFI27, PML, UBA7, ZC3HAV1
regulation of pattern recognition receptor signaling pathway	13 of 573 genes, 2.3%	207 of 44712 genes, 0.5%	0.00709	0.00%	0	GBP5, DHX58, IRF7, TNFAIP3, DDX60, EIF2AK2, RSAD2, SLC15A3, IFI35, ZC3HAV1, OASL, MYD88, IRF1
toll-like receptor 4 signaling pathway	8 of 573 genes, 1.4%	70 of 44712 genes, 0.2%	0.0072	0.00%	0	IFI35, MYD88, OAS1, LGALS9, PIK3AP1, TICAM1, NMI, TNFAIP3
killing of cells of another organism	10 of 573 genes, 1.7%	119 of 44712 genes, 0.3%	0.00745	0.00%	0	CXCL11, GBP1, GSDMB, MYD88, CXCL8, APOL1, GBP3, CXCL9, CCL20, GBP5
disruption of cell in another organism	10 of 573 genes, 1.7%	119 of 44712 genes, 0.3%	0.00745	0.00%	0	CXCL9, CCL20, GBP5, MYD88, CXCL11, GBP1, GSDMB, CXCL8, APOL1, GBP3
antigen processing and presentation of exogenous antigen	7 of 573 genes, 1.2%	50 of 44712 genes, 0.1%	0.0075	0.00%	0	HLA-DOB, HLA-E, HLA-F, HLA-DQB2, B2M, UNC93B1, TAP2
positive regulation of cell killing	8 of 573 genes, 1.4%	71 of 44712 genes, 0.2%	0.00802	0.00%	0	HLA-C, HLA-F, B2M, KLRC1, TAP2, HLA-B, HLA-E, NOS2
positive regulation of T cell mediated immunity	8 of 573 genes, 1.4%	72 of 44712 genes, 0.2%	0.00893	0.00%	0	HLA-C, HLA-F, B2M, SECTM1, TAP2, HLA-B, HLA-E, RSAD2
positive regulation of chemokine production	8 of 573 genes, 1.4%	73 of 44712 genes, 0.2%	0.00991	0.00%	0	OAS1, OAS3, MYD88, CLEC7A, TLR3, EIF2AK2, TICAM1, LGALS9
regulation of CD8-positive, alpha-beta T cell activation	5 of 573 genes, 0.9%	20 of 44712 genes, 0.0%	0.00993	0.00%	0	IRF1, SOCS1, CD274, HLA-E, NCKAP1L
positive regulation of leukocyte activation	18 of 573 genes, 3.1%	395 of 44712 genes, 0.9%	0.00997	0.00%	0	MYD88, JAK2, HLA-E, CD38, NCKAP1L, CLEC7A, CD274, IL4I1, HLA-DOB, TICAM1, B2M, CCL5, TNFSF13B, IL15RA, HLA-DQB2, SOCS1, TNFSF14, LGALS9