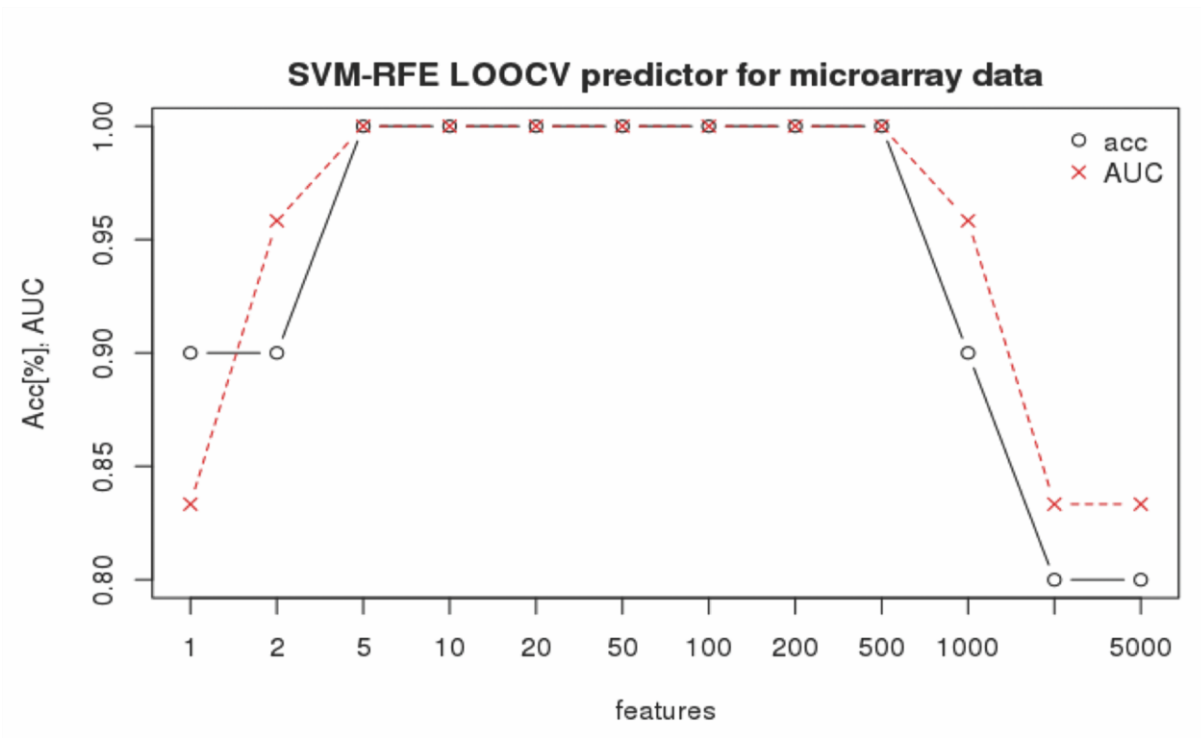
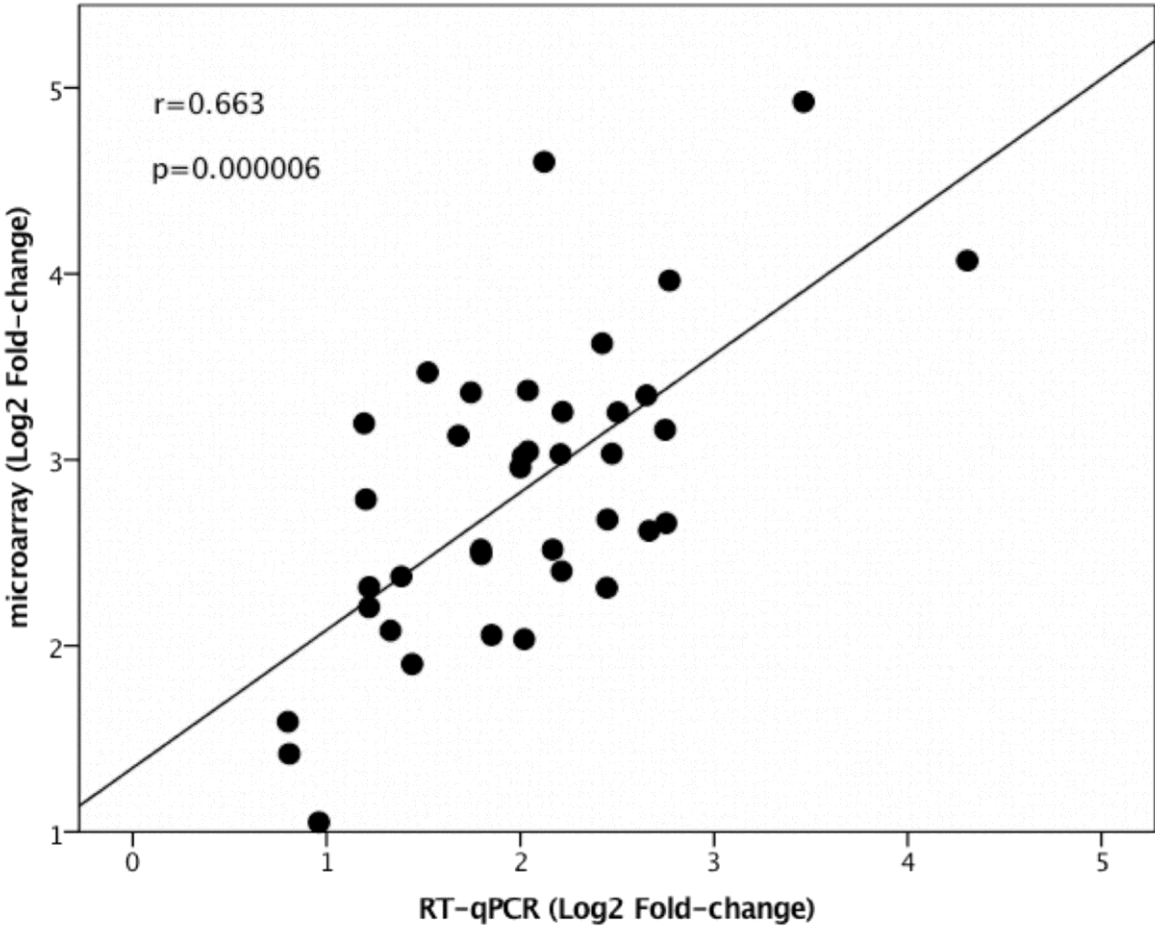


Supplement Figure 1. The development of leave-one-out cross validation (LOOCV) support vector machine (SVM) classification accuracy (ACC) and the area under the ROC curve (AUC) with different RFE parametrizations using microarray data on the training set of patients (n=10).

The figure shows that microarray-based SVM perfectly separates the TCMRV and IV groups for reasonably sized gene sets. For fewer than 5 and more than 500 genes, the classifier tends to underfit / overfit the data.

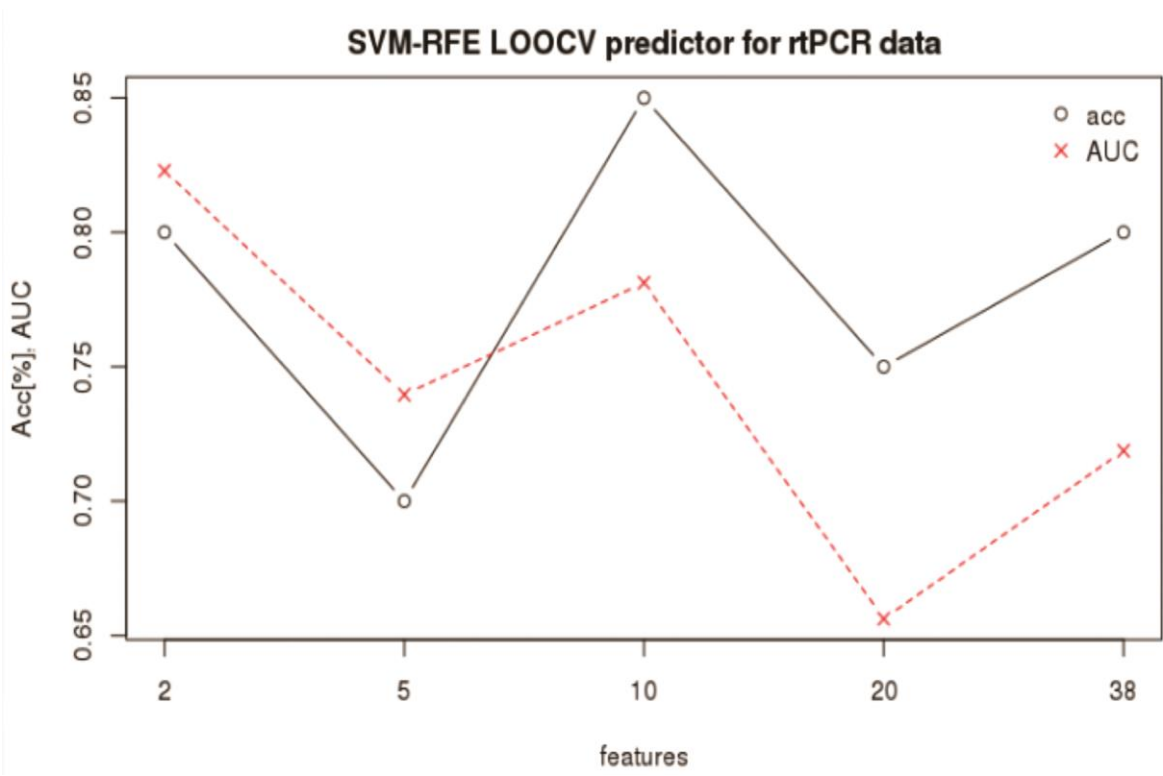


Supplement Figure 2. Correlation of microarray and real-time RT-qPCR analyses of selected genes. Pearson's correlations between \log_2 -fold change of the gene expression values from microarrays and RT-qPCR experiments ($r=0.663$, $p=0.000006$). Scatter plot shows correlation of the median fold changes from the RT-qPCR and microarray data set for a validated set of genes ($n=38$). A complete list of validated genes is shown in Suppl. Table 1.



Supplement Figure 3. The development of the leave-one-out cross validation (LOOCV) support vector machine (SVM) classification accuracy (ACC) and the area under the ROC curve (AUC) with different RFE parametrizations using RT-qPCR data on the validation set of patients (n=20).

The figure shows that RT-qPCR-based SVM working with 38 validated genes selected in the microarray phase reasonably separates TCMRV and IV samples. The plot shows the association of the area under the ROC curve with the number of validated genes and demonstrates maximal classification accuracy (ACC) and AUC for 10 target genes. Each point represents one ROC curve for a given number of validated genes.



| Gene symbol | Gene Name | PCR FC | Microarray F |
|--------------------|--|---------------|---------------------|
| BCL11B | B-cell CLL/lymphoma 11B | 4.65 | 9.56 |
| BTLA | B and T lymphocyte associated | 5.67 | 9.55 |
| CARD9 | Caspase recruitment domain family member 9 | 2.61 | 5.18 |
| CCL17 | C-C motif chemokine ligand 17 | 11.01 | 30.38 |
| CCR2 | C-C motif chemokine receptor 2 | 3.35 | 10.29 |
| CCR7 | C-C motif chemokine receptor 7 | 6.82 | 15.61 |
| CD19 | CD19 molecule | 6.34 | 6.14 |
| CD2 | CD2 molecule | 6.71 | 8.95 |
| CD3E | CD3e molecule | 4.49 | 5.73 |
| CD4 | CD4 molecule | 4.64 | 5.28 |
| CD40 | CD40 molecule | 2.33 | 4.97 |
| CD79A | CD79a molecule | 5.46 | 6.41 |
| CTLA4 | Cytotoxic T-lymphocyte associated protein 4 | 6.28 | 10.18 |
| CXCL13 | C-X-C motif chemokine ligand 13 | 19.80 | 16.81 |
| FPR2 | Formyl peptide receptor 2 | 2.29 | 9.17 |
| GIMAP5 | GTPase, IMAP family member 5 | 4.06 | 4.10 |
| ICOS | Inducible T-cell costimulatory | 4.04 | 8.11 |
| IKZF1 | IKAROS family zinc finger 1 | 3.20 | 8.75 |
| IL21R | Interleukin 21 receptor | 4.62 | 8.17 |
| IL27RA | Interleukin 27 receptor subunit alpha | 2.51 | 4.23 |
| ITGAL | Integrin subunit alpha L | 4.00 | 7.78 |
| ITK | IL2 inducible T-cell kinase | 4.11 | 8.26 |
| KLRG1 | Killer cell lectin-like receptor G1 | 2.33 | 4.62 |
| LAT | Linker for activation of T-cells | 2.72 | 3.74 |
| LAX1 | Lymphocyte transmembrane adaptor 1 | 3.47 | 5.73 |
| LCK | LCK proto-oncogene, Src family tyrosine kinase | 5.45 | 4.96 |
| LCP2 | Lymphocyte cytosolic protein 2 | 3.61 | 4.16 |
| LTA | Lymphotoxin alpha | 5.55 | 8.18 |
| LTB | Lymphotoxin beta | 5.36 | 12.35 |
| MAP3K8 | Mitogen-activated protein kinase kinase kinase 8 | 1.74 | 3.01 |
| MYD88 | Myeloid differentiation primary response 88 | 1.75 | 2.67 |
| NFKB1 | Nuclear factor kappa B subunit 1 | 1.95 | 2.07 |
| SLA2 | Src-like adaptor 2 | 6.74 | 6.32 |
| SLAMF1 | Signaling lymphocytic activation molecule family member 1 | 4.36 | 24.29 |
| TLR8 | Toll-like receptor 8 | 2.87 | 11.08 |
| TNFRSF4 | TNF receptor superfamily member 4 | 3.48 | 5.63 |
| TNFSF14 | Tumor necrosis factor superfamily member 14 | 2.30 | 6.90 |
| ZAP70 | Zeta chain of T cell receptor associated protein kinase 70 | 4.11 | 10.36 |

Supplement table 1. List of 38 validated genes showing a fold change in gene

expression between TCMRV and eIV for RT-qPCR and the microarray technique.

| Entrez Gene ID | Gene symbol | Gene name | FC | Adjusted p-value (BH) |
|----------------|-------------|---|-------|-----------------------|
| 6504 | SLAMF1 | Signaling lymphocytic activation molecule family member 1 | 24.29 | 3.63E-04 |
| 1231 | CCR2 | Chemokine (C-C motif) receptor 2 | 10.29 | 3.63E-04 |
| 3290 | HSD11B1 | Hydroxysteroid (11-beta) dehydrogenase 1 | 18.27 | 2.90E-03 |
| 959 | CD40LG | CD40 ligand | 12.06 | 2.90E-03 |
| 140947 | C5orf20 | TRAF-interacting protein with forkhead-associated domain, family member B; chromosome 5 open reading frame 20 | 10.60 | 2.90E-03 |
| 120425 | AMICA1 | Adhesion molecule, interacts with CXADR antigen 1 | 6.70 | 3.56E-03 |
| 30818 | KCNIP3 | Kv channel interacting protein 3, calsenilin | 6.38 | 3.56E-03 |
| 221188 | GPR114 | G protein-coupled receptor 114 | 6.24 | 3.56E-03 |
| 7128 | TNFAIP3 | Tumor necrosis factor, alpha-induced protein 3 | 5.10 | 3.56E-03 |
| 91523 | FAM113B | Family with sequence similarity 113, member B | 3.99 | 3.56E-03 |
| 3937 | LCP2 | Lymphocyte cytosolic protein 2 (SH2 domain containing leukocyte protein of 76kDa) | 4.16 | 5.44E-03 |
| 9840 | KIAA0748 | Thymocyte expressed, positive selection associated 1 | 5.81 | 5.48E-03 |
| 1438 | CSF2RA | Colony stimulating factor 2 receptor, alpha, low-affinity (granulocyte-macrophage) | 6.36 | 6.25E-03 |
| 53829 | P2RY13 | Purinergic receptor P2Y, G-protein coupled, 13 | 18.60 | 7.53E-03 |
| 27074 | LAMP3 | Lysosomal-associated membrane protein 3 | 15.53 | 7.53E-03 |
| 643733 | LOC642233 | Hypothetical LOC643733 | 15.43 | 7.53E-03 |
| 1117 | CHI3L2 | Chitinase 3-like 2 | 14.22 | 7.53E-03 |
| 10462 | CLEC10A | C-type lectin domain family 10, member A | 13.61 | 7.53E-03 |
| 2841 | GPR18 | G protein-coupled receptor 18 | 11.16 | 7.53E-03 |
| 644846 | LOC644846 | Hypothetical protein LOC644846 (LOC644846), mRNA. | 9.64 | 7.53E-03 |
| 442535 | LOC442535 | Similar to T-cell receptor gamma chain V region PT-gamma-1/2 precursor (LOC442535), mRNA. | 9.42 | 7.53E-03 |
| 2358 | FPR2 | Formyl peptide receptor 2 | 9.17 | 7.53E-03 |
| 6367 | CCL22 | Chemokine (C-C motif) ligand 22 | 8.72 | 7.53E-03 |
| 164668 | APOBEC3H | Apolipoprotein B mRNA editing enzyme, catalytic polypeptide-like 3H | 8.52 | 7.53E-03 |
| 2219 | FCN1 | Ficolin (collagen/fibrinogen domain containing) 1 | 7.69 | 7.53E-03 |
| 29933 | GPR132 | G protein-coupled receptor 132 | 7.65 | 7.53E-03 |
| 2672 | GFI1 | Growth factor independent 1 transcription repressor | 7.17 | 7.53E-03 |
| 84174 | SLA2 | Src-like adaptor 2 | 6.32 | 7.53E-03 |
| 6252 | RTN1 | Reticulon 1 | 5.56 | 7.53E-03 |
| 11151 | CORO1A | Coronin, actin binding protein, 1A | 5.26 | 7.53E-03 |
| 64386 | MMP25 | Matrix metalloproteinase 25 | 4.81 | 7.53E-03 |
| 81030 | ZBP1 | Z-DNA binding protein 1 | 4.67 | 7.53E-03 |
| 81793 | TLR10 | Toll-like receptor 10 | 4.40 | 7.53E-03 |
| 27040 | LAT | Linker for activation of T cells | 3.74 | 7.53E-03 |
| 79713 | TMEM149 | Transmembrane protein 149 | 3.33 | 7.53E-03 |
| 83593 | RASSF5 | Ras association (RalGDS/AF-6) domain family member 5 | 3.09 | 7.53E-03 |
| 50856 | CLEC4A | C-type lectin domain family 4, member A | 5.82 | 8.35E-03 |
| 497189 | TIFAB | TRAF-interacting protein with forkhead-associated domain, family member B; chromosome 5 open reading frame 20 | 5.31 | 8.35E-03 |
| 1731 | SEPT1 | Septin 1 | 6.93 | 8.89E-03 |

| | | | | |
|-----------|--------------|---|-------|----------|
| 3594 | IL12RB1 | Interleukin 12 receptor, beta 1 | 5.72 | 8.89E-03 |
| 4068 | SH2D1A | SH2 domain protein 1A | 4.56 | 8.89E-03 |
| 960 | CD44 | CD44 molecule (Indian blood group) | 3.32 | 9.08E-03 |
| 917 | CD3G | CD3g molecule, gamma (CD3-TCR complex) | 10.62 | 9.16E-03 |
| 3683 | ITGAL | Integrin, alpha L (antigen CD11A (p180), lymphocyte function-associated antigen 1; alpha polypeptide) | 7.78 | 9.16E-03 |
| 3117 | HLA-DQA1 | Similar to hCG2042724; similar to HLA class II histocompatibility antigen, DQ(1) alpha chain precursor (DC-4 alpha chain); major histocompatibility complex, class II, DQ alpha 1 | 4.46 | 9.16E-03 |
| 240 | ALOX5 | Arachidonate 5-lipoxygenase | 4.72 | 9.19E-03 |
| 117289 | TAGAP | T-cell activation RhoGTPase activating protein | 4.09 | 9.19E-03 |
| 5293 | PIK3CD | Phosphoinositide-3-kinase, catalytic, delta polypeptide | 3.00 | 9.19E-03 |
| 3112 | HLA-DOB | Major histocompatibility complex, class II, DO beta | 5.40 | 9.58E-03 |
| 10538 | BATF | Basic leucine zipper transcription factor, ATF-like | 10.78 | 1.00E-02 |
| 100133678 | LOC100133678 | Similar to hCG2042724; similar to HLA class II histocompatibility antigen, DQ(1) alpha chain precursor (DC-4 alpha chain); major histocompatibility complex, class II, DQ alpha 1 | 4.37 | 1.00E-02 |
| 168537 | GIMAP7 | GTPase, IMAP family member 7 | 3.68 | 1.00E-02 |
| 5696 | PSMB8 | Proteasome (prosome, macropain) subunit, beta type, 8 (large multifunctional peptidase 7) | 3.44 | 1.00E-02 |
| 7409 | VAV1 | Vav 1 guanine nucleotide exchange factor | 3.16 | 1.00E-02 |
| 27334 | P2RY10 | Purinergic receptor P2Y, G-protein coupled, 10 | 7.17 | 1.00E-02 |
| 8698 | S1PR4 | Sphingosine-1-phosphate receptor 4 | 5.83 | 1.00E-02 |
| 7293 | TNFRSF4 | Tumor necrosis factor receptor superfamily, member 4 | 5.63 | 1.01E-02 |
| 4069 | LYZ | Lysozyme (renal amyloidosis) | 4.73 | 1.01E-02 |
| 1178 | CLC | Charcot-Leyden crystal protein | 10.36 | 1.10E-02 |
| 606724 | LOC606724 | Coronin, actin binding protein, 1A pseudogene | 5.59 | 1.10E-02 |
| 5880 | RAC2 | Ras-related C3 botulinum toxin substrate 2 (rho family, small GTP binding protein Rac2) | 4.23 | 1.10E-02 |
| 10320 | IKZF1 | IKAROS family zinc finger 1 (Ikaros) | 8.75 | 1.30E-02 |
| 7535 | ZAP70 | Zeta-chain (TCR) associated protein kinase 70kDa | 10.36 | 1.33E-02 |
| 4332 | MNDA | Myeloid cell nuclear differentiation antigen | 9.68 | 1.33E-02 |
| 151888 | BTLA | B and T lymphocyte associated | 9.55 | 1.33E-02 |
| 9466 | IL27RA | Interleukin 27 receptor, alpha | 4.23 | 1.33E-02 |
| 921 | CD5 | CD5 molecule | 11.32 | 1.36E-02 |
| 51176 | LEF1 | Lymphoid enhancer-binding factor 1 | 4.98 | 1.36E-02 |
| 149628 | PYHIN1 | Pyrin and HIN domain family, member 1 | 4.29 | 1.36E-02 |
| 1437 | CSF2 | Colony stimulating factor 2 (granulocyte-macrophage) | 4.24 | 1.36E-02 |
| 64789 | DEM1 | Defects in morphology 1 homolog (S. cerevisiae) | 3.51 | 1.36E-02 |
| 79958 | DENND1C | DENN/MADD domain containing 1C | 3.16 | 1.36E-02 |
| 7185 | TRAF1 | TNF receptor-associated factor 1 | 3.06 | 1.36E-02 |
| 90874 | ZNF697 | Hypothetical LOC100130667; zinc finger protein 697 | -2.88 | 1.36E-02 |
| 257106 | ARHGAP30 | Rho GTPase activating protein 30 | 5.50 | 1.38E-02 |
| 3560 | IL2RB | Interleukin 2 receptor, beta | 4.48 | 1.42E-02 |
| 3120 | HLA-DQB2 | Major histocompatibility complex, class II, DQ beta 2 | 14.35 | 1.42E-02 |
| 3559 | IL2RA | Interleukin 2 receptor, alpha | 8.31 | 1.42E-02 |
| 4049 | LTA | Lymphotoxin alpha (TNF superfamily, member 1) | 8.18 | 1.42E-02 |
| 4261 | CIITA | Class II, major histocompatibility complex, transactivator | 4.84 | 1.42E-02 |
| 3394 | IRF8 | Interferon regulatory factor 8 | 2.81 | 1.42E-02 |

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|-----------|--------------|---|-------|----------|
| 56829 | ZC3HAV1 | Zinc finger CCCH-type, antiviral 1 | 2.81 | 1.42E-02 |
| 115004 | C6orf150 | Chromosome 6 open reading frame 150 | 5.39 | 1.44E-02 |
| 9938 | ARHGAP25 | Rho GTPase activating protein 25 | 3.75 | 1.44E-02 |
| 100133583 | LOC100133583 | Major histocompatibility complex, class II, DQ beta 1; similar to major histocompatibility complex, class II, DQ beta 1 | 4.80 | 1.47E-02 |
| 100130229 | LOC100130229 | Hypothetical protein LOC100130229 (LOC100130229), mRNA. | 4.00 | 1.47E-02 |
| 51311 | TLR8 | Toll-like receptor 8 | 11.08 | 1.48E-02 |
| 80709 | AKNA | AT-hook transcription factor | 4.89 | 1.48E-02 |
| 143689 | PIWIL4 | Piwi-like 4 (Drosophila) | 2.91 | 1.48E-02 |
| 643 | CXCR5 | Chemokine (C-X-C motif) receptor 5 | 7.98 | 1.51E-02 |
| 9267 | PSCD1 | Cytohesin 1 | 2.64 | 1.51E-02 |
| 645432 | ARRDC5 | Arrestin domain containing 5 | 4.15 | 1.58E-02 |
| 7454 | WAS | Wiskott-Aldrich syndrome (eczema-thrombocytopenia) | 3.95 | 1.58E-02 |
| 11064 | CEP110 | Centrosomal protein 110kDa | 3.20 | 1.58E-02 |
| 5778 | PTPN7 | Protein tyrosine phosphatase, non-receptor type 7 | 3.45 | 1.62E-02 |
| 27163 | NAAA | N-acylethanolamine acid amidase | 3.24 | 1.65E-02 |
| 387763 | LOC387763 | Hypothetical LOC387763 (LOC387763), mRNA. | 2.90 | 1.65E-02 |
| 29851 | ICOS | Inducible T-cell co-stimulator | 8.11 | 1.69E-02 |
| 55423 | SIRPG | Signal-regulatory protein gamma | 7.87 | 1.69E-02 |
| 51316 | PLAC8 | Placenta-specific 8 | 7.33 | 1.69E-02 |
| 64926 | RASAL3 | RAS protein activator-like 3 | 4.96 | 1.69E-02 |
| 5292 | PIM1 | Pim-1 oncogene | 4.66 | 1.69E-02 |
| 7187 | TRAF3 | TNF receptor-associated factor 3 | 3.50 | 1.69E-02 |
| 266747 | RGL4 | Ral guanine nucleotide dissociation stimulator-like 4 | 3.32 | 1.69E-02 |
| 799 | CALCR | Calcitonin receptor | -3.47 | 1.69E-02 |
| 283234 | CCDC88B | Coiled-coil domain containing 88B | 3.53 | 1.69E-02 |
| 50619 | DEF6 | Differentially expressed in FDCP 6 homolog (mouse) | 3.75 | 1.70E-02 |
| 6361 | CCL17 | Chemokine (C-C motif) ligand 17 | 30.38 | 1.71E-02 |
| 64005 | MYO1G | Myosin IG | 4.25 | 1.71E-02 |
| 10225 | CD96 | CD96 molecule | 11.44 | 1.73E-02 |
| 64170 | CARD9 | Caspase recruitment domain family, member 9 | 5.18 | 1.73E-02 |
| 129293 | C2orf89 | Hypothetical protein LOC129293 | 5.39 | 1.75E-02 |
| 387841 | LOC387841 | Similar to ribosomal protein L13a, transcript variant 2 (LOC387841), mRNA | 2.78 | 1.75E-02 |
| 3904 | LAIR2 | Leukocyte-associated immunoglobulin-like receptor 2 | 7.37 | 1.79E-02 |
| 84230 | LRRC8C | Leucine rich repeat containing 8 family, member C | 6.06 | 1.79E-02 |
| 100131967 | LOC100131967 | Misc_RNA (LOC100131967), miscRNA | 5.81 | 1.79E-02 |
| 387751 | GVIN1 | GTPase, very large interferon inducible 1 | 4.52 | 1.79E-02 |
| 79961 | DENND2D | DENN/MADD domain containing 2D | 3.31 | 1.79E-02 |
| 4615 | MYD88 | Myeloid differentiation primary response gene (88) | 2.67 | 1.79E-02 |
| 54900 | LAX1 | Lymphocyte transmembrane adaptor 1 | 5.73 | 1.79E-02 |
| 910 | CD1B | CD1b molecule | 11.91 | 1.80E-02 |
| 50852 | TRAT1 | T cell receptor associated transmembrane adaptor 1 | 5.61 | 1.80E-02 |
| 10346 | TRIM22 | Tripartite motif-containing 22 | 3.78 | 1.80E-02 |

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|--------|-----------|---|-------|----------|
| 2534 | FYN | FYN oncogene related to SRC, FGR, YES | 3.93 | 1.86E-02 |
| 6648 | SOD2 | Superoxide dismutase 2, mitochondrial | 4.43 | 1.89E-02 |
| 10219 | KLRG1 | Killer cell lectin-like receptor subfamily G, member 1 | 4.62 | 1.91E-02 |
| 3932 | LCK | Lymphocyte-specific protein tyrosine kinase | 4.68 | 1.91E-02 |
| 653361 | NCF1 | Neutrophil cytosolic factor 1; neutrophil cytosolic factor 1C pseudogene | 5.81 | 1.94E-02 |
| 80342 | TRAF3IP3 | TRAF3 interacting protein 3 | 7.52 | 1.95E-02 |
| 3431 | SP110 | SP110 nuclear body protein | 2.92 | 1.95E-02 |
| 388325 | C17orf87 | Chromosome 17 open reading frame 87 | 4.55 | 1.96E-02 |
| 114836 | SLAMF6 | SLAM family member 6 | 3.96 | 1.96E-02 |
| 5724 | PTAFR | Platelet-activating factor receptor | 3.90 | 1.96E-02 |
| 3695 | ITGB7 | Integrin, beta 7 | 2.93 | 1.96E-02 |
| 6775 | STAT4 | Signal transducer and activator of transcription 4 | 5.61 | 2.00E-02 |
| 973 | CD79A | CD79a molecule, immunoglobulin-associated alpha | 6.41 | 2.01E-02 |
| 9051 | PSTPIP1 | Proline-serine-threonine phosphatase interacting protein 1 | 7.08 | 2.01E-02 |
| 11322 | TMC6 | Transmembrane channel-like 6 | 2.82 | 2.01E-02 |
| 25797 | QPCT | Glutaminy-peptide cyclotransferase | 2.80 | 2.01E-02 |
| 53347 | UBASH3A | Similar to ubiquitin associated and SH3 domain containing, A; ubiquitin associated and SH3 domain containing, A | 11.49 | 2.03E-02 |
| 5579 | PRKCB1 | Protein kinase C, beta 1 | 4.62 | 2.03E-02 |
| 55897 | MESP1 | Mesoderm posterior 1 homolog (mouse) | -3.09 | 2.03E-02 |
| 2827 | GPR3 | G protein-coupled receptor 3 | -2.09 | 2.08E-02 |
| 11040 | PIM2 | Pim-2 oncogene | 3.26 | 2.09E-02 |
| 1890 | TYMP | Thymidine phosphorylase | 7.48 | 2.10E-02 |
| 11184 | MAP4K1 | Mitogen-activated protein kinase kinase kinase kinase 1 | 8.88 | 2.10E-02 |
| 11182 | SLC2A6 | Solute carrier family 2 (facilitated glucose transporter), member 6 | 7.64 | 2.14E-02 |
| 389386 | LOC389386 | Similar to LAP3 protein | 3.44 | 2.14E-02 |
| 93058 | COQ10A | Coenzyme Q10 homolog A (<i>S. cerevisiae</i>) | 2.68 | 2.17E-02 |
| 8869 | ST3GAL5 | ST3 beta-galactoside alpha-2,3-sialyltransferase 5 | 3.27 | 2.21E-02 |
| 56833 | SLAMF8 | SLAM family member 8 | 6.01 | 2.50E-02 |
| 8740 | TNFSF14 | Tumor necrosis factor (ligand) superfamily, member 14 | 6.90 | 2.58E-02 |
| 26002 | MOXD1 | Monoxygenase, DBH-like 1 | 3.93 | 2.58E-02 |
| 51314 | TXNDC3 | Thioredoxin domain containing 3 (spermatzoa) | 3.13 | 2.62E-02 |
| 64805 | P2RY12 | Purinergic receptor P2Y, G-protein coupled, 12 | 4.53 | 2.63E-02 |
| 60489 | APOBEC3G | Apolipoprotein B mRNA editing enzyme, catalytic polypeptide-like 3G | 5.57 | 2.70E-02 |
| 2533 | FYB | FYN binding protein (FYB-120/130) | 4.03 | 2.70E-02 |
| 6402 | SELL | Selectin L | 8.40 | 2.73E-02 |
| 5791 | PTPRE | Protein tyrosine phosphatase, receptor type, E | 3.76 | 2.75E-02 |
| 930 | CD19 | CD19 molecule | 6.14 | 2.75E-02 |
| 374403 | TBC1D10C | TBC1 domain family, member 10C | 5.78 | 2.76E-02 |
| 1050 | CEBPA | CCAAT/enhancer binding protein (C/EBP), alpha | 2.44 | 2.76E-02 |
| 284612 | SYPL2 | Synaptophysin-like 2 | -5.48 | 2.76E-02 |
| 9363 | RAB33A | RAB33A, member RAS oncogene family | 4.39 | 2.76E-02 |
| 330 | BIRC3 | Baculoviral IAP repeat-containing 3 | 8.79 | 2.77E-02 |

| | | | | |
|--------|-----------|--|-------|----------|
| 7940 | LST1 | Leukocyte-specific transcript 1 | 5.15 | 2.77E-02 |
| 11262 | SP140 | SP140 nuclear body protein | 4.57 | 2.77E-02 |
| 3122 | HLA-DRA | Major histocompatibility complex, class II, DR alpha | 2.46 | 2.77E-02 |
| 79007 | DBNDD1 | Dysbindin (dystrobrevin binding protein 1) domain containing 1 | -2.97 | 2.77E-02 |
| 5649 | RELN | Reelin | -5.51 | 2.77E-02 |
| 197259 | MLKL | Mixed lineage kinase domain-like | 3.10 | 2.79E-02 |
| 3601 | IL15RA | Interleukin 15 receptor, alpha | 6.37 | 2.87E-02 |
| 963 | CD53 | CD53 molecule | 5.00 | 2.87E-02 |
| 474344 | GIMAP6 | GTPase, IMAP family member 6 | 3.53 | 2.96E-02 |
| 5777 | PTPN6 | Protein tyrosine phosphatase, non-receptor type 6 | 3.24 | 2.98E-02 |
| 10673 | TNFSF13B | Tumor necrosis factor (ligand) superfamily, member 13b | 5.58 | 2.99E-02 |
| 3126 | HLA-DRB4 | Major histocompatibility complex, class II, DR beta 4; major histocompatibility complex, class II, DR beta 1 | 3.45 | 2.99E-02 |
| 3561 | IL2RG | Interleukin 2 receptor, gamma (severe combined immunodeficiency) | 3.06 | 3.05E-02 |
| 145864 | HAPLN3 | Hyaluronan and proteoglycan link protein 3 | 8.37 | 3.07E-02 |
| 6279 | S100A8 | S100 calcium binding protein A8 | 5.84 | 3.07E-02 |
| 55303 | GIMAP4 | GTPase, IMAP family member 4 | 2.85 | 3.07E-02 |
| 79037 | PVRIG | Poliovirus receptor related immunoglobulin domain containing | 9.01 | 3.14E-02 |
| 57559 | STAMBPL1 | STAM binding protein-like 1 | 3.51 | 3.14E-02 |
| 27299 | ADAMDEC1 | ADAM-like, decysin 1 | 16.88 | 3.24E-02 |
| 914 | CD2 | CD2 molecule | 8.95 | 3.24E-02 |
| 951 | CD37 | CD37 molecule | 5.97 | 3.24E-02 |
| 162979 | ZNF296 | Zinc finger protein 296 | 2.60 | 3.28E-02 |
| 10385 | BTN2A2 | Butyrophilin, subfamily 2, member A2 | 3.38 | 3.29E-02 |
| 5142 | PDE4B | Phosphodiesterase 4B, cAMP-specific (phosphodiesterase E4 dunce homolog, Drosophila) | 3.79 | 3.31E-02 |
| 339541 | MGC33556 | Chromosome 1 open reading frame 22 | 5.83 | 3.36E-02 |
| 63940 | GPSM3 | G-protein signaling modulator 3 (AGS3-like, C. elegans) | 4.31 | 3.36E-02 |
| 5698 | PSMB9 | Proteasome (prosome, macropain) subunit, beta type, 9 (large multifunctional peptidase 2) | 4.29 | 3.36E-02 |
| 4001 | LMNB1 | Lamin B1 | 5.61 | 3.37E-02 |
| 10261 | IGSF6 | Immunoglobulin superfamily, member 6 | 5.46 | 3.37E-02 |
| 5579 | PRKCB | Protein kinase C, beta | 5.12 | 3.37E-02 |
| 6892 | TAPBP | TAP binding protein (tapasin) | 2.94 | 3.37E-02 |
| 25932 | CLIC4 | Chloride intracellular channel 4 | -2.05 | 3.37E-02 |
| 26027 | ACOT11 | Acyl-CoA thioesterase 11 | -2.67 | 3.37E-02 |
| 2357 | FPR1 | Formyl peptide receptor 1 | 10.27 | 3.43E-02 |
| 10859 | LILRB1 | Leukocyte immunoglobulin-like receptor, subfamily B (with TM and ITIM domains), member 1 | 4.74 | 3.43E-02 |
| 80149 | ZC3H12A | Zinc finger CCCH-type containing 12A | 4.30 | 3.43E-02 |
| 79626 | TNFAIP8L2 | Tumor necrosis factor, alpha-induced protein 8-like 2 | 7.04 | 3.45E-02 |
| 10148 | EBI3 | Epstein-Barr virus induced 3 | 8.95 | 3.52E-02 |
| 3055 | HCK | Hemopoietic cell kinase | 4.79 | 3.52E-02 |
| 9262 | STK17B | Serine/threonine kinase 17b | 4.76 | 3.52E-02 |
| 3115 | HLA-DPB1 | Major histocompatibility complex, class II, DP beta 1 | 4.30 | 3.52E-02 |
| 1235 | CCR6 | Cyclin L2; chemokine (C-C motif) receptor 6 | 4.23 | 3.52E-02 |

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|-----------|--------------|---|-------|----------|
| 55340 | GIMAP5 | GTPase, IMAP family member 5 | 4.10 | 3.52E-02 |
| 6891 | TAP2 | Transporter 2, ATP-binding cassette, sub-family B (MDR/TAP) | 3.94 | 3.52E-02 |
| 3134 | HLA-F | Major histocompatibility complex, class I, F | 3.80 | 3.52E-02 |
| 100129104 | LOC100129104 | Similar to hydroxyproline-rich glycoprotein VSP-3 | 3.40 | 3.52E-02 |
| 201294 | UNC13D | unc-13 homolog D (C. elegans) | 3.38 | 3.52E-02 |
| 55843 | ARHGAP15 | Rho GTPase activating protein 15 | 2.92 | 3.52E-02 |
| 10287 | RGS19 | Regulator of G-protein signaling 19 | 2.76 | 3.52E-02 |
| 63941 | NECAB3 | N-terminal EF-hand calcium binding protein 3 | -3.23 | 3.52E-02 |
| 864 | RUNX3 | Runt-related transcription factor 3 | 3.26 | 3.55E-02 |
| 340061 | TMEM173 | Transmembrane protein 173 | 2.74 | 3.61E-02 |
| 5723 | PSPH | Phosphoserine phosphatase-like; phosphoserine phosphatase | -2.61 | 3.63E-02 |
| 160364 | CLEC12A | C-type lectin domain family 12, member A | 7.21 | 3.63E-02 |
| 924 | CD7 | CD7 molecule | 6.17 | 3.63E-02 |
| 1606 | DGKA | Diacylglycerol kinase, alpha 80kDa | 5.56 | 3.63E-02 |
| 2833 | CXCR3 | Chemokine (C-X-C motif) receptor 3 | 4.54 | 3.63E-02 |
| 4790 | NFKB1 | Nuclear factor of kappa light polypeptide gene enhancer in B-cells 1 | 2.07 | 3.63E-02 |
| 92691 | TMEM169 | Transmembrane protein 169 | -3.04 | 3.63E-02 |
| 154075 | SAMD3 | Sterile alpha motif domain containing 3 | 8.09 | 3.65E-02 |
| 150223 | LOC150223 | Hypothetical protein LOC150223 (LOC150223), transcript variant 2, mRNA. | 3.29 | 3.65E-02 |
| 923 | CD6 | CD6 molecule | 8.17 | 3.65E-02 |
| 4050 | LTB | Lymphotoxin beta (TNF superfamily, member 3) | 12.35 | 3.68E-02 |
| 3111 | HLA-DOA | Major histocompatibility complex, class II, DO alpha | 2.89 | 3.73E-02 |
| 648470 | LOC648470 | Similar to Caspase-4 precursor (CASP-4) (ICH-2 protease) (TX protease) (ICE(rel)-II) (LOC648470), mRNA. | 3.22 | 3.74E-02 |
| 26270 | FBXO6 | F-box protein 6 | 2.74 | 3.79E-02 |
| 155038 | GIMAP8 | GTPase, IMAP family member 8 | 2.98 | 3.79E-02 |
| 199 | AIF1 | Allograft inflammatory factor 1 | 2.92 | 3.79E-02 |
| 50615 | IL21R | Interleukin 21 receptor | 8.17 | 3.81E-02 |
| 57514 | CDGAP | Rho GTPase Activating Protein 31 | 3.79 | 3.82E-02 |
| 9770 | RASSF2 | Ras association (RalGDS/AF-6) domain family member 2 | 3.72 | 3.83E-02 |
| 8556 | CDC14A | CDC14 cell division cycle 14 homolog A (S. cerevisiae) | 3.84 | 3.89E-02 |
| 440836 | ODF3B | Outer dense fiber of sperm tails 3B | 2.72 | 3.89E-02 |
| 202309 | GAPT | GRB2-binding adaptor protein, transmembrane | 4.12 | 3.89E-02 |
| 51735 | RAPGEF6 | Rap guanine nucleotide exchange factor (GEF) 6 | 2.43 | 3.89E-02 |
| 8718 | TNFRSF25 | Tumor necrosis factor receptor superfamily, member 25 | 4.10 | 3.90E-02 |
| 11118 | BTN3A2 | Butyrophilin, subfamily 3, member A2 | 3.47 | 3.92E-02 |
| 643866 | CBLN3 | Cerebellin 3 precursor | 3.22 | 3.92E-02 |
| 10563 | CXCL13 | Chemokine (C-X-C motif) ligand 13 | 16.81 | 4.03E-02 |
| 3702 | ITK | IL2-inducible T-cell kinase | 8.26 | 4.03E-02 |
| 51738 | GHRL | Ghrelin/obestatin prepropeptide | 6.54 | 4.03E-02 |
| 920 | CD4 | CD4 molecule | 5.28 | 4.03E-02 |
| 6280 | S100A9 | S100 calcium-binding protein A9 | 4.67 | 4.03E-02 |
| 55016 | MARCH1 | Membrane-associated ring finger (C3HC4) 1 | 4.61 | 4.03E-02 |

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|--------|-----------|--|-------|----------|
| 653820 | LOC653820 | Similar to family with sequence similarity 72, member A, transcript variant 1 (LOC653820), mRNA. | 3.04 | 4.03E-02 |
| 976 | CD97 | CD97 molecule | 2.96 | 4.03E-02 |
| 391 | RHOG | ras homolog gene family, member G (rho G) | 2.55 | 4.03E-02 |
| 80063 | ATF7IP2 | Activating transcription factor 7 interacting protein 2 | 2.02 | 4.03E-02 |
| 23413 | FREQ | Neuronal Calcium Sensor 1 | -3.20 | 4.03E-02 |
| 958 | CD40 | CD40 molecule, TNF receptor superfamily member 5 | 4.97 | 4.07E-02 |
| 8807 | IL18RAP | Interleukin 18 receptor accessory protein | 4.92 | 4.07E-02 |
| 6920 | TCEA3 | Transcription elongation factor A (SII), 3 | -2.36 | 4.07E-02 |
| 134 | ADORA1 | Adenosine A1 receptor | -2.35 | 4.08E-02 |
| 2593 | GAMT | Guanidinoacetate N-methyltransferase | -2.89 | 4.09E-02 |
| 54149 | C21orf91 | Chromosome 21 open reading frame 91 | 2.14 | 4.11E-02 |
| 29125 | C11orf21 | Chromosome 11 open reading frame 21 | 3.39 | 4.12E-02 |
| 1043 | CD52 | CD52 molecule | 4.36 | 4.18E-02 |
| 730415 | LOC730415 | Hypothetical LOC730415, transcript variant 2 (LOC730415), mRNA. | 3.08 | 4.18E-02 |
| 116154 | PHACTR3 | Phosphatase and actin regulator 3 | -4.50 | 4.18E-02 |
| 2323 | FLT3LG | fms-related tyrosine kinase 3 ligand | 4.20 | 4.19E-02 |
| 9535 | GMFG | Glia maturation factor, gamma | 2.71 | 4.19E-02 |
| 5699 | PSMB10 | Proteasome (prosome, macropain) subunit, beta type, 10 | 2.33 | 4.30E-02 |
| 170954 | KIAA1949 | Phostensin | 3.70 | 4.34E-02 |
| 962 | CD48 | CD48 molecule | 4.79 | 4.44E-02 |
| 5771 | PTPN2 | Protein tyrosine phosphatase, non-receptor type 2 | 3.31 | 4.48E-02 |
| 9404 | LPXN | Leupaxin | 2.77 | 4.48E-02 |
| 5168 | ENPP2 | Ectonucleotide pyrophosphatase/phosphodiesterase 2 | 2.35 | 4.56E-02 |
| 80714 | PBX4 | Pre-B-cell leukemia homeobox 4 | 4.38 | 4.56E-02 |
| 4791 | NFKB2 | Nuclear factor of kappa light polypeptide gene enhancer in B-cells 2 (p49/p100) | 2.88 | 4.61E-02 |
| 7052 | TGM2 | Transglutaminase 2 (C polypeptide, protein-glutamine-gamma-glutamyltransferase) | 2.84 | 4.67E-02 |
| 259307 | IL41 | Interleukin 4 induced 1 | 7.97 | 4.69E-02 |
| 64333 | ARHGAP9 | Rho GTPase activating protein 9 | 6.68 | 4.69E-02 |
| 8651 | SOCS1 | Suppressor of cytokine signaling 1 | 3.16 | 4.69E-02 |
| 1493 | CTLA4 | Cytotoxic T-lymphocyte-associated protein 4 | 10.18 | 4.71E-02 |
| 2634 | GBP2 | Guanylate binding protein 2, interferon-inducible | 2.82 | 4.71E-02 |
| 10068 | IL18BP | Interleukin 18 binding protein | 3.94 | 4.72E-02 |
| 9744 | ACAP1 | ArfGAP with coiled-coil, ankyrin repeat and PH domains 1 | 7.54 | 4.75E-02 |
| 23616 | SH3BP1 | SH3-domain binding protein 1 | 5.60 | 4.75E-02 |
| 9934 | P2RY14 | Purinergic receptor P2Y, G-protein coupled, 14 | 4.86 | 4.75E-02 |
| 114614 | MIR155HG | microRNA host gene 2 (non-protein coding); microRNA 155 | 4.46 | 4.75E-02 |
| 10870 | HCST | Hematopoietic cell signal transducer | 3.68 | 4.75E-02 |
| 57121 | LPAR5 | Lysophosphatidic acid receptor 5 | 2.16 | 4.75E-02 |
| 23089 | PEG10 | Paternally expressed 10 | -4.70 | 4.75E-02 |
| 118932 | ANKRD22 | Ankyrin repeat domain 22 | 13.23 | 4.78E-02 |
| 1326 | MAP3K8 | Mitogen-activated protein kinase kinase kinase 8 | 3.01 | 4.78E-02 |
| 9246 | UBE2L6 | Ubiquitin-conjugating enzyme E2L 6 | 2.91 | 4.81E-02 |

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|--------|-----------|---|-------|----------|
| 8322 | FZD4 | Frizzled homolog 4 (Drosophila) | -2.03 | 4.82E-02 |
| 10077 | TSPAN32 | Tetraspanin 32 | 5.55 | 4.82E-02 |
| 3045 | HBD | Hemoglobin, delta | 3.32 | 4.82E-02 |
| 201799 | TMEM154 | Transmembrane protein 154 | 2.58 | 4.82E-02 |
| 26191 | PTPN22 | Protein tyrosine phosphatase, non-receptor type 22 (lymphoid) | 3.54 | 4.84E-02 |
| 54435 | HCG4 | HLA complex group 4 | 2.56 | 4.89E-02 |
| 10166 | SLC25A15 | Solute carrier family 25 (mitochondrial carrier; ornithine transporter) member 15 | -3.40 | 4.89E-02 |
| 387357 | C6orf190 | Thymocyte Selection Associated | 6.91 | 4.92E-02 |
| 197358 | NLRC3 | NLR family, CARD domain containing 3 | 3.66 | 4.92E-02 |
| 653907 | LOC653907 | Similar to complement receptor related protein isoform 1 (LOC653907), mRNA. | 3.60 | 4.92E-02 |
| 10695 | CNPY3 | Canopy 3 homolog (zebrafish) | 2.22 | 4.92E-02 |
| 79822 | ARHGAP28 | Rho GTPase activating protein 28 | -6.72 | 4.93E-02 |
| 1236 | CCR7 | Chemokine (C-C motif) receptor 7 | 15.61 | 4.95E-02 |
| 64919 | BCL11B | B-cell CLL/lymphoma 11B (zinc finger protein) | 9.56 | 4.95E-02 |
| 4689 | NCF4 | Neutrophil cytosolic factor 4, 40kDa | 6.47 | 4.95E-02 |
| 728650 | LOC728650 | Hypothetical LOC728650 | 5.96 | 4.95E-02 |
| 916 | CD3E | CD3e molecule, epsilon (CD3-TCR complex) | 5.73 | 4.95E-02 |
| 3113 | HLA-DPA1 | Major histocompatibility complex, class II, DP alpha 1 | 2.93 | 4.95E-02 |
| 29970 | SCHIP1 | Schwannomin interacting protein 1 | -2.35 | 4.95E-02 |

Supplement table 2. List of 310 deregulated genes in early T cell-mediated vascular rejection vs. early isolated v-lesion. BH; Benjamini-Hochberg

Genes down-regulated in eIV vs. normal

| Entrez Gene ID | Gene symbol | Gene name | FC | Adjusted p-value (BH) |
|----------------|-------------|--|------|-----------------------|
| 4926 | NUMA1 | nuclear mitotic apparatus protein 1 | 2.17 | 2.21E-02 |
| 2687 | GGT5 | gamma-glutamyltransferase 5 | 2.84 | 2.69E-02 |
| 9481 | SLC25A27 | solute carrier family 25 member 27 | 3.93 | 2.69E-02 |
| 2669 | GEM | GTP binding protein overexpressed in skeletal muscle | 3.73 | 3.01E-02 |
| 1195 | CLK1 | CDC like kinase 1 | 2.01 | 3.01E-02 |
| 151126 | ZNF385B | zinc finger protein 385B | 2.93 | 3.01E-02 |
| 3486 | IGFBP3 | insulin-like growth factor-binding protein 3 | 3.01 | 3.01E-02 |
| 651845 | LOC651845 | similar to HLA class II histocompatibility antigen | 3.07 | 3.82E-02 |
| 6844 | VAMP2 | vesicle associated membrane protein 2 | 2.86 | 3.82E-02 |
| 55904 | MLL5 | Myeloid/Lymphoid or Mixed-Lineage Leukemia 5 | 2.92 | 3.82E-02 |
| 7569 | ZNF182 | zinc finger protein 182 | 2.18 | 4.06E-02 |
| 7637 | ZNF84 | zinc finger protein 84 | 2.10 | 4.06E-02 |
| 28968 | SLC6A16 | solute carrier family 6 member 16 | 3.08 | 4.06E-02 |
| 8470 | SORBS2 | sorbin and SH3 domain containing 2 | 2.14 | 4.52E-02 |
| 10826 | C5orf4 | fatty acid hydroxylase domain containing 2 | 3.39 | 4.57E-02 |
| 5930 | RBBP6 | RB binding protein 6, ubiquitin ligase | 2.07 | 4.63E-02 |
| 4638 | MYLK | myosin light chain kinase | 2.49 | 4.63E-02 |
| 9630 | GNA14 | G protein subunit alpha 14 | 2.56 | 4.63E-02 |
| 3486 | IGFBP3 | insulin like growth factor binding protein 3 | 2.70 | 4.71E-02 |
| 283337 | ZNF740 | zinc finger protein 740 | 2.46 | 4.71E-02 |
| 126669 | SHE | Src homology 2 domain containing E | 2.49 | 4.90E-02 |
| 757 | TMEM50B | transmembrane protein 50B | 3.24 | 4.90E-02 |

Genes up-regulated in eIV vs. normal

| Entrez Gene ID | Gene symbol | Gene name | FC | Adjusted p-value (BH) |
|----------------|-------------|---|------|-----------------------|
| 26834 | RNU4-2 | RNA, U4 small nuclear 2 | 7.62 | 5.9E-3 |
| 6084 | RNY1 | RNA, Ro-Associated Y1 | 4.32 | 6.1E-3 |
| 692213 | SNORD110 | small nucleolar RNA, C/D Box 110 | 5.25 | 9.4E-3 |
| 26869 | RNU1-3 | RNA, U1 small nuclear 3 | 4.23 | 12.7E-3 |
| 677833 | SNORA54 | small nucleolar RNA, H/ACA Box 54 | 7.35 | 21.6E-3 |
| 26864 | RNU1G2 | RNA, U1 small nuclear 4 | 4.10 | 21.6E-3 |
| 100169760 | RN5S9 | RNA, 5S Ribosomal 9 | 6.17 | 21.6E-3 |
| 652965 | SNORA48 | small nucleolar RNA, H/ACA box 48 | 4.80 | 21.6E-3 |
| 26818 | SNORD33 | small nucleolar RNA, C/D Box 33 | 7.26 | 22.1E-3 |
| 26863 | RNU1-5 | RNA, U1 small nuclear 5 | 3.81 | 30.1E-3 |
| 64793 | CCDC21 | coiled-coil domain containing 21 | 2.79 | 30.1E-3 |
| 51077 | FCF1 | FCF1 small subunit (SSU) processome component homolog | 2.61 | 30.1E-3 |
| 1984 | EIF5A | eukaryotic translation initiation factor 5A; eukaryotic translation initiation factor 5A-like 1 | 2.42 | 30.1E-3 |

| | | | | |
|-----------|-----------|---|------|---------|
| 26866 | RNU1F1 | RNA, U1 small nuclear 4 | 5.07 | 30.1E-3 |
| 135154 | C6orf57 | chromosome 6 open reading frame 57 | 2.45 | 30.1E-3 |
| 642393 | LOC642393 | similar to mitochondrial ribosomal protein L20; mitochondrial ribosomal protein L20 | 5.39 | 30.1E-3 |
| 677815 | SNORA34 | small nucleolar RNA, H/ACA Box 2C | 4.02 | 38.2E-3 |
| 100151683 | RNU4ATAC | small nuclear RNA U4atac (U12-Dependent Splicing) | 3.48 | 40.2E-3 |
| 85019 | C18orf45 | chromosome 18 open reading frame 45 | 3.49 | 40.6E-3 |
| 9219 | MTA2 | metastasis associated 1 family, member 2 | 2.04 | 40.6E-3 |
| 6159 | RPL29 | ribosomal protein L29 pseudogene 9 | 6.28 | 40.6E-3 |
| 124222 | PAQR4 | progesterin and adipoQ receptor family member IV | 2.90 | 40.6E-3 |
| 652826 | LOC652826 | similar to 26S protease regulatory subunit 6B (MIP224) | 3.41 | 40.6E-3 |
| 83544 | DNAL1 | dynein, axonemal, light chain 1 | 2.20 | 40.6E-3 |
| 677800 | SNORA12 | small nucleolar RNA, H/ACA Box 12 | 5.04 | 45.7E-3 |
| 92691 | TMEM169 | transmembrane protein 169 | 2.17 | 46.3E-3 |
| 79751 | SLC25A22 | solute carrier family 25 (mitochondrial carrier: glutamate), member 22 | 2.27 | 46.3E-3 |
| 9275 | BCL7B | B-cell CLL/lymphoma 7B | 2.29 | 46.3E-3 |

Supplement table 3. List of 22 down-regulated and 28 up-regulated genes in eIV vs. normal. BH; Benjamini-Hochberg

| | Term | Count | Adjusted p-value (BH) |
|------------|---|--------------|------------------------------|
| GO:000695 | Immune response | 197 | 2.61E-36 |
| GO:0006952 | Defense response | 155 | 1.45E-21 |
| GO:0006954 | Inflammatory response | 97 | 5.37E-18 |
| GO:0009611 | Response to wounding | 131 | 2.88E-17 |
| GO:0002684 | Positive regulation of immune system process | 77 | 3.20E-16 |
| GO:0050778 | Positive regulation of immune response | 51 | 1.36E-11 |
| GO:0001775 | Cell activation | 77 | 2.91E-11 |
| GO:0048584 | Positive regulation of response to stimulus | 66 | 2.55E-10 |
| GO:0045321 | Leukocyte activation | 67 | 2.47E-10 |
| GO:0051249 | Regulation of lymphocyte activation | 49 | 3.73E-10 |
| GO:0050865 | Regulation of cell activation | 53 | 1.76E-09 |
| GO:0002694 | Regulation of leukocyte activation | 51 | 2.38E-09 |
| GO:0042110 | T cell activation | 43 | 2.78E-09 |
| GO:0006935 | Chemotaxis | 49 | 6.31E-09 |
| GO:0042330 | Taxis | 49 | 6.31E-09 |
| GO:0046649 | Lymphocyte activation | 56 | 7.41E-09 |
| GO:0002443 | Leukocyte mediated immunity | 33 | 2.68E-08 |
| GO:0002460 | Adaptive immune response based on somatic recombination of immune receptors built from immunoglobulin superfamily domains | 31 | 2.55E-08 |
| GO:0002250 | Adaptive immune response | 31 | 2.55E-08 |
| GO:0050863 | Regulation of T cell activation | 39 | 4.68E-08 |
| GO:0002252 | Immune effector process | 42 | 6.89E-08 |
| GO:0002253 | Activation of immune response | 34 | 6.58E-08 |
| GO:0002764 | Immune response-regulating signal transduction | 25 | 1.52E-07 |
| GO:0007067 | Mitosis | 56 | 3.06E-07 |
| GO:0000280 | Nuclear division | 56 | 3.06E-07 |
| GO:0051301 | Cell division | 68 | 3.93E-07 |
| GO:0001817 | Regulation of cytokine production | 49 | 3.86E-07 |
| GO:0000087 | M phase of mitotic cell cycle | 56 | 5.44E-07 |
| GO:0000278 | Mitotic cell cycle | 79 | 6.39E-07 |
| GO:0002757 | Immune response-activating signal transduction | 23 | 8.09E-07 |
| GO:0002449 | Lymphocyte mediated immunity | 27 | 9.03E-07 |
| GO:0048285 | Organelle fission | 56 | 1.09E-06 |
| GO:0050867 | Positive regulation of cell activation | 35 | 1.37E-06 |
| GO:0051251 | Positive regulation of lymphocyte activation | 32 | 1.93E-06 |
| GO:0046651 | Lymphocyte proliferation | 20 | 1.99E-06 |
| GO:0007049 | Cell cycle | 135 | 1.98E-06 |
| GO:0002819 | Regulation of adaptive immune response | 23 | 3.32E-06 |
| GO:0001819 | Positive regulation of cytokine production | 30 | 4.06E-06 |
| GO:0032943 | Mononuclear cell proliferation | 20 | 4.51E-06 |
| GO:0070661 | Leukocyte proliferation | 20 | 4.51E-06 |
| GO:0002696 | Positive regulation of leukocyte activation | 33 | 4.42E-06 |
| GO:0050870 | Positive regulation of T cell activation | 27 | 4.81E-06 |
| GO:0022402 | Cell cycle process | 104 | 5.54E-06 |
| GO:0046635 | Positive regulation of alpha-beta T cell activation | 15 | 8.08E-06 |
| GO:0009615 | Response to virus | 33 | 8.28E-06 |

| | | | |
|------------|---|----|----------|
| GO:0002822 | Regulation of adaptive immune response based on somatic recombination of immune receptors built from immunoglobulin superfamily domains | 22 | 9.95E-06 |
| GO:0002768 | Immune response-regulating cell surface receptor signaling pathway | 19 | 9.93E-06 |
| GO:0045087 | Innate immune response | 38 | 1.06E-05 |
| GO:0042098 | T cell proliferation | 15 | 1.34E-05 |
| GO:0006968 | Cellular defense response | 23 | 1.48E-05 |

Supplement Table 4. Top 50 GO terms for the biological process enriched in TCMRV versus control group

The genes with different expression in TCMRV and control group after multiple comparisons (n=1966) were entered into the David gene ontology database. Top 50 out of 239 GO terms for the biological process are shown. BH; Benjamini-Hochberg

| Entrez Gene ID | Gene symbol | Gene name |
|----------------|-------------|---|
| 9275 | BCL7B | B-cell CLL/lymphoma 7B |
| 10826 | C5orf4 | chromosome 5 open reading frame 4 |
| 135154 | C6orf57 | chromosome 6 open reading frame 57 |
| 64793 | CCDC21 | coiled-coil domain containing 21 |
| 1984 | EIF5A | eukaryotic translation initiation factor 5A |
| 51077 | FCF1 | FCF1 small subunit (SSU) processome component homolog |
| 642393 | LOC642393 | similar to mitochondrial ribosomal protein L20 |
| 652826 | LOC652826 | similar to 26S protease regulatory subunit 6B (MIP224) (MB67-interacting protein) (TAT-binding protein 7) (TBP-7) |
| 9219 | MTA2 | metastasis associated 1 family, member 2 |
| 4638 | MYLK | myosin light chain kinase |
| 124222 | PAQR4 | progesterin and adipoQ receptor family member IV |
| 100169760 | RN5S9 | RNA, 5S Ribosomal 9 |
| 26869 | RNU1-3 | RNA, U1 Small Nuclear 3 |
| 26863 | RNU1-5 | RNA, U1 Small Nuclear 5 |
| 26866 | RNU1F1 | RNA, U1 Small Nuclear 4 |
| 26864 | RNU1G2 | RNA, U1G2 Small Nuclear |
| 26834 | RNU4-2 | RNA, U4 Small Nuclear 2 |
| 6084 | RNY1 | RNA, Ro-Associated Y1 |
| 6159 | RPL29 | ribosomal protein L29 pseudogene 9 |
| 79751 | SLC25A22 | solute carrier family 25 (mitochondrial carrier: glutamate), member 22 |
| 9481 | SLC25A27 | solute carrier family 25, member 27 |
| 28968 | SLC6A16 | solute carrier family 6, member 16 |
| 677800 | SNORA12 | small nucleolar RNA, H/ACA Box 12 |
| 677815 | SNORA34 | small nucleolar RNA, H/ACA Box 34 |
| 652965 | SNORA48 | small nucleolar RNA, H/ACA box 48 |
| 677833 | SNORA54 | small nucleolar RNA, H/ACA Box 54 |
| 692213 | SNORD110 | small nucleolar RNA, C/D Box 110 |
| 26818 | SNORD33 | small nucleolar RNA, C/D Box 33 |
| 757 | TMEM50B | transmembrane protein 50B |
| 6844 | VAMP2 | vesicle-associated membrane protein 2 (synaptobrevin 2) |
| 151126 | ZNF385B | zinc finger protein 385B |
| 283337 | ZNF740 | zinc finger protein 740 |
| 7637 | ZNF84 | zinc finger protein 84 |

Supplement table 5. The list of 33 genes shared between comparisons of TCMRV vs. normal and eIV vs. normal.