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GO term enrichment of up-regulated genes

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BP GO:0002376 immune system process

Annotate: 2352

Significant: 60

Expected: 39.18

topGO p-value: 0.0004

Differentially expressed genes in this GO term (IDs and gene names):

ENSG00000005471 (ABCB4); ENSG00000006128 (TAC1); ENSG00000026508 (CD44);
ENSG00000064300 (NGFR); ENSG00000077150 (NFKB2); ENSG00000077238 (IL4R);
ENSG00000085563 (ABCB1); ENSG00000087245 (MMP2); ENSG00000095752 (IL11);
ENSG00000100097 (LGALS1); ENSG00000100867 (DHRS2); ENSG00000101000 (PROCR);
ENSG00000102755 (FLT1); ENSG00000102879 (CORO1A); ENSG00000104419 (NDRG1);
ENSG00000104856 (RELB); ENSG00000104998 (IL27RA); ENSG00000105329 (TGFB1);
ENSG00000105974 (CAV1); ENSG00000106546 (AHR); ENSG00000116016 (EPAS1);
ENSG00000118503 (TNFAIP3); ENSG00000120738 (EGR1); ENSG00000120885 (CLU);
ENSG00000120949 (TNFRSF8); ENSG00000124145 (SDC4); ENSG00000124813 (RUNX2);
ENSG00000125730 (C3); ENSG00000125931 (CITED1); ENSG00000128271 (ADORA2A);
ENSG00000131015 (ULBP2); ENSG00000131981 (LGALS3); ENSG00000134470 (IL15RA);
ENSG00000135046 (ANXA1); ENSG00000136826 (KLF4); ENSG00000138772 (ANXA3);
ENSG00000142627 (EPHA2); ENSG00000142867 (BCL10); ENSG00000143369 (ECM1);
ENSG00000145555 (MYO10); ENSG00000154127 (UBASH3B); ENSG00000154342 (WNT3A);
ENSG00000155090 (KLF10); ENSG00000159216 (RUNX1); ENSG00000160712 (IL6R);
ENSG00000164251 (F2RL1); ENSG00000164949 (GEM); ENSG00000165272 (AQP3);
ENSG00000166501 (PRKCB); ENSG00000167244 (IGF2); ENSG00000170345 (FOS);
ENSG00000170542 (SERPINB9); ENSG00000171223 (JUNB); ENSG00000174004 (NRROS);
ENSG00000174130 (TLR6); ENSG00000179388 (EGR3); ENSG00000179750 (APOBEC3B);
ENSG00000196092 (PAX5); ENSG00000196639 (HRH1); ENSG00000198910 (L1CAM)

Differentially expressed genes in this GO term (IDs and product descriptions):

ENSG00000005471 (ATP binding cassette subfamily B member 4); ENSG00000006128
(tachykinin precursor 1); ENSG00000026508 (CD44 molecule (Indian blood group));
ENSG00000064300 (nerve growth factor receptor); ENSG00000077150 (nuclear factor
of kappa light polypeptide gene enhancer in B-cells 2 (p49/p100));
ENSG00000077238 (interleukin 4 receptor); ENSG00000085563 (ATP binding cassette
subfamily B member 1); ENSG00000087245 (matrix metalloproteinase 2);
ENSG00000095752 (interleukin 11); ENSG00000100097 (lectin; galactoside-binding;
soluble; 1); ENSG00000100867 (dehydrogenase/reductase (SDR family) member 2);
ENSG00000101000 (protein C receptor); ENSG00000102755 (fms-related tyrosine
kinase 1); ENSG00000102879 (coronin; actin binding protein; 1A); ENSG00000104419
(N-myc downstream regulated 1); ENSG00000104856 (v-rel avian
reticuloendotheliosis viral oncogene homolog B); ENSG00000104998 (interleukin 27
receptor subunit alpha); ENSG00000105329 (transforming growth factor beta 1);
ENSG00000105974 (caveolin 1); ENSG00000106546 (aryl hydrocarbon receptor);
ENSG00000116016 (endothelial PAS domain protein 1); ENSG00000118503 (TNF alpha
induced protein 3); ENSG00000120738 (early growth response 1); ENSG00000120885
(clusterin); ENSG00000120949 (tumor necrosis factor receptor superfamily member
8); ENSG00000124145 (syndecan 4); ENSG00000124813 (runt-related transcription
factor 2); ENSG00000125730 (complement component 3); ENSG00000125931 (Cbp/p300-
interacting transactivator; with Glu/Asp rich carboxy-terminal domain; 1);
ENSG00000128271 (adenosine A2a receptor); ENSG00000131015 (UL16 binding protein
2); ENSG00000131981 (lectin; galactoside-binding; soluble; 3); ENSG00000134470
(interleukin 15 receptor subunit alpha); ENSG00000135046 (annexin A1);
ENSG00000136826 (Kruppel-like factor 4 (gut)); ENSG00000138772 (annexin A3);

ENSG00000142627 (EPH receptor A2); ENSG00000142867 (B-cell CLL/lymphoma 10);
ENSG00000143369 (extracellular matrix protein 1); ENSG00000145555 (myosin X);
ENSG00000154127 (ubiquitin associated and SH3 domain containing B);
ENSG00000154342 (wingless-type MMTV integration site family member 3A);
ENSG00000155090 (Kruppel-like factor 10); ENSG00000159216 (runt-related
transcription factor 1); ENSG00000160712 (interleukin 6 receptor);
ENSG00000164251 (coagulation factor II (thrombin) receptor-like 1);
ENSG00000164949 (GTP binding protein overexpressed in skeletal muscle);
ENSG00000165272 (aquaporin 3 (Gill blood group)); ENSG00000166501 (protein
kinase C; beta); ENSG00000167244 (insulin like growth factor 2); ENSG00000170345
(FBJ murine osteosarcoma viral oncogene homolog); ENSG00000170542 (serpin
peptidase inhibitor; clade B (ovalbumin); member 9); ENSG00000171223 (jun B
proto-oncogene); ENSG00000174004 (negative regulator of reactive oxygen
species); ENSG00000174130 (toll-like receptor 6); ENSG00000179388 (early growth
response 3); ENSG00000179750 (apolipoprotein B mRNA editing enzyme; catalytic
polypeptide-like 3B); ENSG00000196092 (paired box 5); ENSG00000196639 (histamine
receptor H1); ENSG00000198910 (L1 cell adhesion molecule)

BP GO:0040011 locomotion

Annotate: 1494

Significant: 59

Expected: 24.89

topGO p-value: 0.0005

Differentially expressed genes in this GO term (IDs and gene names):

ENSG00000005513 (SOX8); ENSG00000006128 (TAC1); ENSG00000006327 (TNFRSF12A);
ENSG00000006468 (ETV1); ENSG00000007384 (RHBDF1); ENSG00000011422 (PLAUR);
ENSG00000026508 (CD44); ENSG00000058085 (LAMC2); ENSG00000064300 (NGFR);
ENSG00000075618 (FSCN1); ENSG00000101000 (PROCR); ENSG00000102755 (FLT1);
ENSG00000102879 (CORO1A); ENSG00000105329 (TGFB1); ENSG00000105974 (CAV1);
ENSG00000107954 (NEURL1); ENSG00000112769 (LAMA4); ENSG00000113070 (HBEGF);
ENSG00000118523 (CTGF); ENSG00000120318 (ARAP3); ENSG00000122877 (EGR2);
ENSG00000123358 (NR4A1); ENSG00000124145 (SDC4); ENSG00000124216 (SNAI1);
ENSG00000128271 (ADORA2A); ENSG00000130762 (ARHGEF16); ENSG00000131981 (LGALS3);
ENSG00000133216 (EPHB2); ENSG00000135046 (ANXA1); ENSG00000135919 (SERPINE2);
ENSG00000136826 (KLF4); ENSG00000137090 (DMRT1); ENSG00000138061 (CYP1B1);
ENSG00000138772 (ANXA3); ENSG00000142627 (EPHA2); ENSG00000142871 (CYR61);
ENSG00000143369 (ECM1); ENSG00000153993 (SEMA3D); ENSG00000154342 (WNT3A);
ENSG00000158486 (DNAH3); ENSG00000160712 (IL6R); ENSG00000160886 (LY6K);
ENSG00000160888 (IER2); ENSG00000164251 (F2RL1); ENSG00000166900 (STX3);
ENSG00000167680 (SEMA6B); ENSG00000168505 (GBX2); ENSG00000172020 (GAP43);
ENSG00000173546 (CSPG4); ENSG00000175592 (FOSL1); ENSG00000175832 (ETV4);
ENSG00000176170 (SPHK1); ENSG00000179388 (EGR3); ENSG00000179820 (MYADM);
ENSG00000196639 (HRH1); ENSG00000196754 (S100A2); ENSG00000196924 (FLNA);
ENSG00000198576 (ARC); ENSG00000198910 (L1CAM)

Differentially expressed genes in this GO term (IDs and product descriptions):

ENSG00000005513 (SRY-box 8); ENSG00000006128 (tachykinin precursor 1);
ENSG00000006327 (tumor necrosis factor receptor superfamily member 12A);
ENSG00000006468 (ets variant 1); ENSG00000007384 (rhomboid 5 homolog 1
(Drosophila)); ENSG00000011422 (plasminogen activator; urokinase receptor);
ENSG00000026508 (CD44 molecule (Indian blood group)); ENSG00000058085 (laminin
subunit gamma 2); ENSG00000064300 (nerve growth factor receptor);
ENSG00000075618 (fascin actin-bundling protein 1); ENSG00000101000 (protein C
receptor); ENSG00000102755 (fms-related tyrosine kinase 1); ENSG00000102879
(coronin; actin binding protein; 1A); ENSG00000105329 (transforming growth
factor beta 1); ENSG00000105974 (caveolin 1); ENSG00000107954 (neuralized E3
ubiquitin protein ligase 1); ENSG00000112769 (laminin subunit alpha 4);

ENSG00000113070 (heparin-binding EGF-like growth factor); ENSG00000118523 (connective tissue growth factor); ENSG00000120318 (ArfGAP with RhoGAP domain; ankyrin repeat and PH domain 3); ENSG00000122877 (early growth response 2); ENSG00000123358 (nuclear receptor subfamily 4 group A member 1); ENSG00000124145 (syndecan 4); ENSG00000124216 (snail family zinc finger 1); ENSG00000128271 (adenosine A2a receptor); ENSG00000130762 (Rho guanine nucleotide exchange factor 16); ENSG00000131981 (lectin; galactoside-binding; soluble; 3); ENSG00000133216 (EPH receptor B2); ENSG00000135046 (annexin A1); ENSG00000135919 (serpin peptidase inhibitor; clade E (nexin; plasminogen activator inhibitor type 1); member 2); ENSG00000136826 (Kruppel-like factor 4 (gut)); ENSG00000137090 (doublesex and mab-3 related transcription factor 1); ENSG00000138061 (cytochrome P450 family 1 subfamily B member 1); ENSG00000138772 (annexin A3); ENSG00000142627 (EPH receptor A2); ENSG00000142871 (cysteine-rich; angiogenic inducer; 61); ENSG00000143369 (extracellular matrix protein 1); ENSG00000153993 (sema domain; immunoglobulin domain (Ig); short basic domain; secreted; (semaphorin) 3D); ENSG00000154342 (wingless-type MMTV integration site family member 3A); ENSG00000158486 (dynein; axonemal; heavy chain 3); ENSG00000160712 (interleukin 6 receptor); ENSG00000160886 (lymphocyte antigen 6 complex; locus K); ENSG00000160888 (immediate early response 2); ENSG00000164251 (coagulation factor II (thrombin) receptor-like 1); ENSG00000166900 (syntaxin 3); ENSG00000167680 (sema domain; transmembrane domain (TM); and cytoplasmic domain; (semaphorin) 6B); ENSG00000168505 (gastrulation brain homeobox 2); ENSG00000172020 (growth associated protein 43); ENSG00000173546 (chondroitin sulfate proteoglycan 4); ENSG00000175592 (FOS-like antigen 1); ENSG00000175832 (ets variant 4); ENSG00000176170 (sphingosine kinase 1); ENSG00000179388 (early growth response 3); ENSG00000179820 (myeloid-associated differentiation marker); ENSG00000196639 (histamine receptor H1); ENSG00000196754 (S100 calcium binding protein A2); ENSG00000196924 (filamin A); ENSG00000198576 (activity-regulated cytoskeleton-associated protein); ENSG00000198910 (L1 cell adhesion molecule)

BP GO:0000902 cell morphogenesis

Annotate: 1150

Significant: 32

Expected: 19.16

topGO p-value: 0.003

Differentially expressed genes in this GO term (IDs and gene names):

ENSG00000006327 (TNFRSF12A); ENSG00000006468 (ETV1); ENSG00000064300 (NGFR); ENSG00000066248 (NGEF); ENSG00000102879 (CORO1A); ENSG00000107954 (NEURL1); ENSG00000112782 (CLIC5); ENSG00000120318 (ARAP3); ENSG00000120885 (CLU); ENSG00000122877 (EGR2); ENSG00000128271 (ADORA2A); ENSG00000132688 (NES); ENSG00000133216 (EPHB2); ENSG00000135046 (ANXA1); ENSG00000135424 (ITGA7); ENSG00000137090 (DMRT1); ENSG00000142627 (EPHA2); ENSG00000143320 (CRABP2); ENSG00000145536 (ADAMTS16); ENSG00000145555 (MYO10); ENSG00000153993 (SEMA3D); ENSG00000154342 (WNT3A); ENSG00000162458 (FBLIM1); ENSG00000164877 (MICALL2); ENSG00000167680 (SEMA6B); ENSG00000168505 (GBX2); ENSG00000172020 (GAP43); ENSG00000175832 (ETV4); ENSG00000179820 (MYADM); ENSG00000196924 (FLNA); ENSG00000198576 (ARC); ENSG00000198910 (L1CAM)

Differentially expressed genes in this GO term (IDs and product descriptions):

ENSG00000006327 (tumor necrosis factor receptor superfamily member 12A); ENSG00000006468 (ets variant 1); ENSG00000064300 (nerve growth factor receptor); ENSG00000066248 (neuronal guanine nucleotide exchange factor); ENSG00000102879 (coronin; actin binding protein; 1A); ENSG00000107954 (neuralized E3 ubiquitin protein ligase 1); ENSG00000112782 (chloride intracellular channel 5); ENSG00000120318 (ArfGAP with RhoGAP domain; ankyrin repeat and PH domain 3); ENSG00000120885 (clusterin); ENSG00000122877 (early growth response 2); ENSG00000128271 (adenosine A2a receptor); ENSG00000132688 (nestin);

ENSG00000133216 (EPH receptor B2); ENSG00000135046 (annexin A1); ENSG00000135424 (integrin subunit alpha 7); ENSG00000137090 (doublesex and mab-3 related transcription factor 1); ENSG00000142627 (EPH receptor A2); ENSG00000143320 (cellular retinoic acid binding protein 2); ENSG00000145536 (ADAM metallopeptidase with thrombospondin type 1 motif 16); ENSG00000145555 (myosin X); ENSG00000153993 (sema domain; immunoglobulin domain (Ig); short basic domain; secreted; (semaphorin) 3D); ENSG00000154342 (wingless-type MMTV integration site family member 3A); ENSG00000162458 (filamin binding LIM protein 1); ENSG00000164877 (MICAL-like 2); ENSG00000167680 (sema domain; transmembrane domain (TM); and cytoplasmic domain; (semaphorin) 6B); ENSG00000168505 (gastrulation brain homeobox 2); ENSG00000172020 (growth associated protein 43); ENSG00000175832 (ets variant 4); ENSG00000179820 (myeloid-associated differentiation marker); ENSG00000196924 (filamin A); ENSG00000198576 (activity-regulated cytoskeleton-associated protein); ENSG00000198910 (L1 cell adhesion molecule)

BP GO:0007267 cell-cell signaling

Annotate: 1447

Significant: 36

Expected: 24.1

topGO p-value: 0.0098

Differentially expressed genes in this GO term (IDs and gene names):

ENSG00000006128 (TAC1); ENSG00000041982 (TNC); ENSG00000087085 (ACHE); ENSG00000095752 (IL11); ENSG00000102195 (GPR50); ENSG00000105974 (CAV1); ENSG00000106236 (NPTX2); ENSG00000107954 (NEURL1); ENSG00000109321 (AREG); ENSG00000118523 (CTGF); ENSG00000120738 (EGR1); ENSG00000122877 (EGR2); ENSG00000125931 (CITED1); ENSG00000128271 (ADORA2A); ENSG00000128564 (VGF); ENSG00000130513 (GDF15); ENSG00000133019 (CHRM3); ENSG00000133216 (EPHB2); ENSG00000135046 (ANXA1); ENSG00000135604 (STX11); ENSG00000135919 (SERPINE2); ENSG00000136826 (KLF4); ENSG00000142871 (CYR61); ENSG00000147041 (SYTL5); ENSG00000154342 (WNT3A); ENSG00000155090 (KLF10); ENSG00000159840 (ZYG); ENSG00000166900 (STX3); ENSG00000173267 (SNCG); ENSG00000173918 (C1QTNF1); ENSG00000179388 (EGR3); ENSG00000180535 (BHLHA15); ENSG00000183186 (C2CD4C); ENSG00000196639 (HRH1); ENSG00000198576 (ARC); ENSG00000244405 (ETV5)

Differentially expressed genes in this GO term (IDs and product descriptions):

ENSG00000006128 (tachykinin precursor 1); ENSG00000041982 (tenascin C); ENSG00000087085 (acetylcholinesterase (Yt blood group)); ENSG00000095752 (interleukin 11); ENSG00000102195 (G protein-coupled receptor 50); ENSG00000105974 (caveolin 1); ENSG00000106236 (neuronal pentraxin II); ENSG00000107954 (neuralized E3 ubiquitin protein ligase 1); ENSG00000109321 (amphiregulin); ENSG00000118523 (connective tissue growth factor); ENSG00000120738 (early growth response 1); ENSG00000122877 (early growth response 2); ENSG00000125931 (Cbp/p300-interacting transactivator; with Glu/Asp rich carboxy-terminal domain; 1); ENSG00000128271 (adenosine A2a receptor); ENSG00000128564 (VGF nerve growth factor inducible); ENSG00000130513 (growth differentiation factor 15); ENSG00000133019 (cholinergic receptor; muscarinic 3); ENSG00000133216 (EPH receptor B2); ENSG00000135046 (annexin A1); ENSG00000135604 (syntaxin 11); ENSG00000135919 (serpin peptidase inhibitor; clade E (nexin); plasminogen activator inhibitor type 1); member 2); ENSG00000136826 (Kruppel-like factor 4 (gut)); ENSG00000142871 (cysteine-rich; angiogenic inducer; 61); ENSG00000147041 (synaptotagmin like 5); ENSG00000154342 (wingless-type MMTV integration site family member 3A); ENSG00000155090 (Kruppel-like factor 10); ENSG00000159840 (zyxin); ENSG00000166900 (syntaxin 3); ENSG00000173267 (synuclein gamma); ENSG00000173918 (C1q and tumor necrosis factor related protein 1); ENSG00000179388 (early growth response 3); ENSG00000180535 (basic helix-loop-helix family member a15); ENSG00000183186 (C2

calcium-dependent domain containing 4C); ENSG00000196639 (histamine receptor H1); ENSG00000198576 (activity-regulated cytoskeleton-associated protein); ENSG00000244405 (ets variant 5)

BP GO:0040007 growth

Annotate: 926

Significant: 24

Expected: 15.43

topGO p-value: 0.0213

Differentially expressed genes in this GO term (IDs and gene names):

ENSG00000006327 (TNFRSF12A); ENSG00000041982 (TNC); ENSG00000105329 (TGFB1); ENSG00000109321 (AREG); ENSG00000111077 (TNS2); ENSG00000113070 (HBEGF); ENSG00000118523 (CTGF); ENSG00000135046 (ANXA1); ENSG00000135919 (SERPINE2); ENSG00000136158 (SPRY2); ENSG00000137745 (MMP13); ENSG00000139318 (DUSP6); ENSG00000142227 (EMP3); ENSG00000142871 (CYR61); ENSG00000143320 (CRABP2); ENSG00000153993 (SEMA3D); ENSG00000154342 (WNT3A); ENSG00000163273 (NPPC); ENSG00000167680 (SEMA6B); ENSG00000172020 (GAP43); ENSG00000175793 (SFN); ENSG00000176170 (SPHK1); ENSG00000197019 (SERTAD1); ENSG00000198910 (L1CAM)

Differentially expressed genes in this GO term (IDs and product descriptions):

ENSG00000006327 (tumor necrosis factor receptor superfamily member 12A); ENSG00000041982 (tenascin C); ENSG00000105329 (transforming growth factor beta 1); ENSG00000109321 (amphiregulin); ENSG00000111077 (tensin 2); ENSG00000113070 (heparin-binding EGF-like growth factor); ENSG00000118523 (connective tissue growth factor); ENSG00000135046 (annexin A1); ENSG00000135919 (serpin peptidase inhibitor; clade E (nexin; plasminogen activator inhibitor type 1); member 2); ENSG00000136158 (sprouty RTK signaling antagonist 2); ENSG00000137745 (matrix metalloproteinase 13); ENSG00000139318 (dual specificity phosphatase 6); ENSG00000142227 (epithelial membrane protein 3); ENSG00000142871 (cysteine-rich; angiogenic inducer; 61); ENSG00000143320 (cellular retinoic acid binding protein 2); ENSG00000153993 (sema domain; immunoglobulin domain (Ig); short basic domain; secreted; (semaphorin) 3D); ENSG00000154342 (wingless-type MMTV integration site family member 3A); ENSG00000163273 (natriuretic peptide C); ENSG00000167680 (sema domain; transmembrane domain (TM); and cytoplasmic domain; (semaphorin) 6B); ENSG00000172020 (growth associated protein 43); ENSG00000175793 (stratifin); ENSG00000176170 (sphingosine kinase 1); ENSG00000197019 (SERTA domain containing 1); ENSG00000198910 (L1 cell adhesion molecule)

BP GO:0003013 circulatory system process

Annotate: 461

Significant: 14

Expected: 7.68

topGO p-value: 0.0228

Differentially expressed genes in this GO term (IDs and gene names):

ENSG00000006128 (TAC1); ENSG00000055118 (KCNH2); ENSG00000105329 (TGFB1); ENSG00000105974 (CAV1); ENSG00000113070 (HBEGF); ENSG00000116016 (EPAS1); ENSG00000118523 (CTGF); ENSG00000128271 (ADORA2A); ENSG00000133019 (CHRM3); ENSG00000138119 (MYOF); ENSG00000145536 (ADAMTS16); ENSG00000163273 (NPPC); ENSG00000164251 (F2RL1); ENSG00000196639 (HRH1)

Differentially expressed genes in this GO term (IDs and product descriptions):

ENSG00000006128 (tachykinin precursor 1); ENSG00000055118 (potassium channel; voltage gated eag related subfamily H; member 2); ENSG00000105329 (transforming growth factor beta 1); ENSG00000105974 (caveolin 1); ENSG00000113070 (heparin-binding EGF-like growth factor); ENSG00000116016 (endothelial PAS domain protein

1); ENSG00000118523 (connective tissue growth factor); ENSG00000128271 (adenosine A2a receptor); ENSG00000133019 (cholinergic receptor; muscarinic 3); ENSG00000138119 (myoferlin); ENSG00000145536 (ADAM metallopeptidase with thrombospondin type 1 motif 16); ENSG00000163273 (natriuretic peptide C); ENSG00000164251 (coagulation factor II (thrombin) receptor-like 1); ENSG00000196639 (histamine receptor H1)

BP GO:0055085 transmembrane transport

Annotate: 1300

Significant: 31

Expected: 21.66

topGO p-value: 0.0273

Differentially expressed genes in this GO term (IDs and gene names):

ENSG00000005471 (ABCB4); ENSG00000055118 (KCNH2); ENSG00000055732 (MCOLN3); ENSG00000059804 (SLC2A3); ENSG00000085563 (ABCB1); ENSG00000099625 (CBARP); ENSG00000102879 (CORO1A); ENSG00000105329 (TGFB1); ENSG00000105974 (CAV1); ENSG00000107819 (SFXN3); ENSG00000112782 (CLIC5); ENSG00000114923 (SLC4A3); ENSG00000115616 (SLC9A2); ENSG00000118777 (ABCG2); ENSG00000124942 (AHNAK); ENSG00000131398 (KCNC3); ENSG00000152779 (SLC16A12); ENSG00000154127 (UBASH3B); ENSG00000154342 (WNT3A); ENSG00000156113 (KCNMA1); ENSG00000158715 (SLC45A3); ENSG00000164626 (KCNK5); ENSG00000165272 (AQP3); ENSG00000165548 (TMEM63C); ENSG00000168079 (SCARA5); ENSG00000168389 (MFSD2A); ENSG00000171017 (LRRC8E); ENSG00000182674 (KCNB2); ENSG00000197106 (SLC6A17); ENSG00000198576 (ARC); ENSG00000221955 (SLC12A8)

Differentially expressed genes in this GO term (IDs and product descriptions):

ENSG00000005471 (ATP binding cassette subfamily B member 4); ENSG00000055118 (potassium channel; voltage gated eag related subfamily H; member 2); ENSG00000055732 (mucolipin 3); ENSG00000059804 (solute carrier family 2 (facilitated glucose transporter); member 3); ENSG00000085563 (ATP binding cassette subfamily B member 1); ENSG00000099625 (calcium channel; voltage-dependent; beta subunit associated regulatory protein); ENSG00000102879 (coronin; actin binding protein; 1A); ENSG00000105329 (transforming growth factor beta 1); ENSG00000105974 (caveolin 1); ENSG00000107819 (sideroflexin 3); ENSG00000112782 (chloride intracellular channel 5); ENSG00000114923 (solute carrier family 4 (anion exchanger); member 3); ENSG00000115616 (solute carrier family 9; subfamily A (NHE2; cation proton antiporter 2); member 2); ENSG00000118777 (ATP binding cassette subfamily G member 2 (Junior blood group)); ENSG00000124942 (AHNAK nucleoprotein); ENSG00000131398 (potassium channel; voltage gated Shaw related subfamily C; member 3); ENSG00000152779 (solute carrier family 16 member 12); ENSG00000154127 (ubiquitin associated and SH3 domain containing B); ENSG00000154342 (wingless-type MMTV integration site family member 3A); ENSG00000156113 (potassium channel; calcium activated large conductance subfamily M alpha; member 1); ENSG00000158715 (solute carrier family 45 member 3); ENSG00000164626 (potassium channel; two pore domain subfamily K; member 5); ENSG00000165272 (aquaporin 3 (Gill blood group)); ENSG00000165548 (transmembrane protein 63C); ENSG00000168079 (scavenger receptor class A member 5); ENSG00000168389 (major facilitator superfamily domain containing 2A); ENSG00000171017 (leucine-rich repeat containing 8 family member E); ENSG00000182674 (potassium channel; voltage gated Shab related subfamily B; member 2); ENSG00000197106 (solute carrier family 6 (neutral amino acid transporter); member 17); ENSG00000198576 (activity-regulated cytoskeleton-associated protein); ENSG00000221955 (solute carrier family 12; member 8)

BP GO:0016192 vesicle-mediated transport

Annotate: 1426

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# Significant: 33
# Expected: 23.75
# topGO p-value: 0.0335
# Differentially expressed genes in this GO term (IDs and gene names):
ENSG00000010278 (CD9); ENSG00000077238 (IL4R); ENSG00000087085 (ACHE);
ENSG00000099625 (CBARP); ENSG00000102879 (CORO1A); ENSG00000105329 (TGFB1);
ENSG00000105974 (CAV1); ENSG00000109321 (AREG); ENSG00000120318 (ARAP3);
ENSG00000120885 (CLU); ENSG00000124145 (SDC4); ENSG00000125730 (C3);
ENSG00000127824 (TUBA4A); ENSG00000128271 (ADORA2A); ENSG00000130475 (FCHO1);
ENSG00000131981 (LGALS3); ENSG00000135046 (ANXA1); ENSG00000135604 (STX11);
ENSG00000138772 (ANXA3); ENSG00000143369 (ECM1); ENSG00000145555 (MYO10);
ENSG00000147041 (SYTL5); ENSG00000154342 (WNT3A); ENSG00000164251 (F2RL1);
ENSG00000164877 (MICALL2); ENSG00000166900 (STX3); ENSG00000167244 (IGF2);
ENSG00000168079 (SCARA5); ENSG00000168389 (MFSD2A); ENSG00000183186 (C2CD4C);
ENSG00000196924 (FLNA); ENSG00000198576 (ARC); ENSG00000205542 (TMSB4X)
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# Differentially expressed genes in this GO term (IDs and product descriptions):
ENSG00000010278 (CD9 molecule); ENSG00000077238 (interleukin 4 receptor);
ENSG00000087085 (acetylcholinesterase (Yt blood group)); ENSG00000099625
(calcium channel; voltage-dependent; beta subunit associated regulatory
protein); ENSG00000102879 (coronin; actin binding protein; 1A); ENSG00000105329
(transforming growth factor beta 1); ENSG00000105974 (caveolin 1);
ENSG00000109321 (amphiregulin); ENSG00000120318 (ArfGAP with RhoGAP domain;
ankyrin repeat and PH domain 3); ENSG00000120885 (clusterin); ENSG00000124145
(syndecan 4); ENSG00000125730 (complement component 3); ENSG00000127824 (tubulin
alpha 4a); ENSG00000128271 (adenosine A2a receptor); ENSG00000130475 (FCH domain
only 1); ENSG00000131981 (lectin; galactoside-binding; soluble; 3);
ENSG00000135046 (annexin A1); ENSG00000135604 (syntaxin 11); ENSG00000138772
(annexin A3); ENSG00000143369 (extracellular matrix protein 1); ENSG00000145555
(myosin X); ENSG00000147041 (synaptotagmin like 5); ENSG00000154342 (wingless-
type MMTV integration site family member 3A); ENSG00000164251 (coagulation
factor II (thrombin) receptor-like 1); ENSG00000164877 (MICAL-like 2);
ENSG00000166900 (syntaxin 3); ENSG00000167244 (insulin like growth factor 2);
ENSG00000168079 (scavenger receptor class A member 5); ENSG00000168389 (major
facilitator superfamily domain containing 2A); ENSG00000183186 (C2 calcium-
dependent domain containing 4C); ENSG00000196924 (filamin A); ENSG00000198576
(activity-regulated cytoskeleton-associated protein); ENSG00000205542 (thymosin
beta 4; X-linked)
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GO term enrichment of down-regulated genes

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### BP      GO:0030154 cell differentiation
# Annotate: 3478
# Significant: 21
# Expected: 11.12
# topGO p-value: 0.0015
# Differentially expressed genes in this GO term (IDs and gene names):
ENSG00000021645 (NRXN3); ENSG00000108924 (HLF); ENSG00000114251 (WNT5A);
ENSG00000114646 (CSPG5); ENSG00000115461 (IGFBP5); ENSG00000126016 (AMOT);
ENSG00000131080 (EDA2R); ENSG00000135333 (EPHA7); ENSG00000137834 (SMAD6);
ENSG00000146555 (SDK1); ENSG00000147257 (GPC3); ENSG00000157404 (KIT);
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ENSG00000166033 (HTRA1); ENSG00000166147 (FBN1); ENSG00000168209 (DDIT4);
ENSG00000171956 (FOXB1); ENSG00000175183 (CSRP2); ENSG00000177732 (SOX12);
ENSG00000196159 (FAT4); ENSG00000198732 (SMOC1); ENSG00000265972 (TXNIP)

Differentially expressed genes in this GO term (IDs and product descriptions):
ENSG00000021645 (neurexin 3); ENSG00000108924 (hepatic leukemia factor);
ENSG00000114251 (wingless-type MMTV integration site family member 5A);
ENSG00000114646 (chondroitin sulfate proteoglycan 5); ENSG00000115461 (insulin
like growth factor binding protein 5); ENSG00000126016 (angiomin);
ENSG00000131080 (ectodysplasin A2 receptor); ENSG00000135333 (EPH receptor A7);
ENSG00000137834 (SMAD family member 6); ENSG00000146555 (sidekick cell adhesion
molecule 1); ENSG00000147257 (glypican 3); ENSG00000157404 (v-kit Hardy-
Zuckerman 4 feline sarcoma viral oncogene homolog); ENSG00000166033 (Htra serine
peptidase 1); ENSG00000166147 (fibrillin 1); ENSG00000168209 (DNA damage
inducible transcript 4); ENSG00000171956 (forkhead box B1); ENSG00000175183
(cysteine and glycine rich protein 2); ENSG00000177732 (SRY-box 12);
ENSG00000196159 (FAT atypical cadherin 4); ENSG00000198732 (SPARC related
modular calcium binding 1); ENSG00000265972 (thioredoxin interacting protein)

BP GO:0048856 anatomical structure development

Annotate: 5247

Significant: 29

Expected: 16.77

topGO p-value: 0.0039

Differentially expressed genes in this GO term (IDs and gene names):
ENSG00000021645 (NRXN3); ENSG00000081479 (LRP2); ENSG00000105516 (DBP);
ENSG00000106025 (TSPAN12); ENSG00000106031 (HOXA13); ENSG00000108924 (HLF);
ENSG00000114251 (WNT5A); ENSG00000114646 (CSPG5); ENSG00000115461 (IGFBP5);
ENSG00000126016 (AMOT); ENSG00000131080 (EDA2R); ENSG00000135333 (EPA7);
ENSG00000137834 (SMAD6); ENSG00000144218 (AFF3); ENSG00000146555 (SDK1);
ENSG00000147257 (GPC3); ENSG00000157404 (KIT); ENSG00000164061 (BSN);
ENSG00000165194 (PCDH19); ENSG00000166033 (HTRA1); ENSG00000166147 (FBN1);
ENSG00000168209 (DDIT4); ENSG00000169432 (SCN9A); ENSG00000171956 (FOXB1);
ENSG00000175183 (CSRP2); ENSG00000177732 (SOX12); ENSG00000196159 (FAT4);
ENSG00000198732 (SMOC1); ENSG00000265972 (TXNIP)

Differentially expressed genes in this GO term (IDs and product descriptions):
ENSG00000021645 (neurexin 3); ENSG00000081479 (LDL receptor related protein 2);
ENSG00000105516 (D site of albumin promoter (albumin D-box) binding protein);
ENSG00000106025 (tetraspanin 12); ENSG00000106031 (homeobox A13);
ENSG00000108924 (hepatic leukemia factor); ENSG00000114251 (wingless-type MMTV
integration site family member 5A); ENSG00000114646 (chondroitin sulfate
proteoglycan 5); ENSG00000115461 (insulin like growth factor binding protein 5);
ENSG00000126016 (angiomin); ENSG00000131080 (ectodysplasin A2 receptor);
ENSG00000135333 (EPH receptor A7); ENSG00000137834 (SMAD family member 6);
ENSG00000144218 (AF4/FMR2 family member 3); ENSG00000146555 (sidekick cell
adhesion molecule 1); ENSG00000147257 (glypican 3); ENSG00000157404 (v-kit
Hardy-Zuckerman 4 feline sarcoma viral oncogene homolog); ENSG00000164061
(bassoon presynaptic cytomatrix protein); ENSG00000165194 (protocadherin 19);
ENSG00000166033 (Htra serine peptidase 1); ENSG00000166147 (fibrillin 1);
ENSG00000168209 (DNA damage inducible transcript 4); ENSG00000169432 (sodium
channel; voltage gated; type IX alpha subunit); ENSG00000171956 (forkhead box
B1); ENSG00000175183 (cysteine and glycine rich protein 2); ENSG00000177732
(SRY-box 12); ENSG00000196159 (FAT atypical cadherin 4); ENSG00000198732 (SPARC
related modular calcium binding 1); ENSG00000265972 (thioredoxin interacting
protein)

BP GO:0006629 lipid metabolic process

Annotate: 1320

Significant: 10

Expected: 4.22

topGO p-value: 0.0082

Differentially expressed genes in this GO term (IDs and gene names):

ENSG00000081479 (LRP2); ENSG00000117461 (PIK3R3); ENSG00000119673 (ACOT2);
ENSG00000128039 (SRD5A3); ENSG00000133124 (IRS4); ENSG00000147257 (GPC3);
ENSG00000149809 (TM7SF2); ENSG00000157404 (KIT); ENSG00000178202 (KDEL2);
ENSG00000184227 (ACOT1)

Differentially expressed genes in this GO term (IDs and product descriptions):

ENSG00000081479 (LDL receptor related protein 2); ENSG00000117461
(phosphoinositide-3-kinase regulatory subunit 3); ENSG00000119673 (acyl-CoA
thioesterase 2); ENSG00000128039 (steroid 5 alpha-reductase 3); ENSG00000133124
(insulin receptor substrate 4); ENSG00000147257 (glypican 3); ENSG00000149809
(transmembrane 7 superfamily member 2); ENSG00000157404 (v-kit Hardy-Zuckerman 4
feline sarcoma viral oncogene homolog); ENSG00000178202 (KDEL motif containing
2); ENSG00000184227 (acyl-CoA thioesterase 1)

BP GO:0009790 embryo development

Annotate: 953

Significant: 8

Expected: 3.05

topGO p-value: 0.0102

Differentially expressed genes in this GO term (IDs and gene names):

ENSG00000114251 (WNT5A); ENSG00000126016 (AMOT); ENSG00000137834 (SMAD6);
ENSG00000144218 (AFF3); ENSG00000147257 (GPC3); ENSG00000157404 (KIT);
ENSG00000166147 (FBN1); ENSG00000171956 (FOXB1)

Differentially expressed genes in this GO term (IDs and product descriptions):

ENSG00000114251 (wingless-type MMTV integration site family member 5A);
ENSG00000126016 (angiomin); ENSG00000137834 (SMAD family member 6);
ENSG00000144218 (AF4/FMR2 family member 3); ENSG00000147257 (glypican 3);
ENSG00000157404 (v-kit Hardy-Zuckerman 4 feline sarcoma viral oncogene homolog);
ENSG00000166147 (fibrillin 1); ENSG00000171956 (forkhead box B1)

BP GO:0009058 biosynthetic process

Annotate: 6298

Significant: 27

Expected: 20.13

topGO p-value: 0.0201

Differentially expressed genes in this GO term (IDs and gene names):

ENSG00000081479 (LRP2); ENSG00000103024 (NME3); ENSG00000105516 (DBP);
ENSG00000106031 (HOXA13); ENSG00000108924 (HLF); ENSG00000114251 (WNT5A);
ENSG00000114646 (CSPG5); ENSG00000115461 (IGFBP5); ENSG00000117461 (PIK3R3);
ENSG00000119673 (ACOT2); ENSG00000128039 (SRD5A3); ENSG00000131080 (EDA2R);
ENSG00000137834 (SMAD6); ENSG00000142065 (ZFP14); ENSG00000144218 (AFF3);
ENSG00000147257 (GPC3); ENSG00000149809 (TM7SF2); ENSG00000157404 (KIT);
ENSG00000160094 (ZNF362); ENSG00000166033 (HTRA1); ENSG00000166147 (FBN1);
ENSG00000171956 (FOXB1); ENSG00000177732 (SOX12); ENSG00000184227 (ACOT1);
ENSG00000196693 (ZNF33B); ENSG00000205309 (NT5M); ENSG00000265972 (TXNIP)

Differentially expressed genes in this GO term (IDs and product descriptions):

ENSG00000081479 (LDL receptor related protein 2); ENSG00000103024 (NME/NM23

nucleoside diphosphate kinase 3); ENSG00000105516 (D site of albumin promoter (albumin D-box) binding protein); ENSG00000106031 (homeobox A13); ENSG00000108924 (hepatic leukemia factor); ENSG00000114251 (wingless-type MMTV integration site family member 5A); ENSG00000114646 (chondroitin sulfate proteoglycan 5); ENSG00000115461 (insulin like growth factor binding protein 5); ENSG00000117461 (phosphoinositide-3-kinase regulatory subunit 3); ENSG00000119673 (acyl-CoA thioesterase 2); ENSG00000128039 (steroid 5 alpha-reductase 3); ENSG00000131080 (ectodysplasin A2 receptor); ENSG00000137834 (SMAD family member 6); ENSG00000142065 (ZFP14 zinc finger protein); ENSG00000144218 (AF4/FMR2 family member 3); ENSG00000147257 (glypican 3); ENSG00000149809 (transmembrane 7 superfamily member 2); ENSG00000157404 (v-kit Hardy-Zuckerman 4 feline sarcoma viral oncogene homolog); ENSG00000160094 (zinc finger protein 362); ENSG00000166033 (HtrA serine peptidase 1); ENSG00000166147 (fibrillin 1); ENSG00000171956 (forkhead box B1); ENSG00000177732 (SRY-box 12); ENSG00000184227 (acyl-CoA thioesterase 1); ENSG00000196693 (zinc finger protein 33B); ENSG00000205309 (5';3'-nucleotidase; mitochondrial); ENSG00000265972 (thioredoxin interacting protein)

BP GO:0007155 cell adhesion

Annotate: 1654

Significant: 10

Expected: 5.29

topGO p-value: 0.0346

Differentially expressed genes in this GO term (IDs and gene names):

ENSG00000021645 (NRXN3); ENSG00000114251 (WNT5A); ENSG00000135333 (EPHA7);

ENSG00000137834 (SMAD6); ENSG00000146555 (SDK1); ENSG00000157404 (KIT);

ENSG00000165194 (PCDH19); ENSG00000166147 (FBN1); ENSG00000187955 (COL14A1);

ENSG00000196159 (FAT4)

Differentially expressed genes in this GO term (IDs and product descriptions):

ENSG00000021645 (neurexin 3); ENSG00000114251 (wingless-type MMTV integration

site family member 5A); ENSG00000135333 (EPH receptor A7); ENSG00000137834 (SMAD

family member 6); ENSG00000146555 (sidekick cell adhesion molecule 1);

ENSG00000157404 (v-kit Hardy-Zuckerman 4 feline sarcoma viral oncogene homolog);

ENSG00000165194 (protocadherin 19); ENSG00000166147 (fibrillin 1);

ENSG00000187955 (collagen; type XIV; alpha 1); ENSG00000196159 (FAT atypical

cadherin 4)

BP GO:0008219 cell death

Annotate: 1899

Significant: 11

Expected: 6.07

topGO p-value: 0.0352

Differentially expressed genes in this GO term (IDs and gene names):

ENSG00000103024 (NME3); ENSG00000104081 (BMF); ENSG00000114251 (WNT5A);

ENSG00000131080 (EDA2R); ENSG00000135116 (HRK); ENSG00000135333 (EPHA7);

ENSG00000137834 (SMAD6); ENSG00000157404 (KIT); ENSG00000168209 (DDIT4);

ENSG00000171956 (FOXB1); ENSG00000265972 (TXNIP)

Differentially expressed genes in this GO term (IDs and product descriptions):

ENSG00000103024 (NME/NM23 nucleoside diphosphate kinase 3); ENSG00000104081

(Bcl2 modifying factor); ENSG00000114251 (wingless-type MMTV integration site

family member 5A); ENSG00000131080 (ectodysplasin A2 receptor); ENSG00000135116

(harakiri; BCL2 interacting protein); ENSG00000135333 (EPH receptor A7);

ENSG00000137834 (SMAD family member 6); ENSG00000157404 (v-kit Hardy-Zuckerman 4

feline sarcoma viral oncogene homolog); ENSG00000168209 (DNA damage inducible

transcript 4); ENSG00000171956 (forkhead box B1); ENSG00000265972 (thioredoxin interacting protein)

BP GO:0043473 pigmentation

Annotate: 93

Significant: 2

Expected: 0.3

topGO p-value: 0.0356

Differentially expressed genes in this GO term (IDs and gene names):

ENSG00000007255 (TRAPPC6A); ENSG00000157404 (KIT)

Differentially expressed genes in this GO term (IDs and product descriptions):

ENSG00000007255 (trafficking protein particle complex 6A); ENSG00000157404 (v-kit Hardy-Zuckerman 4 feline sarcoma viral oncogene homolog)

BP GO:0044281 small molecule metabolic process

Annotate: 1955

Significant: 11

Expected: 6.25

topGO p-value: 0.0422

Differentially expressed genes in this GO term (IDs and gene names):

ENSG000000081479 (LRP2); ENSG00000103024 (NME3); ENSG00000114251 (WNT5A); ENSG00000115461 (IGFBP5); ENSG00000119673 (ACOT2); ENSG00000128039 (SRD5A3); ENSG00000149809 (TM7SF2); ENSG00000168209 (DDIT4); ENSG00000184227 (ACOT1); ENSG00000186205 (MARC1); ENSG00000205309 (NT5M)

Differentially expressed genes in this GO term (IDs and product descriptions):

ENSG000000081479 (LDL receptor related protein 2); ENSG00000103024 (NME/NM23 nucleoside diphosphate kinase 3); ENSG00000114251 (wingless-type MMTV integration site family member 5A); ENSG00000115461 (insulin like growth factor binding protein 5); ENSG00000119673 (acyl-CoA thioesterase 2); ENSG00000128039 (steroid 5 alpha-reductase 3); ENSG00000149809 (transmembrane 7 superfamily member 2); ENSG00000168209 (DNA damage inducible transcript 4); ENSG00000184227 (acyl-CoA thioesterase 1); ENSG00000186205 (mitochondrial amidoxime reducing component 1); ENSG00000205309 (5';3'-nucleotidase; mitochondrial)