

Figure S1. GO analysis of genes in glioblastoma cases that showed positive and negative correlations with TCIRG1 in the GSE16011 cohort. (A-C) GO-BP, GO-CC and GO-MF terms of genes that showed positive correlations with TCIRG1, respectively. (D-F) GO-BP, GO-CC and GO-MF terms of genes that showed negative correlations with TCIRG1. Red nodes represent gene counts, and black bars represent negative  $\log_{10}$  P-values. TCIRG1, T cell immune regulator 1; GO, Gene Ontology; BP, biological process; CC, cellular component; MF, molecular function.

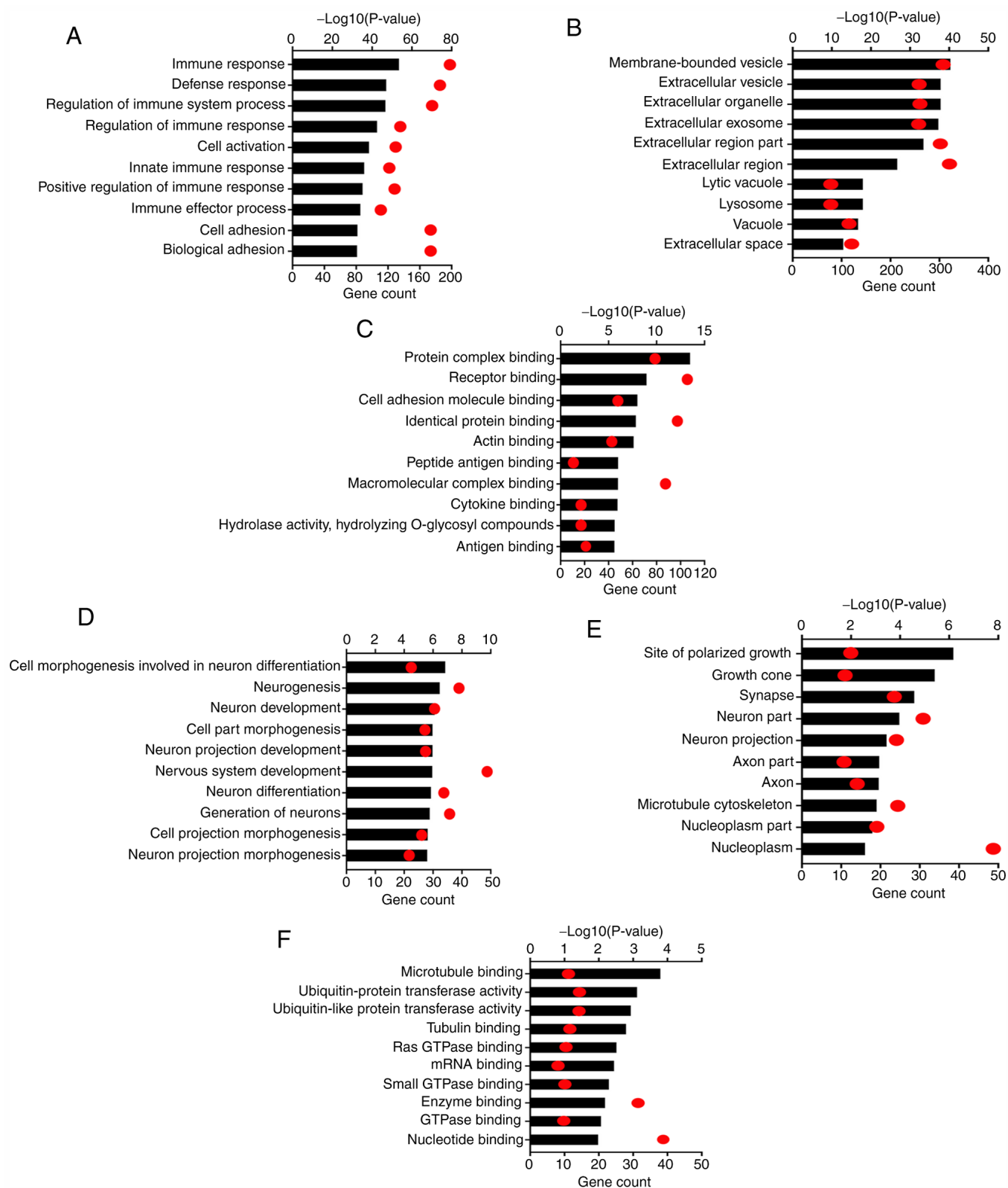


Table SI. Genes correlated with T cell immune regulator 1.

| Gene     | Name                                                                                        | Pearson's r |
|----------|---------------------------------------------------------------------------------------------|-------------|
| ARPC1B   | Actin-related protein 2/3 complex subunit 1B                                                | 0.756       |
| IL4R     | Interleukin 4 receptor                                                                      | 0.695       |
| PLAUR    | Plasminogen activator, urokinase receptor                                                   | 0.693       |
| IFI30    | IFI30, lysosomal thiol reductase                                                            | 0.675       |
| TNFAIP3  | TNF $\alpha$ -induced protein 3                                                             | 0.675       |
| RBM47    | RNA binding motif protein 47                                                                | 0.666       |
| TYMP     | Thymidine phosphorylase                                                                     | 0.665       |
| CEBPB    | CCAAT/enhancer binding protein $\beta$                                                      | 0.663       |
| MVP      | Major vault protein                                                                         | 0.660       |
| BCL3     | B-cell CLL/lymphoma 3                                                                       | 0.657       |
| LILRB3   | Leukocyte immunoglobulin-like receptor B3                                                   | 0.656       |
| ELF4     | E74 like ETS transcription factor 4                                                         | 0.652       |
| ITGA5    | Integrin subunit $\alpha$ 5                                                                 | 0.651       |
| SLAMF8   | SLAM family member 8                                                                        | 0.647       |
| PTPN6    | Protein tyrosine phosphatase, non-receptor type 6                                           | 0.641       |
| RAB27A   | RAB27A, member RAS oncogene family                                                          | 0.64        |
| S100A11  | S100 calcium binding protein A11                                                            | 0.639       |
| CAST     | Calpastatin                                                                                 | 0.638       |
| EHBP1L1  | EH domain-binding protein 1-like 1                                                          | 0.638       |
| LILRB2   | Leukocyte immunoglobulin-like receptor B2                                                   | 0.629       |
| ALDH3B1  | Aldehyde dehydrogenase 3 family member B1                                                   | 0.626       |
| GNA15    | G protein subunit $\alpha$ 15                                                               | 0.626       |
| IL1R1    | Interleukin 1 receptor type 1                                                               | 0.623       |
| NOD2     | Nucleotide binding oligomerization domain-containing 2                                      | 0.622       |
| RAC2     | Ras-related C3 botulinum toxin substrate 2 ( $\rho$ family, small GTP-binding protein Rac2) | 0.621       |
| HK3      | Hexokinase 3                                                                                | 0.620       |
| LRRFIP1  | LRR-binding FLII-interacting protein 1                                                      | 0.620       |
| TRADD    | TNFRSF1A-associated via death domain                                                        | 0.620       |
| IER3     | Immediate early response 3                                                                  | 0.619       |
| GRN      | Granulin                                                                                    | 0.618       |
| IQGAP1   | IQ motif containing GTPase activating protein 1                                             | 0.617       |
| HEXB     | Hexosaminidase subunit $\beta$                                                              | 0.615       |
| VDR      | Vitamin D (1,25-dihydroxyvitamin D3) receptor                                               | 0.613       |
| CCR5     | C-C motif chemokine receptor 5 (gene/pseudogene)                                            | 0.612       |
| MAN2B1   | Mannosidase $\alpha$ class 2B member 1                                                      | 0.609       |
| C5AR1    | Complement component 5a receptor 1                                                          | 0.608       |
| SQRDL    | Sulfide quinone reductase-like (yeast)                                                      | 0.607       |
| TNFRSF1B | TNF receptor superfamily member 1B                                                          | 0.607       |
| SHC1     | SHC adaptor protein 1                                                                       | 0.605       |
| LTBP2    | Latent transforming growth factor $\beta$ -binding protein 2                                | 0.602       |
| TNFAIP2  | TNF $\alpha$ -induced protein 2                                                             | 0.602       |
| CLIC1    | Chloride intracellular channel 1                                                            | 0.601       |
| ITGAM    | Integrin subunit $\alpha$ M                                                                 | 0.599       |
| SLC11A1  | Solute carrier family 11 member 1                                                           | 0.599       |
| WAS      | Wiskott-Aldrich syndrome                                                                    | 0.599       |
| TNFSF13  | TNF superfamily member 13                                                                   | 0.598       |
| MYO1F    | Myosin IF                                                                                   | 0.596       |
| TNFAIP8  | TNF $\alpha$ -induced protein 8                                                             | 0.593       |
| TNFRSF14 | TNF receptor superfamily member 14                                                          | 0.592       |
| CASP4    | Caspase 4                                                                                   | 0.590       |
| FHOD1    | Formin homology 2 domain-containing 1                                                       | 0.590       |
| NAGA     | A-N-acetylgalactosaminidase                                                                 | 0.589       |
| TRIM38   | Tripartite motif-containing 38                                                              | 0.587       |
| ANXA2    | Annexin A2                                                                                  | 0.586       |
| DRAM1    | DNA damage regulated autophagy modulator 1                                                  | 0.585       |
| NOD1     | Nucleotide-binding oligomerization domain Containing 1                                      | 0.585       |
| SLC12A7  | Solute carrier family 12 member 7                                                           | 0.585       |
| TGFBI    | Transforming growth factor $\beta$ induced                                                  | 0.585       |
| CYTIP    | Cytohesin 1 interacting protein                                                             | 0.584       |

Table SI. Continued.

| Gene     | Name                                                                                 | Pearson's r |
|----------|--------------------------------------------------------------------------------------|-------------|
| STAT6    | Signal transducer and activator of transcription 6                                   | 0.580       |
| RHBDF2   | Rhomboid 5 homolog 2                                                                 | 0.578       |
| NCKAP1L  | NCK-associated protein 1 like                                                        | 0.576       |
| AIM1     | Absent in melanoma 1                                                                 | 0.574       |
| NPC2     | NPC intracellular cholesterol transporter 2                                          | 0.574       |
| STXBP2   | Syntaxin binding protein 2                                                           | 0.574       |
| LMNA     | Lamin A/C                                                                            | 0.573       |
| S100A4   | S100 calcium binding protein A4                                                      | 0.573       |
| FXYD5    | FXYD domain containing ion transport regulator 5                                     | 0.572       |
| PIK3CD   | Phosphatidylinositol-4,5-bisphosphate 3-kinase catalytic subunit $\delta$            | 0.572       |
| THEMIS2  | Thymocyte selection associated family member 2                                       | 0.572       |
| AQP9     | Aquaporin 9                                                                          | 0.571       |
| ICAM1    | Intercellular adhesion molecule 1                                                    | 0.571       |
| IL15RA   | Interleukin 15 receptor subunit $\alpha$                                             | 0.571       |
| IL7R     | Interleukin 7 receptor                                                               | 0.571       |
| CD68     | CD68 molecule                                                                        | 0.570       |
| FGR      | FGR proto-oncogene, Src family tyrosine kinase                                       | 0.570       |
| THBD     | Thrombomodulin                                                                       | 0.570       |
| SIPA1    | Signal-induced proliferation-associated 1                                            | 0.569       |
| CAPG     | Capping actin protein, gelsolin-like                                                 | 0.568       |
| FCGR2B   | Fc fragment of IGG receptor IIB                                                      | 0.568       |
| PLK3     | Polo-like kinase 3                                                                   | 0.566       |
| MYO1C    | Myosin IC                                                                            | 0.565       |
| TIMP1    | TIMP metalloproteinase inhibitor 1                                                   | 0.564       |
| DNASE1L1 | Deoxyribonuclease I-like 1                                                           | 0.563       |
| ESYT1    | Extended synaptotagmin 1                                                             | 0.563       |
| SLC7A7   | Solute carrier family 7 member 7                                                     | 0.563       |
| TNFRSF1A | TNF receptor superfamily member 1A                                                   | 0.563       |
| LHFPL2   | Lipoma HMGIC fusion partner-like 2                                                   | 0.562       |
| ANPEP    | Alanyl aminopeptidase, membrane                                                      | 0.561       |
| CCR1     | C-C motif chemokine receptor 1                                                       | 0.561       |
| C1R      | Complement C1r subcomponent                                                          | 0.560       |
| NCF2     | Neutrophil cytosolic factor 2                                                        | 0.560       |
| ANXA11   | Annexin A11                                                                          | 0.559       |
| ADAM8    | ADAM metalloproteinase domain 8                                                      | 0.558       |
| DENND2D  | DENN domain containing 2D                                                            | 0.558       |
| FMNL1    | Formin-like 1                                                                        | 0.558       |
| FNDC3B   | Fibronectin type III domain containing 3B                                            | 0.558       |
| MGAT1    | Mannosyl ( $\alpha$ -1,3-)-glycoprotein $\beta$ -1,2-N-acetylglucosaminyltransferase | 0.558       |
| RAB20    | RAB20, member RAS oncogene family                                                    | 0.558       |
| CALHM2   | Calcium homeostasis modulator 2                                                      | 0.557       |
| CSTA     | Cystatin A                                                                           | 0.557       |
| SP100    | SP100 nuclear antigen                                                                | 0.557       |
| BATF     | Basic leucine zipper ATF-like transcription factor                                   | 0.556       |
| MMP19    | Matrix metalloproteinase 19                                                          | 0.556       |
| POLD4    | DNA polymerase $\delta$ 4, accessory subunit                                         | 0.556       |
| RRAS     | Related RAS viral (r-ras) oncogene homolog                                           | 0.556       |
| DENND1C  | DENN domain containing 1C                                                            | 0.555       |
| PLBD1    | Phospholipase B domain containing 1                                                  | 0.555       |
| COL6A3   | Collagen type VI $\alpha$ 3 chain                                                    | 0.553       |
| LAIR1    | Leukocyte-associated immunoglobulin like receptor 1                                  | 0.553       |
| P4HA2    | Prolyl 4-hydroxylase subunit $\alpha$ 2                                              | 0.552       |
| PLCG2    | Phospholipase C gamma 2                                                              | 0.552       |
| C2       | Complement component 2                                                               | 0.551       |
| IL10RA   | Interleukin 10 receptor subunit $\alpha$                                             | 0.550       |
| MFSD1    | Major facilitator superfamily domain containing 1                                    | 0.550       |
| CTSC     | Cathepsin C                                                                          | 0.549       |
| RHOG     | Ras homolog family member G                                                          | 0.548       |
| SLC15A3  | Solute carrier family 15 member 3                                                    | 0.548       |

Table SI. Continued.

| Gene     | Name                                                        | Pearson's r |
|----------|-------------------------------------------------------------|-------------|
| ARHGAP4  | Rho gtpase activating protein 4                             | 0.547       |
| TREM1    | Triggering receptor expressed on myeloid cells 1            | 0.547       |
| MYH9     | Myosin heavy chain 9                                        | 0.546       |
| C1RL     | Complement C1r subcomponent like                            | 0.545       |
| CYP1B1   | Cytochrome P450 family 1 subfamily B member 1               | 0.545       |
| MAP3K8   | Mitogen-activated protein kinase kinase kinase 8            | 0.545       |
| SASH3    | SAM and SH3 domain containing 3                             | 0.545       |
| TOR4A    | Torsin family 4 member A                                    | 0.545       |
| VASP     | Vasodilator-stimulated phosphoprotein                       | 0.545       |
| COL5A1   | Collagen type V $\alpha$ 1                                  | 0.544       |
| IL6R     | Interleukin 6 receptor                                      | 0.544       |
| SLC10A3  | Solute carrier family 10 member 3                           | 0.544       |
| WIP1     | WD repeat domain, phosphoinositide interacting 1            | 0.543       |
| IFITM2   | Interferon induced transmembrane protein 2                  | 0.542       |
| LPXN     | Leupaxin                                                    | 0.542       |
| SECTM1   | Secreted and transmembrane 1                                | 0.542       |
| ARAP1    | ARFGAP with RHOGAP domain, ankyrin repeat and PH domain 1   | 0.541       |
| MRC2     | Mannose receptor C type 2                                   | 0.541       |
| SH3TC1   | SH3 domain and tetratricopeptide repeats 1                  | 0.541       |
| SERPINA1 | Serpin family A member 1                                    | 0.540       |
| VAV1     | Vav guanine nucleotide exchange factor 1                    | 0.539       |
| CARD9    | Caspase recruitment domain family member 9                  | 0.538       |
| FES      | FES proto-oncogene, tyrosine kinase                         | 0.538       |
| LGALS9   | Galectin 9                                                  | 0.538       |
| MYOF     | Myoferlin                                                   | 0.538       |
| ABCC3    | ATP-binding cassette subfamily C member 3                   | 0.537       |
| DOCK2    | Dedicator of cytokinesis 2                                  | 0.537       |
| PLEKHO2  | Pleckstrin homology domain containing O2                    | 0.537       |
| CFB      | Complement factor B                                         | 0.536       |
| NCF4     | Neutrophil cytosolic factor 4                               | 0.536       |
| SERPINB1 | Serpin family B member 1                                    | 0.536       |
| SYNPO    | Synaptopodin                                                | 0.536       |
| PLXND1   | Plexin D1                                                   | 0.535       |
| PTGER4   | Prostaglandin E receptor 4                                  | 0.535       |
| SIGLEC7  | Sialic acid binding Ig like lectin 7                        | 0.535       |
| UBA7     | Ubiquitin like modifier activating enzyme 7                 | 0.535       |
| CLEC7A   | C-type lectin domain family 7 member A                      | 0.534       |
| CYTH4    | Cytohesin 4                                                 | 0.534       |
| ITGB2    | Integrin subunit $\beta$ 2                                  | 0.534       |
| DSE      | Dermatan sulfate epimerase                                  | 0.533       |
| FAM114A1 | Family with sequence similarity 114 member A1               | 0.533       |
| PYCARD   | PYD and CARD domain containing                              | 0.533       |
| LTBR     | Lymphotoxin $\beta$ receptor                                | 0.532       |
| STAT5A   | Signal transducer and activator of transcription 5A         | 0.532       |
| TAPBP    | TAP binding protein (tapasin)                               | 0.532       |
| ZC3H12A  | Zinc finger CCCH-type containing 12A                        | 0.531       |
| BIRC3    | Baculoviral IAP repeat-containing 3                         | 0.530       |
| CSF2RB   | Colony stimulating factor 2 receptor $\beta$ common subunit | 0.530       |
| F13A1    | Coagulation factor XIII A chain                             | 0.528       |
| DENND3   | DENN domain-containing 3                                    | 0.527       |
| PRKCD    | Protein kinase C $\delta$                                   | 0.527       |
| FCGR2C   | Fc fragment of IGG receptor IIC (gene/pseudogene)           | 0.526       |
| LILRB1   | Leukocyte immunoglobulin like receptor B1                   | 0.526       |
| STAB1    | Stabilin 1                                                  | 0.526       |
| FAH      | Fumarylacetoacetate hydrolase                               | 0.525       |
| PTRF     | Polymerase I and transcript release factor                  | 0.525       |
| AMPD3    | Adenosine monophosphate deaminase 3                         | 0.524       |
| FKBP15   | FK506 binding protein 15                                    | 0.524       |
| TMBIM1   | Transmembrane BAX inhibitor motif containing 1              | 0.523       |

Table SI. Continued.

| Gene     | Name                                                      | Pearson's r |
|----------|-----------------------------------------------------------|-------------|
| CTSZ     | Cathepsin Z                                               | 0.522       |
| GUSB     | Glucuronidase $\beta$                                     | 0.522       |
| CCL5     | C-C motif chemokine ligand 5                              | 0.521       |
| FBP1     | Fructose-bisphosphatase 1                                 | 0.521       |
| FUCA1    | Fucosidase, $\alpha$ -L- 1, tissue                        | 0.521       |
| MANBA    | Mannosidase $\beta$                                       | 0.521       |
| S100A9   | S100 calcium binding protein A9                           | 0.520       |
| SYK      | Spleen associated tyrosine kinase                         | 0.520       |
| C1S      | Complement component 1, s subcomponent                    | 0.519       |
| IL21R    | Interleukin 21 receptor                                   | 0.519       |
| PIEZO1   | Piezo type mechanosensitive ion channel Component 1       | 0.519       |
| CASP8    | Caspase 8                                                 | 0.518       |
| CIDEB    | Cell death-inducing DFFA-like effector b                  | 0.518       |
| CDCP1    | CUB domain containing protein 1                           | 0.517       |
| FKBP11   | FK506 binding protein 11                                  | 0.517       |
| GPSM3    | G-protein signaling modulator 3                           | 0.517       |
| IL15     | Interleukin 15                                            | 0.517       |
| VAMP8    | Vesicle-associated membrane protein 8                     | 0.517       |
| S100A8   | S100 calcium binding protein A8                           | 0.516       |
| TLR2     | Toll-like receptor 2                                      | 0.516       |
| LCP1     | Lymphocyte cytosolic protein 1                            | 0.515       |
| ZNF710   | Zinc finger protein 710                                   | 0.515       |
| LIF      | Leukemia inhibitory factor                                | 0.514       |
| MAN1A1   | Mannosidase $\alpha$ class 1A member 1                    | 0.514       |
| MYO1E    | Myosin IE                                                 | 0.514       |
| APOBEC3C | Apolipoprotein B mRNA editing enzyme catalytic subunit 3C | 0.513       |
| CD4      | CD4 molecule                                              | 0.513       |
| CTSB     | Cathepsin B                                               | 0.512       |
| IFITM3   | Interferon-induced transmembrane protein 3                | 0.512       |
| SIL1     | SIL1 nucleotide exchange factor                           | 0.512       |
| SLC17A9  | Solute carrier family 17 member 9                         | 0.512       |
| CCDC69   | Coiled-coil domain containing 69                          | 0.511       |
| DAB2     | DAB2, clathrin adaptor protein                            | 0.511       |
| PRF1     | Perforin 1                                                | 0.511       |
| WIPF1    | WAS/WASL interacting protein family member 1              | 0.511       |
| ADPGK    | ADP-dependent glucokinase                                 | 0.510       |
| BCL2A1   | BCL2-related protein A1                                   | 0.510       |
| FAM129A  | Family with sequence similarity 129 member A              | 0.510       |
| CD163    | CD163 molecule                                            | 0.509       |
| CASP1    | Caspase 1                                                 | 0.508       |
| TSPAN4   | Tetraspanin 4                                             | 0.508       |
| ISG20    | Interferon-stimulated exonuclease gene 20                 | 0.507       |
| LY96     | Lymphocyte antigen 96                                     | 0.507       |
| MAN2A1   | Mannosidase $\alpha$ class 2A member 1                    | 0.507       |
| ICAM3    | Intercellular adhesion molecule 3                         | 0.506       |
| GMIP     | GEM-interacting protein                                   | 0.505       |
| CTSA     | Cathepsin A                                               | 0.504       |
| HEXA     | Hexosaminidase subunit $\alpha$                           | 0.504       |
| NRP1     | Neuropilin 1                                              | 0.504       |
| BACE2    | B-site APP-cleaving enzyme 2                              | 0.503       |
| C2CD2    | C2 calcium-dependent domain-containing 2                  | 0.503       |
| CD44     | CD44 molecule (Indian blood group)                        | 0.503       |
| CLCF1    | Cardiotrophin-like cytokine factor 1                      | 0.502       |
| IL2RB    | Interleukin 2 receptor subunit $\beta$                    | 0.502       |
| LGALS3   | Galectin 3                                                | 0.502       |
| PLEK     | Pleckstrin                                                | 0.502       |
| APOBEC3G | Apolipoprotein B mRNA editing enzyme catalytic subunit 3G | 0.501       |
| BNC2     | Basonuclin 2                                              | 0.501       |
| CORO1B   | Coronin 1B                                                | 0.501       |

Table SI. Continued.

| Gene     | Name                                                                             | Pearson's r |
|----------|----------------------------------------------------------------------------------|-------------|
| CTSD     | Cathepsin D                                                                      | 0.501       |
| CYBB     | Cytochrome b-245 $\beta$ chain                                                   | 0.501       |
| IKBKE    | Inhibitor of $\kappa$ light polypeptide gene enhancer in B cells, kinase epsilon | 0.501       |
| MMP14    | Matrix metalloproteinase 14                                                      | 0.501       |
| BIN2     | Bridging integrator 2                                                            | 0.500       |
| CAPZA1   | Capping actin protein of muscle Z-line $\alpha$ subunit 1                        | 0.500       |
| KHNYN    | KH and NYN domain-containing                                                     | 0.500       |
| PRR13    | Proline rich 13                                                                  | 0.500       |
| NAP1L3   | Nucleosome assembly protein 1-like 3                                             | -0.500      |
| ASF1A    | Anti-silencing function 1A histone chaperone                                     | -0.501      |
| ECSIT    | ECSIT signaling integrator                                                       | -0.501      |
| KIF3A    | Kinesin family member 3A                                                         | -0.501      |
| PRPSAP2  | Phosphoribosyl pyrophosphate synthetase-associated protein 2                     | -0.501      |
| ARHGEF9  | Cdc42 guanine nucleotide exchange factor 9                                       | -0.502      |
| CRMP1    | Collapsin response mediator protein 1                                            | -0.502      |
| KDM1A    | Lysine demethylase 1A                                                            | -0.502      |
| RALGPS1  | Ral GEF with PH domain and SH3-binding motif 1                                   | -0.502      |
| WASF1    | WAS protein family member 1                                                      | -0.502      |
| FXYD6    | FXYD domain-containing ion transport regulator 6                                 | -0.504      |
| TSC22D1  | TSC22 domain family member 1                                                     | -0.505      |
| DPF1     | Double PHD fingers 1                                                             | -0.507      |
| TMEM183A | Transmembrane protein 183A                                                       | -0.507      |
| YWHAQ    | Tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein $\tau$    | -0.507      |
| ADNP     | Activity-dependent neuroprotector homeobox                                       | -0.508      |
| CASK     | Calcium/calmodulin dependent serine protein kinase                               | -0.509      |
| NBEA     | Neurobeachin                                                                     | -0.509      |
| VEZF1    | Vascular endothelial zinc finger 1                                               | -0.511      |
| GDAP1L1  | Ganglioside-induced differentiation-associated protein 1-like 1                  | -0.513      |
| PAFAH1B3 | Platelet activating factor acetylhydrolase 1b catalytic subunit 3                | -0.513      |
| PODXL2   | Podocalyxin-like 2                                                               | -0.516      |
| NDRG2    | NDRG family member 2                                                             | -0.517      |
| TRIM37   | Tripartite motif-containing 37                                                   | -0.517      |
| GNG4     | G protein subunit $\gamma$ 4                                                     | -0.520      |
| PJA1     | Praja ring finger ubiquitin ligase 1                                             | -0.520      |
| NRXN1    | Neurexin 1                                                                       | -0.521      |
| NOL4     | Nucleolar protein 4                                                              | -0.522      |
| TOP2B    | Topoisomerase (DNA) II $\beta$                                                   | -0.522      |
| HMGCR    | 3-hydroxy-3-methylglutaryl-coa reductase                                         | -0.523      |
| SPAST    | Spastin                                                                          | -0.526      |
| ZNF510   | Zinc finger protein 510                                                          | -0.527      |
| ATAT1    | A tubulin acetyltransferase 1                                                    | -0.528      |
| UBE2E3   | Ubiquitin conjugating enzyme E2 E3                                               | -0.530      |
| CBR4     | Carbonyl reductase 4                                                             | -0.534      |
| CRB1     | Crumbs 1, cell polarity complex component                                        | -0.535      |
| FSD1     | Fibronectin type III and SPRY domain containing 1                                | -0.535      |
| SRPK2    | SRSF protein kinase 2                                                            | -0.535      |
| ZNF675   | Zinc finger protein 675                                                          | -0.536      |
| MARCKSL1 | MARCKS like 1                                                                    | -0.538      |
| MFF      | Mitochondrial fission factor                                                     | -0.538      |
| ZNF821   | Zinc finger protein 821                                                          | -0.540      |
| VBP1     | VHL binding protein 1                                                            | -0.545      |
| PDE6D    | Phosphodiesterase 6D                                                             | -0.547      |
| KCND2    | Potassium voltage-gated channel subfamily D member 2                             | -0.548      |
| TMEFF1   | Transmembrane protein with EGF like and two follistatin like domains 1           | -0.548      |
| CSPG5    | Chondroitin sulfate proteoglycan 5                                               | -0.549      |
| PSAT1    | Phosphoserine aminotransferase 1                                                 | -0.551      |
| DLL3     | $\delta$ -like canonical Notch ligand 3                                          | -0.553      |
| KAT7     | Lysine acetyltransferase 7                                                       | -0.553      |
| KLHL23   | Kelch like family member 23                                                      | -0.553      |

Table SI. Continued.

| Gene     | Name                                                                    | Pearson's r |
|----------|-------------------------------------------------------------------------|-------------|
| OLIG2    | Oligodendrocyte lineage transcription factor 2                          | -0.553      |
| SIAH1    | Siah E3 ubiquitin protein ligase 1                                      | -0.553      |
| KIF2A    | Kinesin family member 2A                                                | -0.554      |
| SCG3     | Secretogranin III                                                       | -0.554      |
| NUDT11   | Nudix hydrolase 11                                                      | -0.555      |
| ZNF711   | Zinc finger protein 711                                                 | -0.555      |
| RSBN1    | Round spermatid basic protein 1                                         | -0.556      |
| ANKRD46  | Ankyrin repeat domain 46                                                | -0.557      |
| RAD21    | RAD21 cohesin complex component                                         | -0.557      |
| AASDHPPT | Aminoadipate-semialdehyde dehydrogenase-phosphopantetheinyl transferase | -0.560      |
| CAMSAP2  | Calmodulin regulated spectrin-associated protein family member 2        | -0.560      |
| RPRD1A   | Regulation of nuclear pre-mRNA domain-containing 1A                     | -0.561      |
| GPSM2    | G-protein signaling modulator 2                                         | -0.564      |
| ZNF253   | Zinc finger protein 253                                                 | -0.569      |
| CDK5R1   | Cyclin-dependent kinase 5 regulatory subunit 1                          | -0.572      |
| CLASP2   | Cytoplasmic linker-associated protein 2                                 | -0.576      |
| ZFP37    | ZFP37 zinc finger protein                                               | -0.577      |
| MATR3    | Matrin 3                                                                | -0.578      |
| CXXC4    | CXXC finger protein 4                                                   | -0.580      |
| BCAN     | Brevican                                                                | -0.593      |
| MAP2     | Microtubule-associated protein 2                                        | -0.599      |
| CUL3     | Cullin 3                                                                | -0.600      |
| ASCL1    | Achaete-scute family BHLH transcription factor 1                        | -0.605      |
| BCL7A    | BCL tumor suppressor 7A                                                 | -0.618      |
| GSTA4    | Glutathione S-transferase $\alpha$ 4                                    | -0.623      |