Table S1 GO enrichment pathway of upregulated DEGs related to immune cells

Immune cells	ID	Description
CD4 T cells memory resting	GO:0022613	ribonucleoprotein complex biogenesis
CD4 T cells memory resting	GO:0034660	ncRNA metabolic process
CD4 T cells memory resting	GO:0006401	RNA catabolic process
mast cells resting	GO:0006401	RNA catabolic process
mast cells resting	GO:0008380	RNA splicing
mast cells resting	GO:0022613	ribonucleoprotein complex biogenesis
CD4 T cells memory resting	GO:0034470	ncRNA processing
CD4 T cells memory resting	GO:0006402	mRNA catabolic process
mast cells resting	GO:0006402	mRNA catabolic process
CD4 T cells memory resting	GO:0042254	ribosome biogenesis
CD4 T cells memory resting	GO:0010498	proteasomal protein catabolic process
mast cells resting	GO:0002446	neutrophil mediated immunity
mast cells resting	GO:0006605	protein targeting
mast cells resting	GO:0034660	ncRNA metabolic process
mast cells resting	GO:0042119	neutrophil activation
mast cells resting	GO:0002283	neutrophil activation involved in immune response
CD4 T cells memory resting	GO:0008380	RNA splicing
mast cells resting	GO:0043312	neutrophil degranulation
CD4 T cells memory resting	GO:0006605	protein targeting
mast cells resting	GO:0090150	establishment of protein localization to membrane
mast cells resting	GO:0000375	RNA splicing, via transesterification reactions
mast cells resting	GO:0000377	RNA splicing, via transesterification reactions with bulged adenosine as nucleophile
mast cells resting	GO:0000398	mRNA splicing, via spliceosome
mast cells resting	GO:0042110	T cell activation
CD4 T cells memory resting	GO:0043161	proteasome-mediated ubiquitin-dependent protein catabolic process
M0 macrophages	GO:0044282	small molecule catabolic process
B cells naïve	GO:0002446	neutrophil mediated immunity
B cells naïve	GO:0042119	neutrophil activation
CD4 T cells memory resting	GO:1901987	regulation of cell cycle phase transition

B cells naïve	GO:0002283	neutrophil activation involved in immune response
B cells naïve	GO:0043312	neutrophil degranulation
mast cells resting	GO:0022407	regulation of cell-cell adhesion
B cells naïve	GO:0022613	ribonucleoprotein complex biogenesis
CD4 T cells memory resting	GO:0002446	neutrophil mediated immunity
CD4 T cells memory resting	GO:0000375	RNA splicing, via transesterification reactions
CD4 T cells memory resting	GO:0000377	RNA splicing, via transesterification reactions with bulged adenosine as nucleophile
CD4 T cells memory resting	GO:0000398	mRNA splicing, via spliceosome
CD4 T cells memory resting	GO:1901990	regulation of mitotic cell cycle phase transition
CD4 T cells memory resting	GO:0042119	neutrophil activation
CD4 T cells memory resting	GO:0002283	neutrophil activation involved in immune response
CD4 T cells memory resting	GO:0034248	regulation of cellular amide metabolic process
CD4 T cells memory resting	GO:0043312	neutrophil degranulation
mast cells resting	GO:0045785	positive regulation of cell adhesion
B cells naïve	GO:0006605	protein targeting
mast cells resting	GO:1901987	regulation of cell cycle phase transition
mast cells resting	GO:0034470	ncRNA processing
B cells naïve	GO:0090150	establishment of protein localization to membrane
mast cells resting	GO:0000956	nuclear-transcribed mRNA catabolic process
B cells naïve	GO:0006401	RNA catabolic process
CD4 T cells memory resting	GO:0016072	rRNA metabolic process
CD4 T cells memory resting	GO:0006364	rRNA processing
M0 macrophages	GO:0016054	organic acid catabolic process
mast cells resting	GO:0042254	ribosome biogenesis
mast cells resting	GO:0048285	organelle fission
mast cells resting	GO:0002429	immune response-activating cell surface receptor signaling pathway
mast cells resting	GO:0002757	immune response-activating signal transduction
B cells naïve	GO:0034660	ncRNA metabolic process
mast cells resting	GO:0043254	regulation of protein-containing complex assembly
CD4 T cells memory resting	GO:0048285	organelle fission

CD4 T cells memory resting	GO:0090150	establishment of protein localization to membrane
mast cells resting	GO:1901990	regulation of mitotic cell cycle phase transition
CD4 T cells memory resting	GO:0006417	regulation of translation
mast cells resting	GO:0007015	actin filament organization
M0 macrophages	GO:0046395	carboxylic acid catabolic process
CD4 T cells memory resting	GO:1903311	regulation of mRNA metabolic process
mast cells resting	GO:0019080	viral gene expression
B cells naïve	GO:0046034	ATP metabolic process
mast cells resting	GO:1903311	regulation of mRNA metabolic process
mast cells resting	GO:0007159	leukocyte cell-cell adhesion
mast cells resting	GO:0034248	regulation of cellular amide metabolic process
mast cells resting	GO:0006413	translational initiation
CD4 T cells memory resting	GO:0010948	negative regulation of cell cycle process
mast cells resting	GO:0050867	positive regulation of cell activation
mast cells resting	GO:0051656	establishment of organelle localization
mast cells resting	GO:0000280	nuclear division
B cells naïve	GO:0006402	mRNA catabolic process
mast cells resting	GO:0006612	protein targeting to membrane
CD4 T cells memory resting	GO:0000280	nuclear division
mast cells resting	GO:0002696	positive regulation of leukocyte activation
mast cells resting	GO:0019083	viral transcription
mast cells resting	GO:0001819	positive regulation of cytokine production
mast cells resting	GO:0032970	regulation of actin filament-based process
mast cells resting	GO:0090066	regulation of anatomical structure size
mast cells resting	GO:0050863	regulation of T cell activation
mast cells resting	GO:0071900	regulation of protein serine/threonine kinase activity
CD4 T cells memory resting	GO:0032984	protein-containing complex disassembly
CD4 T cells memory resting	GO:0042176	regulation of protein catabolic process
mast cells resting	GO:1903037	regulation of leukocyte cell-cell adhesion
CD4 T cells memory resting	GO:0007059	chromosome segregation
mast cells resting	GO:1903131	mononuclear cell differentiation
CD4 T cells memory resting	GO:0006413	translational initiation
CD4 T cells memory resting	GO:0019080	viral gene expression

mast cells resting	GO:0052547	regulation of peptidase activity
M0 macrophages	GO:0006631	fatty acid metabolic process
mast cells resting	GO:0007059	chromosome segregation
mast cells resting	GO:1903793	positive regulation of anion transport
mast cells resting	GO:0002831	regulation of response to biotic stimulus
B cells naïve	GO:0034470	ncRNA processing
B cells naïve	GO:0042254	ribosome biogenesis
mast cells resting	GO:0060249	anatomical structure homeostasis
CD4 T cells memory resting	GO:0002429	immune response-activating cell surface receptor signaling pathway
CD4 T cells memory resting	GO:0002757	immune response-activating signal transduction
CD4 T cells memory resting	GO:0019882	antigen processing and presentation
CD4 T cells memory resting	GO:0002831	regulation of response to biotic stimulus
CD4 T cells memory resting	GO:0045930	negative regulation of mitotic cell cycle
B cells naïve	GO:0002429	immune response-activating cell surface receptor signaling pathway
B cells naïve	GO:0002757	immune response-activating signal transduction
CD4 T cells memory resting	GO:0051169	nuclear transport
CD4 T cells memory resting	GO:0140014	mitotic nuclear division
CD4 T cells memory resting	GO:0006520	cellular amino acid metabolic process
CD4 T cells memory resting	GO:0016569	covalent chromatin modification
CD4 T cells memory resting	GO:0062012	regulation of small molecule metabolic process
CD4 T cells memory resting	GO:0000209	protein polyubiquitination
CD4 T cells memory resting	GO:0006913	nucleocytoplasmic transport
B cells naïve	GO:1901987	regulation of cell cycle phase transition
CD4 T cells memory resting	GO:0000956	nuclear-transcribed mRNA catabolic process
CD4 T cells memory resting	GO:0016570	histone modification
CD4 T cells memory resting	GO:0019083	viral transcription
B cells naïve	GO:0019882	antigen processing and presentation

CD4 T cells memory resting	GO:0043687	post-translational protein modification
B cells naïve	GO:0052547	regulation of peptidase activity
B cells naïve	GO:0010498	proteasomal protein catabolic process
CD4 T cells memory resting	GO:0019693	ribose phosphate metabolic process
B cells naïve	GO:0042110	T cell activation
B cells naïve	GO:1901990	regulation of mitotic cell cycle phase transition
M0 macrophages	GO:0006520	cellular amino acid metabolic process
B cells naïve	GO:0048002	antigen processing and presentation of peptide antigen
B cells naïve	GO:0006119	oxidative phosphorylation
B cells naïve	GO:0008380	RNA splicing
B cells naïve	GO:0022900	electron transport chain
B cells naïve	GO:0043161	proteasome-mediated ubiquitin-dependent protein catabolic process
B cells naïve	GO:0043254	regulation of protein-containing complex assembly
B cells naïve	GO:0002831	regulation of response to biotic stimulus
B cells naïve	GO:0015980	energy derivation by oxidation of organic compounds
M0 macrophages	GO:0016042	lipid catabolic process
B cells naïve	GO:0045785	positive regulation of cell adhesion
B cells naïve	GO:1903793	positive regulation of anion transport
B cells naïve	GO:0006612	protein targeting to membrane
B cells naïve	GO:0052548	regulation of endopeptidase activity
B cells naïve	GO:0001819	positive regulation of cytokine production
B cells naïve	GO:0002478	antigen processing and presentation of exogenous peptide antigen
M0 macrophages	GO:0016053	organic acid biosynthetic process
B cells naïve	GO:0019884	antigen processing and presentation of exogenous antigen
B cells naïve	GO:0022407	regulation of cell-cell adhesion
B cells naïve	GO:0006163	purine nucleotide metabolic process
B cells naïve	GO:0006413	translational initiation
B cells naïve	GO:0007159	leukocyte cell-cell adhesion
B cells naïve	GO:0016072	rRNA metabolic process
B cells naïve	GO:0070482	response to oxygen levels
B cells naïve	GO:0072521	purine-containing compound metabolic process
B cells naïve	GO:0007015	actin filament organization
M0 macrophages	GO:0008202	steroid metabolic process
B cells naïve	GO:0016049	cell growth
B cells naïve	GO:0019080	viral gene expression
B cells naïve	GO:0019693	ribose phosphate metabolic process

B cells naïve	GO:0032984	protein-containing complex disassembly
B cells naïve	GO:0045862	positive regulation of proteolysis
B cells naïve	GO:0006364	rRNA processing
M0 macrophages	GO:0046394	carboxylic acid biosynthetic process
Follicular helper T cells	GO:0044282	small molecule catabolic process
gamma delta T cells	GO:0002446	neutrophil mediated immunity
gamma delta T cells	GO:0042119	neutrophil activation
gamma delta T cells	GO:0002283	neutrophil activation involved in immune response
gamma delta T cells	GO:0043312	neutrophil degranulation
gamma delta T cells	GO:0048193	Golgi vesicle transport
M0 macrophages	GO:1901605	alpha-amino acid metabolic process
M0 macrophages	GO:0006790	sulfur compound metabolic process
gamma delta T cells	GO:0009100	glycoprotein metabolic process
M0 macrophages	GO:0006066	alcohol metabolic process
gamma delta T cells	GO:0010256	endomembrane system organization
gamma delta T cells	GO:0043087	regulation of GTPase activity
M0 macrophages	GO:0044242	cellular lipid catabolic process
M0 macrophages	GO:0072329	monocarboxylic acid catabolic process
Follicular helper T cells	GO:0016054	organic acid catabolic process
gamma delta T cells	GO:1903793	positive regulation of anion transport
M0 macrophages	GO:0006869	lipid transport
gamma delta T cells	GO:0016311	dephosphorylation
gamma delta T cells	GO:0090066	regulation of anatomical structure size
M0 macrophages	GO:0030258	lipid modification
Follicular helper T cells	GO:0046395	carboxylic acid catabolic process
M0 macrophages	GO:0015711	organic anion transport
M0 macrophages	GO:0019216	regulation of lipid metabolic process
gamma delta T cells	GO:0009101	glycoprotein biosynthetic process
M0 macrophages	GO:0009991	response to extracellular stimulus
M0 macrophages	GO:0031667	response to nutrient levels
gamma delta T cells	GO:0006644	phospholipid metabolic process
gamma delta T cells	GO:0007409	axonogenesis
gamma delta T cells	GO:0043254	regulation of protein-containing complex assembly
gamma delta T cells	GO:0006979	response to oxidative stress
gamma delta T cells	GO:0007015	actin filament organization
M0 macrophages	GO:0009063	cellular amino acid catabolic process
gamma delta T cells	GO:0051169	nuclear transport
M0 macrophages	GO:0072521	purine-containing compound metabolic process
gamma delta T cells	GO:0006913	nucleocytoplasmic transport
gamma delta T cells	GO:0019693	ribose phosphate metabolic process

Follicular helper T cells	GO:0006631	fatty acid metabolic process
M0 macrophages	GO:0009259	ribonucleotide metabolic process
gamma delta T cells	GO:0009259	ribonucleotide metabolic process
M0 macrophages	GO:0019693	ribose phosphate metabolic process
gamma delta T cells	GO:0043161	proteasome-mediated ubiquitin-dependent protein catabolic process
gamma delta T cells	GO:0043547	positive regulation of GTPase activity
gamma delta T cells	GO:1904951	positive regulation of establishment of protein localization
gamma delta T cells	GO:1990778	protein localization to cell periphery
gamma delta T cells	GO:0034976	response to endoplasmic reticulum stress
M0 macrophages	GO:0046486	glycerolipid metabolic process
M0 macrophages	GO:0062012	regulation of small molecule metabolic process
M0 macrophages	GO:0006163	purine nucleotide metabolic process
gamma delta T cells	GO:0006839	mitochondrial transport
gamma delta T cells	GO:0032535	regulation of cellular component size
M0 macrophages	GO:0042493	response to drug
M0 macrophages	GO:0009150	purine ribonucleotide metabolic process
M0 macrophages	GO:0015849	organic acid transport
M0 macrophages	GO:0043434	response to peptide hormone
gamma delta T cells	GO:0031589	cell-substrate adhesion
gamma delta T cells	GO:0032970	regulation of actin filament-based process
gamma delta T cells	GO:0051222	positive regulation of protein transport
gamma delta T cells	GO:0062197	cellular response to chemical stress
Follicular helper T cells	GO:0006520	cellular amino acid metabolic process
M0 macrophages	GO:0009062	fatty acid catabolic process
gamma delta T cells	GO:0016050	vesicle organization
M0 macrophages	GO:0046942	carboxylic acid transport
M0 macrophages	GO:0072330	monocarboxylic acid biosynthetic process
gamma delta T cells	GO:0006650	glycerophospholipid metabolic process
gamma delta T cells	GO:0010506	regulation of autophagy
gamma delta T cells	GO:0032386	regulation of intracellular transport
gamma delta T cells	GO:0070085	glycosylation
M0 macrophages	GO:0002697	regulation of immune effector process
M0 macrophages	GO:0051346	negative regulation of hydrolase activity
gamma delta T cells	GO:1903829	positive regulation of cellular protein localization
gamma delta T cells	GO:0006486	protein glycosylation
gamma delta T cells	GO:0043413	macromolecule glycosylation
gamma delta T cells	GO:0072659	protein localization to plasma membrane
gamma delta T cells	GO:2001233	regulation of apoptotic signaling pathway
Follicular helper T	GO:0006066	alcohol metabolic process

cells		
gamma delta T cells	GO:0006986	response to unfolded protein
Follicular helper T cells	GO:0008202	steroid metabolic process
gamma delta T cells	GO:0008654	phospholipid biosynthetic process
gamma delta T cells	GO:0015931	nucleobase-containing compound transport
gamma delta T cells	GO:0032147	activation of protein kinase activity
gamma delta T cells	GO:0035966	response to topologically incorrect protein
Follicular helper T cells	GO:0016042	lipid catabolic process
gamma delta T cells	GO:0022604	regulation of cell morphogenesis
M0 macrophages	GO:0044262	cellular carbohydrate metabolic process
M0 macrophages	GO:1901606	alpha-amino acid catabolic process
M0 macrophages	GO:1903793	positive regulation of anion transport
M0 macrophages	GO:0005996	monosaccharide metabolic process
gamma delta T cells	GO:0006457	protein folding
M0 macrophages	GO:0006575	cellular modified amino acid metabolic process
M0 macrophages	GO:0006959	humoral immune response
Follicular helper T cells	GO:0016053	organic acid biosynthetic process
M0 macrophages	GO:0019395	fatty acid oxidation
M0 macrophages	GO:0034440	lipid oxidation
gamma delta T cells	GO:0034599	cellular response to oxidative stress
M0 macrophages	GO:0042445	hormone metabolic process
M0 macrophages	GO:1901653	cellular response to peptide
M0 macrophages	GO:0048545	response to steroid hormone
M0 macrophages	GO:0006694	steroid biosynthetic process
Follicular helper T cells	GO:0006790	sulfur compound metabolic process
M0 macrophages	GO:0042180	cellular ketone metabolic process
Follicular helper T cells	GO:0046394	carboxylic acid biosynthetic process
M0 macrophages	GO:1901617	organic hydroxy compound biosynthetic process
Follicular helper T cells	GO:1901605	alpha-amino acid metabolic process
Follicular helper T cells	GO:0006869	lipid transport
Follicular helper T cells	GO:0019216	regulation of lipid metabolic process
Follicular helper T cells	GO:0009259	ribonucleotide metabolic process
Follicular helper T cells	GO:0019693	ribose phosphate metabolic process

Follicular helper T cells	GO:0042445	hormone metabolic process
Follicular helper T cells	GO:0072329	monocarboxylic acid catabolic process
Follicular helper T cells	GO:0006163	purine nucleotide metabolic process
Follicular helper T cells	GO:0010038	response to metal ion
Follicular helper T cells	GO:0015711	organic anion transport
Follicular helper T cells	GO:0044242	cellular lipid catabolic process
Follicular helper T cells	GO:0072521	purine-containing compound metabolic process
Follicular helper T cells	GO:0009150	purine ribonucleotide metabolic process
Follicular helper T cells	GO:0042493	response to drug
Follicular helper T cells	GO:0046942	carboxylic acid transport
Follicular helper T cells	GO:0009063	cellular amino acid catabolic process
Follicular helper T cells	GO:0009636	response to toxic substance
Follicular helper T cells	GO:0015849	organic acid transport
Follicular helper T cells	GO:0072330	monocarboxylic acid biosynthetic process
Follicular helper T cells	GO:0030258	lipid modification
Follicular helper T cells	GO:0006959	humoral immune response
Follicular helper T cells	GO:0009991	response to extracellular stimulus
Follicular helper T cells	GO:0031667	response to nutrient levels
Follicular helper T cells	GO:0034754	cellular hormone metabolic process
Follicular helper T cells	GO:0015980	energy derivation by oxidation of organic compounds
Follicular helper T cells	GO:0002697	regulation of immune effector process
Follicular helper T cells	GO:0006720	isoprenoid metabolic process

Follicular helper T cells	GO:0022900	electron transport chain
Follicular helper T cells	GO:0048545	response to steroid hormone
Follicular helper T cells	GO:0048732	gland development
Follicular helper T cells	GO:1903793	positive regulation of anion transport
Follicular helper T cells	GO:0006721	terpenoid metabolic process
Follicular helper T cells	GO:0006805	xenobiotic metabolic process
Follicular helper T cells	GO:0006956	complement activation
Follicular helper T cells	GO:0007596	blood coagulation
Follicular helper T cells	GO:0007599	hemostasis
Follicular helper T cells	GO:0009410	response to xenobiotic stimulus
Follicular helper T cells	GO:0071466	cellular response to xenobiotic stimulus
Follicular helper T cells	GO:1901617	organic hydroxy compound biosynthetic process
Eosinophils	GO:0051346	negative regulation of hydrolase activity
Eosinophils	GO:0006869	lipid transport
Eosinophils	GO:0002697	regulation of immune effector process
Eosinophils	GO:0044282	small molecule catabolic process
Eosinophils	GO:0006959	humoral immune response
Eosinophils	GO:0030198	extracellular matrix organization
Eosinophils	GO:0043062	extracellular structure organization
Eosinophils	GO:0045229	external encapsulating structure organization
Eosinophils	GO:0052547	regulation of peptidase activity
Eosinophils	GO:0052548	regulation of endopeptidase activity
Eosinophils	GO:0002460	adaptive immune response based on somatic recombination of immune receptors built from immunoglobulin superfamily domains
Eosinophils	GO:0002449	lymphocyte mediated immunity
Eosinophils	GO:0006520	cellular amino acid metabolic process
Eosinophils	GO:0006898	receptor-mediated endocytosis
Eosinophils	GO:0010466	negative regulation of peptidase activity
Eosinophils	GO:0010951	negative regulation of endopeptidase activity
Eosinophils	GO:0045861	negative regulation of proteolysis

Eosinophils	GO:0016053	organic acid biosynthetic process
Eosinophils	GO:0016054	organic acid catabolic process
Eosinophils	GO:0046394	carboxylic acid biosynthetic process
Eosinophils	GO:0002920	regulation of humoral immune response
Eosinophils	GO:0006956	complement activation
Eosinophils	GO:0008202	steroid metabolic process
Eosinophils	GO:0016042	lipid catabolic process
Eosinophils	GO:0046395	carboxylic acid catabolic process
Eosinophils	GO:0051604	protein maturation
Eosinophils	GO:0055088	lipid homeostasis
Eosinophils	GO:1901605	alpha-amino acid metabolic process
Eosinophils	GO:0002526	acute inflammatory response
Eosinophils	GO:0002576	platelet degranulation
Eosinophils	GO:0015850	organic hydroxy compound transport
Eosinophils	GO:0016064	immunoglobulin mediated immune response
Eosinophils	GO:0019724	B cell mediated immunity
Eosinophils	GO:0030449	regulation of complement activation
Eosinophils	GO:0042157	lipoprotein metabolic process
Eosinophils	GO:1905952	regulation of lipid localization
Eosinophils	GO:0001523	retinoid metabolic process
Eosinophils	GO:0002455	humoral immune response mediated by circulating immunoglobulin
Eosinophils	GO:0006720	isoprenoid metabolic process
Eosinophils	GO:0006721	terpenoid metabolic process
Eosinophils	GO:0009063	cellular amino acid catabolic process
Eosinophils	GO:0016101	diterpenoid metabolic process
Eosinophils	GO:0016485	protein processing
Eosinophils	GO:0019835	cytolysis
Eosinophils	GO:0032368	regulation of lipid transport
Eosinophils	GO:0072330	monocarboxylic acid biosynthetic process
Eosinophils	GO:0032371	regulation of sterol transport
Eosinophils	GO:0032374	regulation of cholesterol transport
Eosinophils	GO:0055090	acylglycerol homeostasis
Eosinophils	GO:0070328	triglyceride homeostasis