

SUPPLEMENTAL MATERIAL

Table S1. Genes demonstrating core enrichment within the 13 gene ontology gene sets identified as statistically significant by Gene Set Enrichment Analysis in EAT versus SAT.

Gene set	Gene name	Gene Symbol
GO:0007498 Mesoderm development	transcription factor 21 slit homolog 2 (Drosophila) eyes absent homolog 2 (Drosophila) secreted and transmembrane 1 BMX non-receptor tyrosine kinase IKAROS family zinc finger 1 (Ikaros) IKAROS family zinc finger 3 (Aiolos) snail homolog 2 (Drosophila) Bruton agammaglobulinemia tyrosine kinase growth differentiation factor 11	TCF21 SLIT2 EYA2 SECTM1 BMX IKZF1 IKZF3 SNAI2 BTK GDF11
GO:0004620 Phospholipase activity	phospholipase A2, group V phospholipase A2, group IIA (platelets, synovial fluid) phospholipase D1, phosphatidylcholine-specific coagulation factor II (thrombin) receptor-like 2 phospholipase C, beta 2 lipase, endothelial chemokine (C-C motif) receptor 5 phospholipase C, eta 1 phospholipase A2, group IID bradykinin receptor B2 complement component 3a receptor 1 phospholipase A2, group IVC (cytosolic, calcium-independent)	PLA2G5 PLA2G2A PLD1 F2RL2 PLCB2 LIPG CCR5 PLCH1 PLA2G2D BDKRB2 C3AR1 PLA2G4C
GO:0005267 Potassium channel activity	potassium intermediate/small conductance calcium-activated channel, subfamily N, member 3 potassium channel, subfamily K, member 17 potassium large conductance calcium-activated channel, subfamily M, beta member 4 potassium voltage-gated channel, shaker-related subfamily, member 3 potassium channel, subfamily K, member 5 potassium voltage-gated channel, Shal-related subfamily, member 3 potassium channel, subfamily K, member 1 potassium channel, subfamily K, member 6 potassium voltage-gated channel, KQT-like subfamily, member 1 potassium voltage-gated channel, KQT-like subfamily, member 5 potassium voltage-gated channel, shaker-related subfamily, member 5 potassium inwardly-rectifying channel, subfamily J, member 10 potassium channel, subfamily K, member 3 potassium voltage-gated channel, Isk-related family, member 1 potassium voltage-gated channel, shaker-related subfamily, member 1 (episodic ataxia with myokymia) Kv channel interacting protein 2 potassium intermediate/small conductance calcium-activated channel, subfamily N, member 4 potassium large conductance calcium-activated channel, subfamily M, beta member 2	KCNN3 KCNC17 KCNCB4 KCNA3 KCNC5 KCND3 KCNC1 KCNC6 KCNQ1 KCNQ5 KCNA5 KCNJ10 KCNC3 KCNE1 KCNA1 KCNP2 KCNN4 KCNCB2
GO:0007599 Hemostasis	multimerin 1 tissue factor pathway inhibitor (lipoprotein-associated coagulation inhibitor) integrin, alpha 2 (CD49B, alpha 2 subunit of VLA-2 receptor) protein S (alpha) plasminogen activator, tissue ectonucleoside triphosphate diphosphohydrolase 1 coagulation factor II (thrombin) receptor-like 2 gamma-glutamyl carboxylase coagulation factor VIII, procoagulant component (hemophilia A) coagulation factor XIII, A1 polypeptide CD40 ligand (TNF superfamily, member 5, hyper-IgM syndrome) thrombomodulin coagulation factor II (thrombin) receptor Wiskott-Aldrich syndrome (eczema-thrombocytopenia) complement component 4 binding protein, beta Friend leukemia virus integration 1 serpin peptidase inhibitor, clade E (nexin, plasminogen activator inhibitor type 1), member 1	MMRN1 TFPI ITGA2 PROS1 PLAT ENTPD1 F2RL2 GGCX F8 F13A1 CD40LG THBD F2R WAS C4BPB FLI1 SERPINE1
GO:0050817 Coagulation	multimerin 1 tissue factor pathway inhibitor (lipoprotein-associated coagulation inhibitor) integrin, alpha 2 (CD49B, alpha 2 subunit of VLA-2 receptor) protein S (alpha) plasminogen activator, tissue ectonucleoside triphosphate diphosphohydrolase 1	MMRN1 TFPI ITGA2 PROS1 PLAT ENTPD1

	<p>coagulation factor II (thrombin) receptor-like 2 gamma-glutamyl carboxylase coagulation factor VIII, procoagulant component (hemophilia A) coagulation factor XIII, A1 polypeptide CD40 ligand (TNF superfamily, member 5, hyper-IgM syndrome) thrombomodulin coagulation factor II (thrombin) receptor Wiskott-Aldrich syndrome (eczema-thrombocytopenia) complement component 4 binding protein, beta serpin peptidase inhibitor, clade E (nexin, plasminogen activator inhibitor type 1), member 1</p>	<p>F2RL2 GGCX F8 F13A1 CD40LG THBD F2R WAS C4BPB SERPINE1</p>
<p>GO:0007596 Blood coagulation</p>	<p>multimerin 1 tissue factor pathway inhibitor (lipoprotein-associated coagulation inhibitor) integrin, alpha 2 (CD49B, alpha 2 subunit of VLA-2 receptor) protein S (alpha) plasminogen activator, tissue ectonucleoside triphosphate diphosphohydrolase 1 coagulation factor II (thrombin) receptor-like 2 gamma-glutamyl carboxylase coagulation factor VIII, procoagulant component (hemophilia A) coagulation factor XIII, A1 polypeptide CD40 ligand (TNF superfamily, member 5, hyper-IgM syndrome) thrombomodulin coagulation factor II (thrombin) receptor Wiskott-Aldrich syndrome (eczema-thrombocytopenia) complement component 4 binding protein, beta serpin peptidase inhibitor, clade E (nexin, plasminogen activator inhibitor type 1), member 1</p>	<p>MMRN1 TFPI ITGA2 PROS1 PLAT ENTPD1 F2RL2 GGCX F8 F13A1 CD40LG THBD F2R WAS C4BPB SERPINE1</p>
<p>GO:0003704 Specific RNA polymerase II transcription factor activity</p>	<p>Meis1, myeloid ecotropic viral integration site 1 homolog 2 (mouse) GLIS family zinc finger 3 prospero-related homeobox 1 SRY (sex determining region Y)-box 9 (campomelic dysplasia, autosomal sex-reversal) nuclear receptor subfamily 2, group F, member 1 nuclear receptor subfamily 2, group F, member 2</p>	<p>MEIS2 GLIS3 PROX1 SOX9 NR2F1 NR2F2</p>
<p>GO:0050878 Regulation of body fluid levels</p>	<p>multimerin 1 tissue factor pathway inhibitor (lipoprotein-associated coagulation inhibitor) integrin, alpha 2 (CD49B, alpha 2 subunit of VLA-2 receptor) protein S (alpha) plasminogen activator, tissue ectonucleoside triphosphate diphosphohydrolase 1 coagulation factor II (thrombin) receptor-like 2 gamma-glutamyl carboxylase coagulation factor VIII, procoagulant component (hemophilia A) coagulation factor XIII, A1 polypeptide CD40 ligand (TNF superfamily, member 5, hyper-IgM syndrome) thrombomodulin coagulation factor II (thrombin) receptor Wiskott-Aldrich syndrome (eczema-thrombocytopenia) solute carrier family 22 (organic cation transporter), member 4 complement component 4 binding protein, beta Friend leukemia virus integration 1 serpin peptidase inhibitor, clade E (nexin, plasminogen activator inhibitor type 1), member 1</p>	<p>MMRN1 TFPI ITGA2 PROS1 PLAT ENTPD1 F2RL2 GGCX F8 F13A1 CD40LG THBD F2R WAS SLC22A4 C4BPB FLI1 SERPINE1</p>
<p>GO:0042060 Wound healing</p>	<p>multimerin 1 tissue factor pathway inhibitor (lipoprotein-associated coagulation inhibitor) integrin, alpha 2 (CD49B, alpha 2 subunit of VLA-2 receptor) protein S (alpha) plasminogen activator, tissue ectonucleoside triphosphate diphosphohydrolase 1 coagulation factor II (thrombin) receptor-like 2 gamma-glutamyl carboxylase coagulation factor VIII, procoagulant component (hemophilia A) coagulation factor XIII, A1 polypeptide CD40 ligand (TNF superfamily, member 5, hyper-IgM syndrome) thrombomodulin coagulation factor II (thrombin) receptor Wiskott-Aldrich syndrome (eczema-thrombocytopenia) transforming growth factor, beta 2 complement component 4 binding protein, beta melanoma inhibitory activity family, member 3 serpin peptidase inhibitor, clade E (nexin, plasminogen activator inhibitor type 1), member 1</p>	<p>MMRN1 TFPI ITGA2 PROS1 PLAT ENTPD1 F2RL2 GGCX F8 F13A1 CD40LG THBD F2R WAS TGFB2 C4BPB MIA3 SERPINE1</p>
<p>GO:0016860 Intramolecular</p>	<p>prostaglandin D2 synthase 21kDa (brain) protein disulfide isomerase family A, member 5</p>	<p>PTGDS PDIA5</p>

oxidoreductase activity	<p>prostaglandin I2 (prostacyclin) synthase glucosamine-6-phosphate deaminase 1 hydroxy-delta-5-steroid dehydrogenase, 3 beta- and steroid delta-isomerase 1 endoplasmic reticulum protein 29 emopamil binding protein (sterol isomerase) protein disulfide isomerase family A, member 6 dopachrome tautomerase (dopachrome delta-isomerase, tyrosine-related protein 2) protein disulfide isomerase family A, member 3</p>	<p>PTGIS GNPDA1 HSD3B1 ERP29 EBP PDIA6 DCT PDIA3</p>
GO:0008624 Induction of apoptosis by extracellular signals	<p>death-associated protein kinase 1 CD38 molecule protein kinase C, alpha death-associated protein Bruton agammaglobulinemia tyrosine kinase BCL2-associated X protein adenosine A1 receptor tumor necrosis factor receptor superfamily, member 25</p>	<p>DAPK1 CD38 PRKCA DAP BTK BAX ADORA1 TNFRSF25</p>
GO:0016337 Cell cell adhesion	<p>Myelin protein zero-like 2 claudin 1 matrix Gla protein neural cell adhesion molecule 2 LIM domain only 4 cytoplasmic FMR1 interacting protein 2 claudin 15 annexin A9 poliovirus receptor-related 2 (herpesvirus entry mediator B) CD209 molecule spleen tyrosine kinase contactin 4 integrin, beta 2 (complement component 3 receptor 3 and 4 subunit) cadherin, EGF LAG seven-pass G-type receptor 1 (flamingo homolog, Drosophila) signal-regulatory protein gamma</p>	<p>MPZL2 CLDN1 MGP NCAM2 LMO4 CYFIP2 CLDN15 ANXA9 PVRL2 CD209 SYK CNTN4 ITGB2 CELSR1 SIRPG</p>
GO:0007267 Cell cell signaling	<p>potassium intermediate/small conductance calcium-activated channel, subfamily N, member 3 collagen, type IV, alpha 4 chemokine (C-C motif) ligand 21 mal, T-cell differentiation protein phosphodiesterase 7B wingless-type MMTV integration site family, member 5A interleukin 7 synaptosomal-associated protein, 25kDa vasoactive intestinal peptide receptor 2 stabilin 1 Kv channel interacting protein 1 chemokine (C-C motif) ligand 26 synuclein, alpha interacting protein (synphilin) interleukin 18 (interferon-gamma-inducing factor) transforming growth factor, beta 3 fibroblast growth factor 9 (glia-activating factor) WNT1 inducible signaling pathway protein 1 potassium large conductance calcium-activated channel, subfamily M, beta member 4 quinolinate phosphoribosyltransferase (nicotinate-nucleotide pyrophosphorylase (carboxylating)) complement component 1, q subcomponent, A chain chemokine (C-X-C motif) ligand 13 (B-cell chemoattractant) proprotein convertase subtilisin/kexin type 6 discs, large homolog 4 (Drosophila) sema domain, seven thrombospondin repeats (type 1 and type 1-like), transmembrane domain (TM) and short cytoplasmic domain, (semaphorin) 5A platelet-derived growth factor alpha polypeptide tumor necrosis factor receptor superfamily, member 11a, NFKB activator stanniocalcin 1 fibroblast growth factor 18 synaptotagmin I prostaglandin I2 (prostacyclin) receptor (IP) chemokine (C-X-C motif) ligand 6 (granulocyte chemotactic protein 2) sema domain, immunoglobulin domain (Ig), short basic domain, secreted, (semaphorin) 3B chemokine (C-C motif) ligand 13 double C2-like domains, alpha regulating synaptic membrane exocytosis 1 proprotein convertase subtilisin/kexin type 2 protocadherin beta 5 glutamyl aminopeptidase (aminopeptidase A)</p>	<p>KCNN3 COL4A4 CCL21 MAL PDE7B WNT5A IL7 SNAP25 VIPR2 STAB1 KCNIP1 CCL26 SNCAIP IL18 TGFB3 FGF9 WISP1 KCNMB4 QPRT C1QA CXCL13 PCSK6 DLG4 SEMA5A PDGFA TNFRSF11A STC1 FGF18 SYT1 PTGIR CXCL6 SEMA3B CCL13 DOC2A RIMS1 PCSK2 PCDHB5 ENPEP</p>

	<p>synapsin I ephrin-A5 fibroblast growth factor 11 homer homolog 1 (Drosophila) tumor necrosis factor (ligand) superfamily, member 8 chemokine (C-C motif) receptor 1 leukemia inhibitory factor (cholinergic differentiation factor) contactin 4 chemokine (C-C motif) receptor 5 inhibin, beta A (activin A, activin AB alpha polypeptide) GRB2-related adaptor protein snail homolog 2 (Drosophila) signal-regulatory protein gamma zyxin tumor necrosis factor, alpha-induced protein 6 gap junction protein, alpha 1, 43kDa (connexin 43) ephrin-B3 neuromedin B cholinergic receptor, nicotinic, alpha 4 gamma-aminobutyric acid (GABA) A receptor, beta 2 glutamate receptor, ionotropic, AMPA 2 protein tyrosine phosphatase, receptor type, J transforming growth factor, beta 2 proprotein convertase subtilisin/kexin type 5 glutamate receptor, ionotropic, N-methyl D-aspartate 2A transcription factor AP-2 gamma (activating enhancer binding protein 2 gamma) c-mer proto-oncogene tyrosine kinase SH2 domain protein 1A, Duncan's disease (lymphoproliferative syndrome) myelin basic protein secretogranin V (7B2 protein) interleukin 1, beta myelin protein zero-like 1 potassium voltage-gated channel, KQT-like subfamily, member 5 gap junction protein, beta 2, 26kDa (connexin 26) chemokine (C motif) ligand 1 CD33 molecule interleukin 15 G protein-coupled receptor 176 5-hydroxytryptamine (serotonin) receptor 2A adenosine A1 receptor stanniocalcin 2 chemokine (C-C motif) ligand 18 (pulmonary and activation-regulated) nicotinamide phosphoribosyltransferase gamma-aminobutyric acid (GABA) receptor, rho 2 glutamate receptor, ionotropic, kainate 1 potassium channel, subfamily K, member 3 insulin-like 3 (Leydig cell) fibroblast growth factor 3 (murine mammary tumor virus integration site (v-int-2) oncogene homolog) amphiregulin (schwannoma-derived growth factor) Fas ligand (TNF superfamily, member 6) adrenergic, alpha-2B-, receptor angiotensinogen (serpin peptidase inhibitor, clade A, member 8) oncostatin M chemokine (C-C motif) ligand 4 hypoxanthine phosphoribosyltransferase 1 (Lesch-Nyhan syndrome) tetraspanin 32</p>	<p>SYN1 EFNA5 FGF11 HOMER1 TNFSF8 CCR1 LIF CNTN4 CCR5 INHBA GRAP SNAI2 SIRPG ZYX TNFAIP6 GJA1 EFNB3 NMB CHRNA4 GABRB2 GRIA2 PTPRJ TGFB2 PCSK5 GRIN2A TFAP2C MERTK SH2D1A MBP SCG5 IL1B MPZL1 KCNQ5 GJB2 XCL1 CD33 IL15 GPR176 HTR2A ADORA1 STC2 CCL18 NAMPT GABRR2 GRIK1 KCNK3 INSL3 FGF3 AREG FASLG ADRA2B AGT OSM CCL4 HPRT1 TSPAN32</p>
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Table S2. Genes demonstrating core enrichment within the 14 gene ontology gene sets identified as statistically significant by Gene Set Enrichment Analysis in SAT versus EAT.

Gene set	Gene name	Symbol
GO:0044257 Cellular protein catabolic process	<p>sequestosome 1 proteasome (prosome, macropain) 26S subunit, ATPase, 5 valosin-containing protein ariadne homolog, ubiquitin-conjugating enzyme E2 binding protein, 1 (Drosophila) autocrine motility factor receptor ubiquitin-conjugating enzyme E2G 1 (UBC7 homolog, yeast) ubiquitin B ubiquitination factor E4A (UFD2 homolog, yeast) ubiquitin-conjugating enzyme E2L 3</p>	<p>SQSTM1 PSMC5 VCP ARIH1 AMFR UBE2G1 UBB UBE4A UBE2L3</p>

	<p>ubiquitin fusion degradation 1 like (yeast) seven in absentia homolog 2 (Drosophila) carboxypeptidase A2 (pancreatic) ubiquitin-conjugating enzyme E2A (RAD6 homolog) ubiquitin protein ligase E3 component n-recogin 5 F-box and leucine-rich repeat protein 4 ubiquitin-conjugating enzyme E2K ring finger protein 11 ring finger protein 144B tumor susceptibility gene 101 ring finger protein 217 STIP1 homology and U-box containing protein 1 ubiquitin-conjugating enzyme E2B (RAD6 homolog) SMAD specific E3 ubiquitin protein ligase 1 Parkinson disease (autosomal recessive, juvenile) 2, parkin F-box protein 7 proteasome (prosome, macropain) 26S subunit, non-ATPase, 14 ubiquitin-conjugating enzyme E2H (UBC8 homolog, yeast) nuclear protein localization 4 homolog (S. cerevisiae) ubiquitin protein ligase E3 component n-recogin 3 (putative) CDC23 (cell division cycle 23, yeast, homolog) Der1-like domain family, member 1 ubiquitination factor E4B (UFD2 homolog, yeast) KIAA0368 ubiquitin specific peptidase 33</p>	<p>UFD1L SIAH2 CPA2 UBE2A UBR5 FBXL4 UBE2K RNF11 RNF144B TSG101 STUB1 RNF217 UBE2B SMURF1 PARK2 FBXO7 PSMD14 UBE2H NPLOC4 UBR3 CDC23 DERL1 UBE4B KIAA0368 USP33</p>
<p>GO:0030163 Protein catabolic process</p>	<p>sequestosome 1 proteasome (prosome, macropain) 26S subunit, ATPase, 5 valosin-containing protein ariadne homolog, ubiquitin-conjugating enzyme E2 binding protein, 1 (Drosophila) autocrine motility factor receptor unconventional SNARE in the ER 1 homolog ubiquitin-conjugating enzyme E2G 1 (UBC7 homolog, yeast) ubiquitin B ubiquitination factor E4A (UFD2 homolog, yeast) ubiquitin-conjugating enzyme E2L 3 ubiquitin fusion degradation 1 like (yeast) seven in absentia homolog 2 (Drosophila) carboxypeptidase A2 (pancreatic) ubiquitin-conjugating enzyme E2A (RAD6 homolog) ubiquitin protein ligase E3 component n-recogin 5 F-box and leucine-rich repeat protein 4 ubiquitin-conjugating enzyme E2K ring finger protein 11 ring finger protein 144B tumor susceptibility gene 101 STIP1 homology and U-box containing protein 1 ring finger protein 217 ubiquitin-conjugating enzyme E2B (RAD6 homolog) SMAD specific E3 ubiquitin protein ligase 1 Parkinson disease (autosomal recessive, juvenile) 2, parkin F-box protein 7 proteasome (prosome, macropain) 26S subunit, non-ATPase, 14 ubiquitin-conjugating enzyme E2H (UBC8 homolog, yeast) nuclear protein localization 4 homolog (S. cerevisiae) ubiquitin protein ligase E3 component n-recogin 3 (putative) CDC23 (cell division cycle 23, yeast, homolog) Der1-like domain family, member 1 ubiquitination factor E4B (UFD2 homolog, yeast) KIAA0368 ubiquitin specific peptidase 33 seven in absentia homolog 1 (Drosophila)</p>	<p>SQSTM1 PSMC5 VCP ARIH1 AMFR USE1 UBE2G1 UBB UBE4A UBE2L3 UFD1L SIAH2 CPA2 UBE2A UBR5 FBXL4 UBE2K RNF11 RNF144B TSG101 STUB1 RNF217 UBE2B SMURF1 PARK2 FBXO7 PSMD14 UBE2H NPLOC4 UBR3 CDC23 DERL1 UBE4B KIAA0368 USP33 SIAH1</p>
<p>GO:0007179 Transforming growth factor beta receptor signaling pathway</p>	<p>cell death-inducing DFFA-like effector a left-right determination factor 2 STIP1 homology and U-box containing protein 1 activin A receptor type II-like 1 growth differentiation factor 15 transforming growth factor, beta receptor III (betaglycan, 300kDa) zinc finger, FYVE domain containing 9 SMAD, mothers against DPP homolog 2 (Drosophila) fibromodulin</p>	<p>CIDEA LEFTY2 STUB1 ACVRL1 GDF15 TGFB3 ZFYE9 SMAD2 FMOD</p>

	hydroxyprostaglandin dehydrogenase 15-(NAD) SMAD, mothers against DPP homolog 7 (Drosophila) activin A receptor, type 1 Cbp/p300-interacting transactivator, with Glu/Asp-rich carboxy-terminal domain, 2 growth differentiation factor 10 cyclin-dependent kinase inhibitor 2B (p15, inhibits CDK4)	HPGD SMAD7 ACVR1 CITED2 GDF10 CDKN2B
GO:0048037 Cofactor binding	amine oxidase, copper containing 3 (vascular adhesion protein 1) malic enzyme 3, NADP(+)-dependent, mitochondrial aldehyde dehydrogenase 6 family, member A1 NADPH oxidase 4 hydroxyprostaglandin dehydrogenase 15-(NAD) nicotinamide nucleotide transhydrogenase apoptosis-inducing factor, mitochondrion-associated, 2 2-hydroxyacyl-CoA lyase 1 glutamate-cysteine ligase, catalytic subunit	AOC3 ME3 ALDH6A1 NOX4 HPGD NNT AIFM2 HACL1 GCLC
GO:0016247 Channel regulator activity	(unnamed) sorcin cAMP-regulated phosphoprotein, 19kDa potassium voltage-gated channel, shaker-related subfamily, beta member 1 neural precursor cell expressed, developmentally down-regulated 4-like adrenergic, alpha-2A-, receptor	CHP SRI ARPP19 KCNAB1 NEDD4L ADRA2A
GO:0043406 Positive regulation of MAP kinase activity	phosphoinositide-3-kinase, catalytic, beta polypeptide (unnamed) superoxide dismutase 1, soluble (amyotrophic lateral sclerosis 1 (adult)) MyoD family inhibitor domain containing epidermal growth factor receptor (erythroblastic leukemia viral (v-erb-b) oncogene homolog, avian) adrenergic, beta-2-, receptor, surface fibroblast growth factor 2 (basic) adrenergic, alpha-2A-, receptor	PIK3CB ZAK SOD1 MDFIC EGFR ADRB2 FGF2 ADRA2A
GO:0007584 Response to nutrient	gastric inhibitory polypeptide receptor peroxisome proliferative activated receptor, gamma tubby like protein 4 ectonucleotide pyrophosphatase/phosphodiesterase 1 cyclin-dependent kinase inhibitor 2B (p15, inhibits CDK4)	GIPR PPARG TULP4 ENPP1 CDKN2B
GO:0015457 Auxiliary transport protein activity	(unnamed) sorcin cAMP-regulated phosphoprotein, 19kDa potassium voltage-gated channel, shaker-related subfamily, beta member 1 neural precursor cell expressed, developmentally down-regulated 4-like neuronatin adrenergic, alpha-2A-, receptor	CHP SRI ARPP19 KCNAB1 NEDD4L NNAT ADRA2A
GO:0051402 Neuron apoptosis	RAS p21 protein activator (GTPase activating protein) 1 superoxide dismutase 1, soluble (amyotrophic lateral sclerosis 1 (adult)) BCL2/adenovirus E1B 19kDa interacting protein 3 B-cell CLL/lymphoma 2	RASA1 SOD1 BNIP3 BCL2
GO:0008639 Small protein conjugating enzyme activity	ariadne homolog, ubiquitin-conjugating enzyme E2 binding protein, 1 (Drosophila) autocrine motility factor receptor ubiquitin-conjugating enzyme E2M (UBC12 homolog, yeast) Cas-Br-M (murine) ecotropic retroviral transforming sequence ubiquitin-conjugating enzyme E2L 3 ubiquitin protein ligase E3C ubiquitin protein ligase E3 component n-recogin 5 tripartite motif-containing 23 ubiquitin-conjugating enzyme E2K F-box protein 3 BRCA1 associated protein ring finger protein 14 ring finger protein 144B F-box and WD-40 domain protein 2 STIP1 homology and U-box containing protein 1 ring finger protein 217 SMAD specific E3 ubiquitin protein ligase 1 Parkinson disease (autosomal recessive, juvenile) 2, parkin F-box protein 7 ubiquitin-conjugating enzyme E2H (UBC8 homolog, yeast) myosin regulatory light chain interacting protein ubiquitin protein ligase E3 component n-recogin 3 (putative) CDC23 (cell division cycle 23, yeast, homolog) TNF receptor-associated factor 6	ARIH1 AMFR UBE2M CBL UBE2L3 UBE3C UBR5 TRIM23 UBE2K FBXO3 BRAP RNF14 RNF144B FBXW2 STUB1 RNF217 SMURF1 PARK2 FBXO7 UBE2H MYLIP UBR3 CDC23 TRAF6

	zyg-11 related, cell cycle regulator	ZER1
GO:0016879 Ligase activity forming carbon nitrogen bonds	<p>ariadne homolog, ubiquitin-conjugating enzyme E2 binding protein, 1 (Drosophila)</p> <p>autocrine motility factor receptor</p> <p>ubiquitin-conjugating enzyme E2M (UBC12 homolog, yeast)</p> <p>Cas-Br-M (murine) ecotropic retroviral transforming sequence</p> <p>ubiquitin-conjugating enzyme E2L 3</p> <p>glutathione synthetase</p> <p>ubiquitin protein ligase E3C</p> <p>ubiquitin protein ligase E3 component n-recogin 5</p> <p>tripartite motif-containing 23</p> <p>carbamoyl-phosphate synthetase 1, mitochondrial</p> <p>ubiquitin-conjugating enzyme E2K</p> <p>F-box protein 3</p> <p>BRCA1 associated protein</p> <p>ring finger protein 14</p> <p>ring finger protein 144B</p> <p>F-box and WD-40 domain protein 2</p> <p>STIP1 homology and U-box containing protein 1</p> <p>ring finger protein 217</p> <p>SMAD specific E3 ubiquitin protein ligase 1</p> <p>CTP synthase II</p> <p>Parkinson disease (autosomal recessive, juvenile) 2, parkin</p> <p>F-box protein 7</p> <p>ubiquitin-conjugating enzyme E2H (UBC8 homolog, yeast)</p> <p>myosin regulatory light chain interacting protein</p> <p>ubiquitin protein ligase E3 component n-recogin 3 (putative)</p> <p>CDC23 (cell division cycle 23, yeast, homolog)</p> <p>TNF receptor-associated factor 6</p> <p>methylenetetrahydrofolate dehydrogenase (NADP+ dependent) 1, methylenetetrahydrofolate cyclohydrolase, formyltetrahydrofolate synthetase</p> <p>biotinidase</p> <p>glutamate-cysteine ligase, catalytic subunit</p>	<p>ARIH1</p> <p>AMFR</p> <p>UBE2M</p> <p>CBL</p> <p>UBE2L3</p> <p>GSS</p> <p>UBE3C</p> <p>UBR5</p> <p>TRIM23</p> <p>CPS1</p> <p>UBE2K</p> <p>FBXO3</p> <p>BRAP</p> <p>RNF14</p> <p>RNF144B</p> <p>FBXW2</p> <p>STUB1</p> <p>RNF217</p> <p>SMURF1</p> <p>CTPS2</p> <p>PARK2</p> <p>FBXO7</p> <p>UBE2H</p> <p>MYLIP</p> <p>UBR3</p> <p>CDC23</p> <p>TRAF6</p> <p>ZER1</p> <p>MTHFD1</p> <p>BTD</p> <p>GCLC</p>
GO:0007178 Transmembrane receptor protein serine threonine kinase signaling pathway	<p>activin A receptor, type IB</p> <p>sclerosteosis</p> <p>latent transforming growth factor beta binding protein 2</p> <p>SMAD, mothers against DPP homolog 4 (Drosophila)</p> <p>bone morphogenetic protein receptor, type IA</p> <p>cell death-inducing DFFA-like effector a</p> <p>left-right determination factor 2</p> <p>SMAD, mothers against DPP homolog 5 (Drosophila)</p> <p>STIP1 homology and U-box containing protein 1</p> <p>SMAD specific E3 ubiquitin protein ligase 1</p> <p>activin A receptor type II-like 1</p> <p>growth differentiation factor 15</p> <p>transforming growth factor, beta receptor III (betaglycan, 300kDa)</p> <p>zinc finger, FYVE domain containing 9</p> <p>SMAD, mothers against DPP homolog 2 (Drosophila)</p> <p>activin A receptor, type IIA</p> <p>fibromodulin</p> <p>hydroxyprostaglandin dehydrogenase 15-(NAD)</p> <p>SMAD, mothers against DPP homolog 7 (Drosophila)</p> <p>activin A receptor, type I</p> <p>Chp/p300-interacting transactivator, with Glu/Asp-rich carboxy-terminal domain, 2</p> <p>growth differentiation factor 10</p> <p>cyclin-dependent kinase inhibitor 2B (p15, inhibits CDK4)</p>	<p>ACVR1B</p> <p>SOST</p> <p>LTBP2</p> <p>SMAD4</p> <p>BMPR1A</p> <p>CIDEA</p> <p>LEFTY2</p> <p>SMAD5</p> <p>STUB1</p> <p>SMURF1</p> <p>ACVRL1</p> <p>GDF15</p> <p>TGFBR3</p> <p>ZFYVE9</p> <p>SMAD2</p> <p>ACVR2A</p> <p>FMOD</p> <p>HPGD</p> <p>SMAD7</p> <p>ACVR1</p> <p>CITED2</p> <p>GDF10</p> <p>CDKN2B</p>
GO: 0016881 Acid amino acid ligase activity	<p>ariadne homolog, ubiquitin-conjugating enzyme E2 binding protein, 1 (Drosophila)</p> <p>autocrine motility factor receptor</p> <p>ubiquitin-conjugating enzyme E2M (UBC12 homolog, yeast)</p> <p>Cas-Br-M (murine) ecotropic retroviral transforming sequence</p> <p>ubiquitin-conjugating enzyme E2L 3</p> <p>glutathione synthetase</p> <p>ubiquitin protein ligase E3C</p> <p>UBR5 ubiquitin protein ligase E3 component n-recogin 5</p> <p>tripartite motif-containing 23</p> <p>UBE2K ubiquitin-conjugating enzyme E2K</p> <p>F-box protein 3</p> <p>BRCA1 associated protein</p> <p>ring finger protein 14</p> <p>RNF144B ring finger protein 144B</p> <p>F-box and WD-40 domain protein 2</p>	<p>ARIH1</p> <p>AMFR</p> <p>UBE2M</p> <p>CBL</p> <p>UBE2L3</p> <p>GSS</p> <p>UBE3C</p> <p>UBR5</p> <p>TRIM23</p> <p>UBE2K</p> <p>FBXO3</p> <p>BRAP</p> <p>RNF14</p> <p>RNF144B</p> <p>FBXW2</p>

	<p>STIP1 homology and U-box containing protein 1 RNF217 ring finger protein 217 SMAD specific E3 ubiquitin protein ligase 1 Parkinson disease (autosomal recessive, juvenile) 2, parkin F-box protein 7 ubiquitin-conjugating enzyme E2H (UBC8 homolog, yeast) myosin regulatory light chain interacting protein UBR3 ubiquitin protein ligase E3 component n-recogin 3 (putative) CDC23 (cell division cycle 23, yeast, homolog) TNF receptor-associated factor 6 ZER1 zyg-11 related, cell cycle regulator glutamate-cysteine ligase, catalytic subunit</p>	<p>STUB1 RNF217 SMURF1 PARK2 FBXO7 UBE2H MYLIP UBR3 CDC23 TRAF6 ZER1 GCLC</p>
<p>GO:0009653 Anatomical structure morphogenesis</p>	<p>myocilin, trabecular meshwork inducible glucocorticoid response cell division cycle 42 (GTP binding protein, 25kDa) CDC42 binding protein kinase beta (DMPK-like) roundabout homolog 4, magic roundabout (Drosophila) trafficking protein particle complex 4 tripartite motif-containing 15 sex comb on midleg-like 1 (Drosophila) mitochondrial ribosomal protein L40 discs, large homolog 1 (Drosophila) holocytochrome c synthase (cytochrome c heme-lyase) serpin peptidase inhibitor, clade F (alpha-2 antiplasmin, pigment epithelium derived factor), member 1 eyes absent homolog 4 (Drosophila) ras homolog gene family, member B T-box 4 angiominin ras-related C3 botulinum toxin substrate 3 (rho family, small GTP binding protein Rac3) activin A receptor type II-like 1 vascular endothelial growth factor A endoplasmic reticulum aminopeptidase 1 oligophrenin 1 RAS p21 protein activator (GTPase activating protein) 1 microtubule-associated protein 7 Wolf-Hirschhorn syndrome candidate 1 glycophorin C (Gerbich blood group) promyelocytic leukemia FYVE, RhoGEF and PH domain containing 4 msh homeobox homolog 1 (Drosophila) fasciculation and elongation protein zeta 2 (zygin II) collagen, type V, alpha 3 SMAD, mothers against DPP homolog 2 (Drosophila) forkhead box O4 roundabout, axon guidance receptor, homolog 2 (Drosophila) paired-like homeodomain transcription factor 2 microtubule-associated protein tau cadherin 13, H-cadherin (heart) vinculin NADPH oxidase 4 CCAAT/enhancer binding protein (C/EBP), gamma clathrin, heavy chain-like 1 Notch homolog 2 (Drosophila) FYVE, RhoGEF and PH domain containing 5 enhancer of zeste homolog 1 (Drosophila) glyceronephosphate O-acyltransferase superoxide dismutase 1, soluble (amyotrophic lateral sclerosis 1 (adult)) hairy/enhancer-of-split related with YRPW motif 1 RAR-related orphan receptor B nuclear factor (erythroid-derived 2)-like 1 seven in absentia homolog 1 (Drosophila) reticulon 4 SRY (sex determining region Y)-box 13 MLX interacting protein-like natriuretic peptide receptor A/guanylate cyclase A (atrionatriuretic peptide receptor A) Kallmann syndrome 1 sequence Notch homolog 3 (Drosophila) LIM domain and actin binding 1 collagen, type IV, alpha 2 melanoma cell adhesion molecule insulin-like growth factor 2 mRNA binding protein 2</p>	<p>MYOC CDC42 CDC42BPB ROBO4 TRAPPC4 TRIM15 SCML1 MRPL40 DLG1 HCCS SERPINF1</p> <p>EYA4 RHOB TBX4 AMOT RAC3 ACVRL1 VEGFA ERAP1 OPHN1 RASA1 MAP7 WHSC1 GYPC PML FGD4 MSX1 FEZ2 COL5A3 SMAD2 FOXO4 ROBO2 PITX2 MAPT CDH13 VCL NOX4 CEBPG CLTCL1 NOTCH2 FGD5 EZH1 GNPAT SOD1 HEY1 RORB NFE2L1 SIAH1 RTN4 SOX13 MLXIPL NPR1 KAL1 NOTCH3 LIMA1 COL4A2 MCAM</p>

	paired box gene 3 (Waardenburg syndrome 1) glutamate-cysteine ligase, catalytic subunit T-box 3 (ulnar mammary syndrome) fibroblast growth factor 16 pleckstrin homology-like domain, family A, member 3 T-box 5 engrailed homolog 1 homeobox B5 carboxypeptidase M homeobox A4 wingless-type MMTV integration site family, member 11 fibroblast growth factor 2 (basic) glypican 3 mab-21-like 1 (C. elegans) twist homolog 1 (acrocephalosyndactyly 3; Saethre-Chotzen syndrome) (Drosophila)	IGF2BP2 PAX3 GCLC TBX3 FGF16 PHLDA3 TBX5 EN1 HOXB5 CPM HOXA4 WNT11 FGF2 GPC3 MAB21L1 TWIST1
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Table S3. Genes demonstrating core enrichment within the 1 gene ontology gene set identified as statistically significant by Gene Set Enrichment Analysis in EATCAD versus EATCnt.

Gene set	Gene name	Symbol
GO:0050906 Detection of stimulus involved in sensory perception	receptor transporter protein 4 taste receptor, type 2, member 43 phosducin S-antigen; retina and pineal gland (arrestin) calcium channel, voltage-dependent, alpha 1F subunit taste receptor, type 2, member 14 G protein-coupled receptor kinase 1	RTP4 TAS2R43 PDC SAG CACNA1F TAS2R14 GRK1

Table S4. Genes demonstrating core enrichment within the 15 gene ontology gene sets identified as statistically significant by Gene Set Enrichment Analysis in EATCnt versus EATCAD.

Gene set	Gene name	Symbol
GO:0030166 Proteoglycan biosynthetic process	exostoses (multiple) 1 carbohydrate (N-acetylglucosamine 6-O) sulfotransferase 7 carbohydrate (chondroitin 6) sulfotransferase 3 chondroitin sulfate N-acetylgalactosaminyltransferase 2	EXT1 CHST7 CHST3 CSGALNACT2
GO:0008080 N acyltransferase activity	K(lysine) acetyltransferase 6B CREB binding protein (Rubinstein-Taybi syndrome) arylalkylamine N-acetyltransferase general transcription factor IIIC, polypeptide 4, 90kDa ceramide synthase 5 TAF5 RNA polymerase II, TATA box binding protein (TBP)-associated factor, 100kDa spermidine/spermine N1-acetyltransferase 1 N-acetyltransferase 1 (arylamine N-acetyltransferase) K(lysine) acetyltransferase 6A N-acetyltransferase 2 (arylamine N-acetyltransferase) histone acetyltransferase 1 aminolevulinate, delta-, synthase 2 (sideroblastic/hypochromic anemia)	KAT6B CREBBP AANAT GTF3C4 CERS5 TAF5 SAT1 NAT1 KAT6A NAT2 HAT1 ALAS2
GO:0008270 Zinc ion binding	methionine sulfoxide reductase B3 seven in absentia homolog 1 (Drosophila) cysteine-rich protein 1 (intestinal) matrix metalloproteinase 2 (gelatinase A, 72kDa gelatinase, 72kDa type IV collagenase) RAB interacting factor leucyl/cystinyl aminopeptidase phosphate regulating endopeptidase homolog, X-linked (hypophosphatemia, vitamin D resistant rickets) early endosome antigen 1, 162kD selenoprotein X, 1 myoneurin carbonic anhydrase II ring finger protein 11 zinc finger protein 185 (LIM domain) cytidine deaminase rearranged L-myc fusion S100 calcium binding protein A12 Kruppel-like factor 7 (ubiquitous) matrix metalloproteinase 14 (membrane-inserted) Cas-Br-M (murine) ecotropic retroviral transforming sequence b matrix metalloproteinase 12 (macrophage elastase)	MSRB3 SIAH1 CRIP1 MMP2 RABIF LNPEP PHEX EEA1 SEPX1 MYNN CA2 RNF11 ZNF185 CDA RLF S100A12 KLF7 MMP14 CBLB

	guanine deaminase matrix metalloproteinase 8 (neutrophil collagenase)	MMP12 GDA MMP8
GO:0016044 Membrane organization and biogenesis	epidermal growth factor receptor (erythroblastic leukemia viral (v-erb-b) oncogene homolog, avian) sorting nexin 4 low density lipoprotein receptor (familial hypercholesterolemia) asialoglycoprotein receptor 1 macrophage scavenger receptor 1 ATPase, H ⁺ transporting, lysosomal 50/57kDa, V1 subunit H coronin, actin binding protein, 1C RAB22A, member RAS oncogene family golgi SNAP receptor complex member 2 superoxide dismutase 1, soluble (amyotrophic lateral sclerosis 1 (adult)) optic atrophy 1 (autosomal dominant) adaptor-related protein complex 2, sigma 1 subunit PDZ and LIM domain 7 (enigma) Rho GTPase activating protein 27 sorting nexin 2 rabaptin, RAB GTPase binding effector protein 1 VAMP (vesicle-associated membrane protein)-associated protein A, 33kDa syntaxin 11 dynamin 1-like coiled-coil domain containing 88A izumo sperm-egg fusion 1 Cas-BR-M (murine) ecotropic retroviral transforming sequence Sad1 and UNC84 domain containing 2 phospholipid scramblase 1 N-ethylmaleimide-sensitive factor attachment protein, gamma stabilin 1 phosphatidylinositol binding clathrin assembly protein myosin VI amphiphysin (Stiff-Man syndrome with breast cancer 128kDa autoantigen) GULP, engulfment adaptor PTB domain containing 1 Fc fragment of IgG, high affinity Ia, receptor (CD64) RAB interacting factor vacuolar protein sorting 4 homolog B (S. cerevisiae) azurocidin 1 (cationic antimicrobial protein 37) ADAM metalloproteinase domain 12 (meltrin alpha) early endosome antigen 1, 162kD low density lipoprotein receptor-related protein 8, apolipoprotein e receptor BCL2-like 1 sortilin-related receptor, L(DLR class) A repeats-containing synaptojanin 1 lymphoid-restricted membrane protein ficolin (collagen/fibrinogen domain containing) 1 C-type lectin domain family 7, member A insulin-like growth factor 2 receptor RAB5A, member RAS oncogene family BCL2/adenovirus E1B 19kDa interacting protein 1 zinc finger, FYVE domain containing 16 granulein, EF-hand calcium binding protein potassium voltage-gated channel, subfamily H (eag-related), member 1 dynamin 1	EGFR SNX4 LDLR ASGR1 MSR1 ATP6V1H CORO1C RAB22A GOSR2 SOD1 OPA1 AP2S1 PDLIM7 ARHGAP27 SNX2 RABEP1 VAPA STX11 DNM1L CCDC88A IZUMO1 CBL SUN2 PLSCR1 NAPG STAB1 PICALM MYO6 AMPH GULP1 FCGR1A RABIF VPS4B AZU1 ADAM12 EEA1 LRP8 BCL2L1 SORL1 SYNJ1 LRMP FCN1 CLEC7A IGF2R RAB5A BNIP1 ZFYVE16 GCA KCNH1 DNM1
GO:0046914 Transition metal ion binding	methionine sulfoxide reductase B3 seven in absentia homolog 1 (Drosophila) v-abl Abelson murine leukemia viral oncogene homolog 2 (arg, Abelson-related gene) cysteine-rich protein 1 (intestinal) matrix metalloproteinase 2 (gelatinase A, 72kDa gelatinase, 72kDa type IV collagenase) RAB interacting factor leucyl/cystinyl aminopeptidase phosphate regulating endopeptidase homolog, X-linked (hypophosphatemia, vitamin D resistant rickets) early endosome antigen 1, 162kD selenoprotein X, 1 myoneurin carbonic anhydrase II ring finger protein 11 zinc finger protein 185 (LIM domain) cytidine deaminase rearranged L-myc fusion S100 calcium binding protein A12	MSRB3 SHAH1 ABL2 CRIP1 MMP2 RABIF LNPEP PHEX EEA1 SEPX1 MYNN CA2 RNF11 ZNF185 CDA RLF

	Kruppel-like factor 7 (ubiquitous) matrix metalloproteinase 14 (membrane-inserted) Cas-Br-M (murine) ecotropic retroviral transforming sequence b matrix metalloproteinase 12 (macrophage elastase) guanine deaminase matrix metalloproteinase 8 (neutrophil collagenase)	S100A12 KLF7 MMP14 CBLB MMP12 GDA MMP8
GO:0051128 Regulation of Cellular component organization and biogenesis	nexilin (F actin binding protein) cytoplasmic linker associated protein 1 RAS p21 protein activator (GTPase activating protein) 1 ArfGAP with RhoGAP domain, ankyrin repeat and PH domain 1 cysteine-rich PAK1 inhibitor tousled-like kinase 1 FYVE, RhoGEF and PH domain containing 2 Rho guanine nucleotide exchange factor (GEF) 10-like eukaryotic translation initiation factor 3, subunit A adaptor-related protein complex 2, sigma 1 subunit eukaryotic translation initiation factor 2B, subunit 2 beta, 39kDa poly(A) binding protein interacting protein 2 CDC42 effector protein (Rho GTPase binding) 5 coiled-coil domain containing 88A eukaryotic translation initiation factor 2 alpha kinase 4 sorbin and SH3 domain containing 3 Cas-Br-M (murine) ecotropic retroviral transforming sequence ubiquitin-conjugating enzyme E2N (UBC13 homolog, yeast) gelsolin (amyloidosis, Finnish type) interleukin-1 receptor-associated kinase 3 ghrelin/obestatin preprohormone tubulin polymerization promoting protein MID1 interacting protein 1 (gastrulation specific G12 homolog (zebrafish)) eukaryotic translation initiation factor 2-alpha kinase 3 rho/rac guanine nucleotide exchange factor (GEF) 2 cell division cycle 42 (GTP binding protein, 25kDa) eukaryotic translation initiation factor 1B eukaryotic translation termination factor 1 ArfGAP with RhoGAP domain, ankyrin repeat and PH domain 3 azuocidin 1 (cationic antimicrobial protein 37) adenomatosis polyposis coli tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, eta polypeptide CDC42 effector protein (Rho GTPase binding) 2 microtubule-associated protein, RP/EB family, member 1 serine/threonine kinase 38 like reticulon 4 leucine rich repeat containing 4C eukaryotic translation initiation factor 3, subunit J zinc finger, FYVE domain containing 16 ubiquitin B FYVE, RhoGEF and PH domain containing 4	NEXN CLASP1 RASA1 ARAP1 CRIPAK TLK1 FGD2 ARHGEF10L EIF3A AP2S1 EIF2B2 PAIP2 CDC42EP5 CCDC88A EIF2AK4 SORBS3 CBL UBE2N GSN IRAK3 GHRL TPPP MID1IP1 EIF2AK3 ARHGEF2 CDC42 EIF1B ETF1 ARAP3 AZU1 APC YWHAH CDC42EP2 MAPRE1 STK38L RTN4 LRRC4C EIF3J ZFYVE16 UBB FGD4
GO:0051347 Positive regulation of transferase activity	amyotrophic lateral sclerosis 2 (juvenile) superoxide dismutase 1, soluble (amyotrophic lateral sclerosis 1 (adult)) endoplasmic reticulum to nucleus signalling 1 sphingosine-1-phosphate receptor 2 serine incorporator 1 cholinergic receptor, muscarinic 1 STE20-related kinase adaptor beta cyclin D2 coiled-coil domain containing 88A chemokine (C-X-C motif) receptor 4 mitogen-activated protein kinase kinase kinase 2 ghrelin/obestatin preprohormone serine incorporator 5 MyoD family inhibitor domain containing epidermal growth factor (beta-urogastrone) growth arrest and DNA-damage-inducible, gamma p21/Cdc42/Rac1-activated kinase 1 (STE20 homolog, yeast) mucosa associated lymphoid tissue lymphoma translocation gene 1 azuocidin 1 (cationic antimicrobial protein 37) prolactin receptor interleukin-1 receptor-associated kinase 1 TNF receptor-associated factor 6	ALS2 SOD1 ERN1 S1PR2 SERINC1 CHRM1 STRADB CCND2 CCDC88A CXCR4 MAP3K2 GHRL SERINC5 MDFIC EGF GADD45G PAK1 MALT1 AZU1 PRLR IRAK1 TRAF6

	<p>epiregulin formyl peptide receptor 1 complement component 5a receptor 1 prokineticin 2 mitogen-activated protein kinase kinase kinase 5 mitogen-activated protein kinase kinase 3 toll-like receptor 6</p>	<p>EREG FPR1 C5AR1 PROK2 MAP3K5 MAP2K3 TLR6</p>
<p>GO:0006984 ER nuclear signaling pathway</p>	<p>cysteine-rich PAK1 inhibitor SREBF chaperone Rho guanine nucleotide exchange factor (GEF) 10-like endoplasmic reticulum to nucleus signalling 1 activating transcription factor 6 eukaryotic translation initiation factor 2-alpha kinase 3 p21/Cdc42/Rac1-activated kinase 1 (STE20 homolog, yeast) VCP-interacting membrane protein</p>	<p>CRIPAK SCAP ARHGEF10L ERN1 ATF6 EIF2AK3 PAK1 SELS</p>
<p>GO:0008234 Cysteine type peptidase activity</p>	<p>ubiquitin specific peptidase 4 (proto-oncogene) ubiquitin specific peptidase 7 (herpes virus-associated) ubiquitin specific peptidase 14 (tRNA-guanine transglycosylase) ubiquitin specific peptidase 16 ubiquitin carboxyl-terminal esterase L3 (ubiquitin thiolesterase) ubiquitin specific peptidase 8 ATG4 autophagy related 4 homolog B (S. cerevisiae) ubiquitin specific peptidase 9, X-linked cathepsin K (pseudodeficiency) cathepsin S caspase 8, apoptosis-related cysteine peptidase ubiquitin specific peptidase 53 legumain valosin containing protein (p97)/p47 complex interacting protein 1 ubiquitin specific peptidase 12 ubiquitin specific peptidase 6 (Tre-2 oncogene) ubiquitin specific peptidase 15 caspase 3, apoptosis-related cysteine peptidase ubiquitin carboxyl-terminal esterase L1 (ubiquitin thiolesterase) protein disulfide isomerase family A, member 3</p>	<p>USP4 USP7 USP14 USP16 UCHL3 USP8 ATG4B USP9X CTSK CTSS CASP8 USP53 LGMN VCIPI1 USP12 USP6 USP15 CASP3 UCHL1 PDIA3</p>
<p>GO:0008144 Drug binding</p>	<p>peptidylprolyl isomerase G (cyclophilin G) topoisomerase (DNA) II alpha 170kDa peptidylprolyl isomerase C (cyclophilin C) FK506 binding protein 4, 59kDa FK506 binding protein 3, 25kDa nuclear factor of activated T-cells, cytoplasmic, calcineurin-dependent 1 peptidylprolyl isomerase D (cyclophilin D)</p>	<p>PP1G TOP2A PP1C FKBP4 FKBP3 NFATC1 PP1D</p>
<p>GO:0006508 Proteolysis</p>	<p>cathepsin B ADAM metallopeptidase domain 10 tripeptidyl peptidase II cathepsin G ubiquitin protein ligase E3 component n-recogin 3 (putative) proprotein convertase subtilisin/kexin type 5 furin (paired basic amino acid cleaving enzyme) ubiquitin protein ligase E3 component n-recogin 5 von Hippel-Lindau tumor suppressor synovial apoptosis inhibitor 1, synoviolin astacin-like metallo-endopeptidase (M12 family) ubiquitin-like modifier activating enzyme 3 DnaJ (Hsp40) homolog, subfamily C, member 1 plasminogen activator, urokinase zinc metallopeptidase (STE24 homolog, yeast) cathepsin H ubiquitination factor E4B (UFD2 homolog, yeast) matrix metallopeptidase 9 (gelatinase B, 92kDa gelatinase, 92kDa type IV collagenase) complement factor D (adipsin) ubiquitin-conjugating enzyme E2K ubiquitin specific peptidase 33 ubiquitin-conjugating enzyme E2N (UBC13 homolog, yeast) cathepsin Z F-box protein 7 ubiquitin-conjugating enzyme E2D 3 (UBC4/5 homolog, yeast) seven in absentia homolog 1 (Drosophila) peptidase D carboxypeptidase A1 (pancreatic)</p>	<p>CTSB ADAM10 TPP2 CTSG UBR3 PCSK5 FURIN UBR5 VHL SYVN1 ASTL UBA3 DNAJC1 PLAU ZMPSTE24 CTSH UBE4B MMP9 CFD UBE2K USP33 UBE2N CTSZ FBXO7 UBE2D3 SIAH1 PEPD CPA1</p>

	<p>matrix metallopeptidase 2 (gelatinase A, 72kDa gelatinase, 72kDa type IV collagenase) F-box and leucine-rich repeat protein 6 presenilin 1 (Alzheimer disease 3) ATG4 autophagy related 4 homolog B (<i>S. cerevisiae</i>) CDC20 cell division cycle 20 homolog (<i>S. cerevisiae</i>) leucyl/cystinyl aminopeptidase phosphate regulating endopeptidase homolog, X-linked (hypophosphatemia, vitamin D resistant rickets) pappalysin 2 cathepsin K (pycnodysostosis) dipeptidyl-peptidase 3 carboxypeptidase Q cathepsin S caspase 8, apoptosis-related cysteine peptidase keratin 1 (epidermolytic hyperkeratosis) serglycin RCE1 homolog, prenyl protein peptidase (<i>S. cerevisiae</i>) ATPase, H⁺ transporting, lysosomal accessory protein 2 ring finger protein 11 VCP-interacting membrane protein suppression of tumorigenicity 14 (colon carcinoma) matrix metallopeptidase 7 (matrilysin, uterine) seven in absentia homolog 2 (<i>Drosophila</i>) proteasome (prosome, macropain) 26S subunit, non-ATPase, 14 ubiquitin-conjugating enzyme E2D 1 (UBC4/5 homolog, yeast) matrix metallopeptidase 3 (stromelysin 1, progelatinase) matrix metallopeptidase 14 (membrane-inserted) ubiquitin B ADAM metallopeptidase with thrombospondin type 1 motif, 5 (aggrecanase-2) matrix metallopeptidase 12 (macrophage elastase) caspase 3, apoptosis-related cysteine peptidase proprotein convertase subtilisin/kexin type 1 ubiquitin-conjugating enzyme E2B (RAD6 homolog) ring finger protein 144B matrix metallopeptidase 8 (neutrophil collagenase)</p>	<p>MMP2 FBXL6 PSEN1 ATG4B CDC20 LNPEP PHEX PAPPA2 CTSK DPP3 PGCP CTSS CASP8 KRT1 SRGN RCE1 ATP6AP2 RNF11 SELS ST14 MMP7 SLAH2 PSMD14 UBE2D1 MMP3 MMP14 UBB ADAMTS5 MMP12 CASP3 PCSK1 UBE2B RNF144B MMP8</p>
GO:0004197 Cysteine type endopeptidase activity	<p>ubiquitin specific peptidase 4 (proto-oncogene) ubiquitin specific peptidase 7 (herpes virus-associated) ubiquitin specific peptidase 14 (tRNA-guanine transglycosylase) ubiquitin specific peptidase 16 ubiquitin specific peptidase 8 ubiquitin specific peptidase 9, X-linked cathepsin K (pycnodysostosis) cathepsin S caspase 8, apoptosis-related cysteine peptidase legumain ubiquitin specific peptidase 6 (Tre-2 oncogene) ubiquitin specific peptidase 15 caspase 3, apoptosis-related cysteine peptidase ubiquitin carboxyl-terminal esterase L1 (ubiquitin thiolesterase) protein disulfide isomerase family A, member 3</p>	<p>USP4 USP7 USP14 USP16 USP8 USP9X CTSK CTSS CASP8 LGMIN USP6 USP15 CASP3 UCHL1 PDIA3</p>
GO:0006944 Membrane fusion	<p>golgi SNAP receptor complex member 2 rabaptin, RAB GTPase binding effector protein 1 VAMP (vesicle-associated membrane protein)-associated protein A, 33kDa syntaxin 11 izumo sperm-egg fusion 1 N-ethylmaleimide-sensitive factor attachment protein, gamma RAB interacting factor vacuolar protein sorting 4 homolog B (<i>S. cerevisiae</i>) ADAM metallopeptidase domain 12 (meltrin alpha) early endosome antigen 1, 162kD lymphoid-restricted membrane protein BCL2/adenovirus E1B 19kDa interacting protein 1 grancalcin, EF-hand calcium binding protein potassium voltage-gated channel, subfamily H (eag-related), member 1</p>	<p>GOSR2 RABEP1 VAPA STX11 IZUMO1 NAPG RABIF VPS4B ADAM12 EEA1 LRMP BNIP1 GCA KCNH1</p>
GO:0016540 Protein autoprocessing	<p>TAO kinase 3 U2AF homology motif (UHM) kinase 1 lemur tyrosine kinase 2 eukaryotic translation initiation factor 2-alpha kinase 3 eukaryotic translation initiation factor 2-alpha kinase 1 p21/Cdc42/Rac1-activated kinase 1 (STE20 homolog, yeast)</p>	<p>TAOK3 UHMK1 LMTK2 EIF2AK3 EIF2AK1 PAK1</p>

	<p>p21 (CDKN1A)-activated kinase 2 insulin-like growth factor 1 receptor mitogen-activated protein kinase kinase kinase 3 serine/threonine kinase 4 NLR family, pyrin domain containing 12</p>	<p>PAK2 IGF1R MAP3K3 STK4 NLRP12</p>
<p>GO:0008233 Peptidase activity</p>	<p>zinc metallopeptidase (STE24 homolog, yeast) cathepsin H thyrotropin-releasing hormone degrading enzyme matrix metallopeptidase 9 (gelatinase B, 92kDa gelatinase, 92kDa type IV collagenase) endoplasmic reticulum aminopeptidase 2 ADAM metallopeptidase with thrombospondin type 1 motif, 2 coagulation factor IX (plasma thromboplastic component, Christmas disease, hemophilia B) complement component 1, s subcomponent complement factor D (adipsin) ubiquitin specific peptidase 4 (proto-oncogene) ubiquitin specific peptidase 7 (herpes virus-associated) ubiquitin specific peptidase 14 (tRNA-guanine transglycosylase) ubiquitin specific peptidase 16 ubiquitin carboxyl-terminal esterase L3 (ubiquitin thiolesterase) peptidase D carboxypeptidase A1 (pancreatic) gamma-glutamyl hydrolase (conjugase, folylpolyglutamyl hydrolase) ubiquitin specific peptidase 8 mannan-binding lectin serine peptidase 1 (C4/C2 activating component of Ra-reactive factor) matrix metallopeptidase 2 (gelatinase A, 72kDa gelatinase, 72kDa type IV collagenase) protease, serine, 36 presenilin 1 (Alzheimer disease 3) ATG4 autophagy related 4 homolog B (S. cerevisiae) ubiquitin specific peptidase 9, X-linked leucyl/cystinyl aminopeptidase angiotensin I converting enzyme (peptidyl-dipeptidase A) 2 pappalysin 2 methionyl aminopeptidase 2 cathepsin K (pseudodeficiency) carboxypeptidase Q cathepsin S caspase 8, apoptosis-related cysteine peptidase ubiquitin specific peptidase 53 RCE1 homolog, prenyl protein peptidase (S. cerevisiae) legumain carboxypeptidase D chymotrypsin-like elastase family, member 2B matrix metallopeptidase 3 (stromelysin 1, progelatinase) matrix metallopeptidase 14 (membrane-inserted) valosin containing protein (p97)/p47 complex interacting protein 1 ubiquitin specific peptidase 12 ubiquitin specific peptidase 6 (Tre-2 oncogene) ubiquitin specific peptidase 15 matrix metallopeptidase 12 (macrophage elastase) alanyl (membrane) aminopeptidase (aminopeptidase N, aminopeptidase M, microsomal aminopeptidase, CD13, p150) caspase 3, apoptosis-related cysteine peptidase ubiquitin carboxyl-terminal esterase L1 (ubiquitin thiolesterase) protein disulfide isomerase family A, member 3 lactotransferrin matrix metallopeptidase 8 (neutrophil collagenase)</p>	<p>ZMPSTE24 CTSH TRHDE MMP9 ERAP2 ADAMTS2 F9 C1S CFD USP4 USP7 USP14 USP16 UCHL3 PEPD CPA1 GGH USP8 MASP1 MMP2 PRSS36 PSEN1 ATG4B USP9X LNPEP ACE2 PAPPA2 METAP2 CTSK PGCP CTSS CASP8 USP53 RCE1 LGMN CPD CELA2B MMP3 MMP14 VCPIP1 USP12 ELANE USP6 USP15 MMP12 ANPEP CASP3 UCHL1 PDIA3 LTF MMP8</p>