

SUPPLEMENTAL MATERIAL

Chorny et al., <http://www.jem.org/cgi/content/full/jem.20150282/DC1>

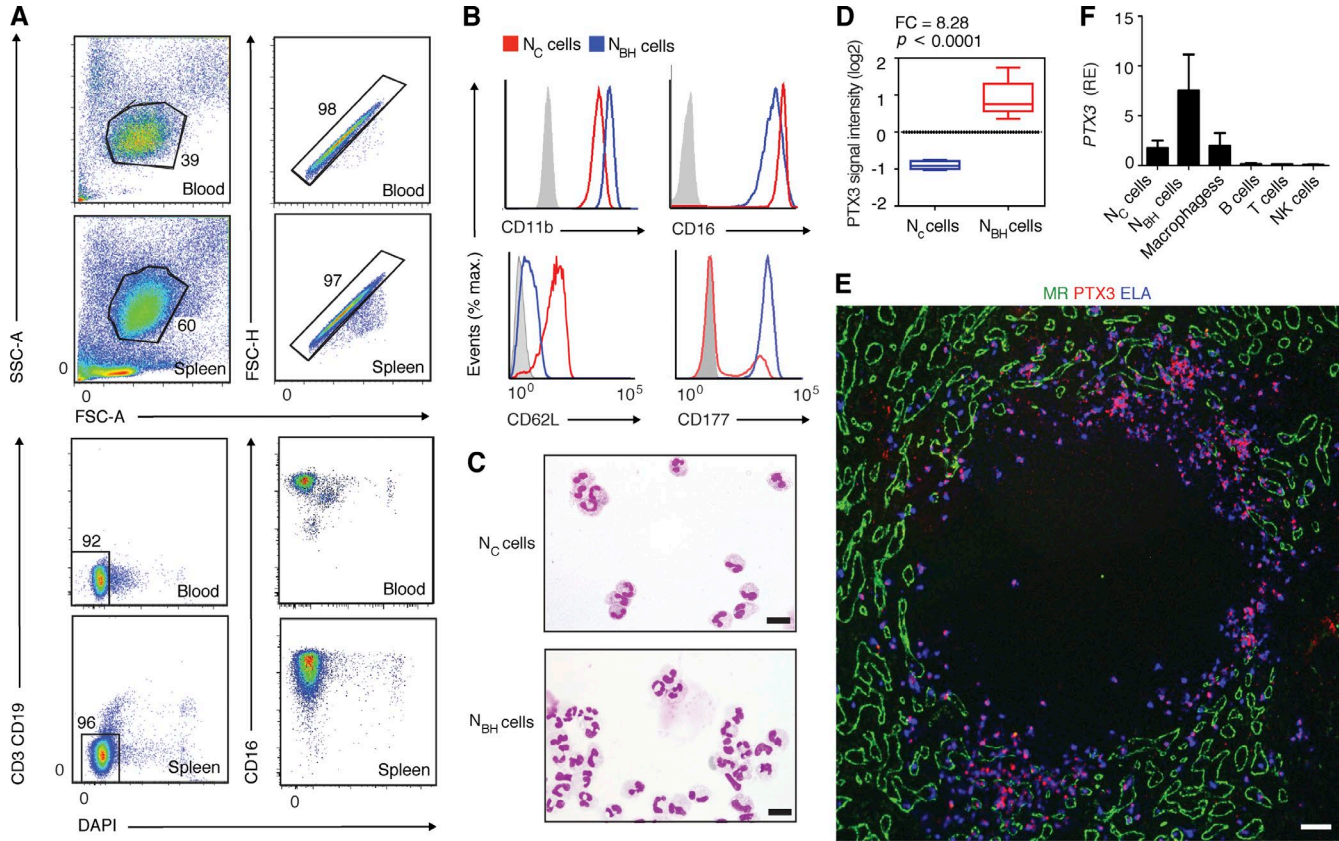


Figure S1. **PTX3 originates from NBh cells expressing an activated phenotype.** (A and B) Gating strategy used to FACS sort human NC and NBh cells (A) and comparative flow cytometric analysis of CD11b, CD16, CD62L, and CD177 on gated NC and NBh cells (B). Gates were established using a fluorescence-minus-one strategy. FSC, forward scatter; SSC, side scatter. The shaded profile shows isotype-matched control. (C) Light microscopy of human NC and NBh cells after FACS sorting and Giemsa staining. Bars, 20 μ m. (D) PTX3 signal intensity from microarray data shown in Fig. 1 A. FC, fold change expression. (E) IFA of human splenic tissue stained for mannose receptor (MR; green), PTX3 (red), and elastase (ELA; blue). Mannose receptor stains sinus-lining cells from red pulp and perifollicular sinusoids. Bar, 100 μ m. (F) qRT-PCR of PTX3 mRNA from circulating NC cells and splenic NBh cells, macrophages, B cells, T cells, and NK cells. PTX3 mRNA is normalized to β -actin mRNA and shown as relative expression (RE) compared with NK cells. Error bars, SEM. Data show one representative experiment of at least four with similar results (A–C and E), one experiment with six biological replicates (D), or two experiments with at least three samples in each experimental group (F).

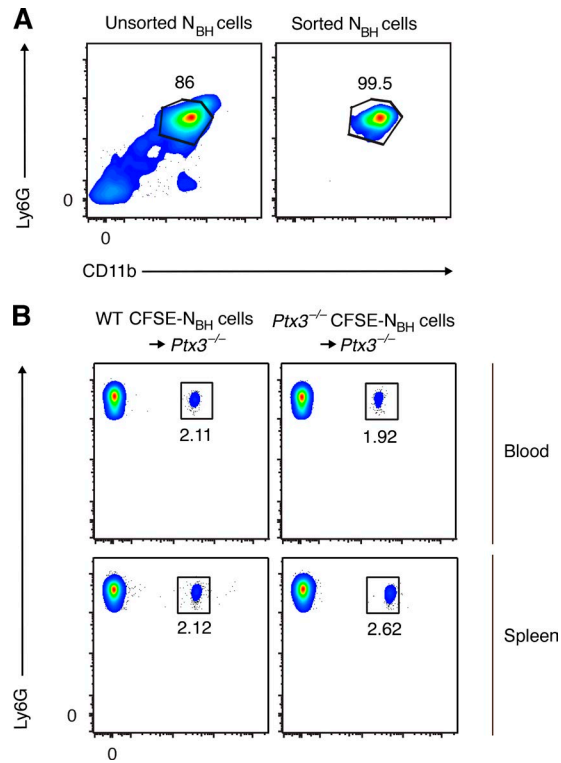


Figure S2. **NBh cells efficiently colonize the spleen after adoptive transfer.** (A) Flow cytometric analysis of mouse Ly6G⁺CD11b⁺ NBh cells before and after FACS sorting. (B) Flow cytometric analysis of adoptively transferred Ly6G⁺CFSE⁺ NBh cells from WT or *Ptx3*^{-/-} mice in the blood and spleen of *Ptx3*^{-/-} recipients. Data show one representative experiment of at least three with similar results.

Table S1. **Antibodies to human antigens**

| Antigen | Label | Isotype | Clone | Manufacturer | Use |
|------------|--------|------------------|----------------------|--------------------|-------|
| CD3 | PE-Cy5 | Mouse IgG1, k | UCHT1 | eBioscience | FC |
| CD4 | PE | Mouse IgG1, k | SK3 | BD | FC |
| CD11b | PE | Mouse IgG2a | D12 | BD | FC |
| CD14 | APC | Mouse IgG1 | HCD14 | BioLegend | FC |
| CD15 | FITC | Mouse IgM | 28 | SouthernBiotech | FC |
| CD16 | AF 647 | Mouse IgG1, k | 3G8 | BD | FC |
| CD19 | PE-Cy7 | Mouse IgG1, k | H1B19 | BioLegend | FC |
| CD27 | PE | Mouse IgG1 | M-T271 | Ancell | FC |
| CD49d (a4) | PE-Cy5 | Mouse IgG1, k | 9F10 | BD | FC |
| CD62L | PE | Mouse IgG1 | LT-TD180 | Attendbio | FC |
| CD117 | PE | Mouse IgG1, k | 104D2 | eBioscience | FC |
| IgD | FITC | Goat IgG | 2032-02 ^a | SouthernBiotech | FC/IF |
| IgD | Biotin | Goat IgG F(ab')2 | 2032-08 ^a | SouthernBiotech | |
| Elastase | | Mouse IgG1 | NP57 | Dako | IF |
| Elastase | | Rabbit IgG | ab21595 ^a | Abcam | IF |
| CD206 (MR) | | Mouse IgG1 | 19.2 | BD | IF |
| PTX3 | | Rat IgG2a | MNB4 | Abcam | IF |
| PTX3 | | Rat IgG2a | MNB4 | Enzo Life Sciences | IF |
| C1q | | Mouse IgG1, k | A201 ^a | QUIDEL | IF |

AF, Alexa Fluor; APC, allophycocyanin; Cy, cyanin; FC, flow cytometry; IF, immunofluorescence; MR, mannose receptor.

^aCatalogue number

Table S2. . Antibodies to mouse antigens

| Antigen | Label | Isotype | Clone | Manufacturer | Use |
|--------------|---------|--------------------------|-----------|-----------------|-----------|
| CD5 | PE | Rat IgG2a, k | 53-7.3 | BD | FC |
| CD5 | BV 421 | Rat IgG2a, k | 53-7.4 | BD | FC |
| CD11b | APC-Cy7 | Rat IgG2b, k | M1/70 | BioLegend | FC |
| CD21/CD35 | E780 | Rat IgG2b, k | 7G6 | BD | FC |
| CD21/CD35 | APC | Rat IgG2b, k | 7G7 | BD | FC |
| CD23 | PE | Rat IgG2a, k | B3B4 | BD | FC |
| CD23 | FITC | Rat IgG2a, k | B3B5 | eBioscience | FC |
| CD43 | APC | IgG2a k | 1B11 | BD | FC |
| B220/CD45R | PE-Cy7 | Rat IgG2a, k | RA3-6B2 | BD | FC |
| B220/CD45R | APC-Cy7 | Rat IgG2a, k | RA3-6B3 | BD | FC |
| B220/CD45R | Biot | Rat IgG2a, k | RA3-6B4 | BD | IF |
| AA4-1 (CD93) | PE-Cy7 | Rat IgG2b, k | AA4-1 | eBioscience | FC |
| CD54 | AF 647 | Rat IgG2b, k | YN1/1.7.4 | BioLegend | FC |
| CD62L | BV 421 | Rat IgG2a, k | MEL-14 | BioLegend | FC |
| CD69 | PE-Cy7 | Rat IgG2a, k | H1.2F3 | BioLegend | FC |
| CD86 | PE-Cy7 | IgG2a | P03 | BioLegend | FC |
| CD138 | BV 421 | Rat IgG2a, k | 281-2 | BD | FC |
| IgG2b | FITC | Goat IgG | pAb | SouthernBiotech | FC |
| IgG2b | Bio | Goat IgG | pAb | SouthernBiotech | IF |
| IgG2c | FITC | Goat IgG | pAb | SouthernBiotech | FC |
| IgG2c | Bio | Goat IgG | pAb | SouthernBiotech | IF |
| IgG3 | FITC | Rat IgG2a, k | R40-82 | BD | FC |
| IgG3 | Bio | Rat IgG2a, k | R40-82 | BD | IF |
| IgM | PE | Goat F(ab') ₂ | pAb | SouthernBiotech | FC |
| IgM | Bio | Goat F(ab') ₃ | pAb | SouthernBiotech | IF |
| Ki67 | FITC | IgG2a k | 16A8 | eBioscience | FC |
| Ly6G | FITC | Rat IgG2a, k | 1A8 | BioLegend | FC/IF |
| Ly6G | AF 647 | Rat IgG2a, k | 1A8 | BioLegend | FC/IF |
| MMP9 | | Rab IgG | pAb | Abcam | IF |
| MOMA-1 | Biot | Rat IgG2a | MOMA-1 | Abcam | IF |
| MOMA-1 | FITC | Rat IgG2a | MOMA-1 | AbD Serotec | IF |
| TNP | | Rat IgG2a | 2A3 | Bio X Cell | IF |
| Ly6G | | Rat IgG2a, k | 1A8 | Bio X Cell | Depletion |
| LCMV | | Rat IgG2a, k | VL-4 | Bio X Cell | Depletion |
| IgG | HRP | Goat IgG | pAb | SouthernBiotech | ELISA |
| IgM | HRP | Goat IgG | pAb | SouthernBiotech | ELISA |
| IgG2b | HRP | Goat IgG | pAb | SouthernBiotech | ELISA |
| IgG2c | HRP | Goat IgG | pAb | SouthernBiotech | ELISA |
| IgG3 | HRP | Goat IgG | pAb | SouthernBiotech | ELISA |
| IgG1 | HRP | Goat IgG | pAb | SouthernBiotech | ELISA |

AF, Alexa Fluor; APC, allophycocyanin; BV, brilliant violet; Cy, cyanin; E, eFluor; FC, flow cytometry; IF, immunofluorescence; LCMV, lymphocytic choriomeningitis virus; pAb, polyclonal antibody.

Table S3. Primers used to PCR amplify mouse genes

| Target gene | | Primer sequence (5'-3') |
|-----------------------------------------|--------|-------------------------|
| <i>Aicda</i> | S | CAGTCTGAGATGTAGCGTAGGAA |
| | AS | CGTGGTGAAGAGGAGAGATAGTG |
| I γ 2b-C γ 2b transcripts | S | AGTTGTATCTCCACCCAGGG |
| | AS | CACTGGGCCTTTCCAGAACTA |
| I γ 2c-C γ 2c | S | CCAGTGGATAGACCGATGG |
| | AS | ACTGGTGGACCGAGGAAGG |
| <i>Prdm1</i> | S | GGAGAGGCTCCACTACCCTT |
| | AS | GCTTTGGGTTGCTTCCGTT |
| <i>Ptx3</i> | TaqMan | Mm00477268_m1 |
| <i>Il-10</i> | TaqMan | Mm00439614_m1 |
| <i>Tnfsf13b</i> | TaqMan | Mm00446347_m1 |
| <i>Tnfsf13</i> | TaqMan | Mm00840215_g1 |
| <i>Il-6</i> | TaqMan | Mm00446190_m1 |
| <i>Cd40lg</i> | TaqMan | Mm00441911_m1 |
| <i>Aicda</i> | TaqMan | Mm01184115_m1 |

AS, antisense primer; S, sense primer.

Table S4. Primers used to PCR amplify human genes

| Target gene | | Primer sequence |
|----------------|----|------------------------------|
| <i>ACTB</i> | S | GGATGCAGAAGGAGATCACT |
| | AS | CGATCCACACGGAGTACTTG |
| <i>AICDA</i> | S | AGAGCCGTGACAGTGCTACA |
| | AS | TGTAGCCGAGGAAGAGCAAT |
| <i>BLIMP-1</i> | S | GTGGTATTGTCGGGACTTTGCAG |
| | AS | TCCGTTGCTTTAGACTGCTCTGTG |
| <i>XBP1</i> | S | AGGAGTTAAGACAGCGCTTGG |
| | AS | AGAGGTGCACGTAGTCTGAGTGCTG |
| <i>PTX3</i> | S | GGGACAAGCTCTTCATCATGCT |
| | AS | GTCGTCCGTGGCTTGCA |
| <i>EGR-1</i> | S | GACCGCAGAGTCTTTTCCTG |
| | AS | TGGGTTGGTCATGCTCACTA |
| <i>NFKBIZ</i> | S | GCAACAGGAGTTCCTTCACTG |
| | AS | TCACCTTTTGGCTTTCTTGG |
| <i>TNFAIP3</i> | S | GACCATGGCACAACCTCATCTCA |
| | AS | GTTAGCTTCATCCAACCTTGGCGCATTG |
| <i>EDN-1</i> | S | CTTTGAGGGACCTGAAGCTG |
| | AS | CTGTTGCCTTTGTGGGAAGT |

AS, antisense primer; S, sense primer.

Table S5. Genes with highest degree of differential expression in NBh cells compared with NC cells

| Gene ID | Gene symbol | Entrez gene name | Fold change | Adj. p-value | Cellular location | Type |
|-----------|------------------|-------------------------------------------------------------------------------------|-------------|--------------|---------------------|----------------------------|
| CD177 | <i>CD177</i> | CD177 molecule | 83,032 | 2,14E-05 | Cytoplasm | Other |
| SNORD3B-1 | <i>SNORD3B-1</i> | Small nucleolar RNA, C/D box 3B-1 | 55,201 | 1,81E-06 | Other | Other |
| EGR1 | <i>EGR1</i> | Early growth response 1 | 54,143 | 4,89E-04 | Nucleus | Transcription regulator |
| TNFAIP3 | <i>TNFAIP3</i> | Tumor necrosis factor, alpha-induced protein 3 | 27,600 | 3,35E-06 | Nucleus | Enzyme |
| CPNE5 | <i>CPNE5</i> | Copine V | 25,727 | 1,52E-03 | Plasma membrane | Other |
| JUN | <i>JUN</i> | Jun proto-oncogene | 23,676 | 6,37E-06 | Nucleus | Transcription regulator |
| NFKBIZ | <i>NFKBIZ</i> | Nuclear factor of kappa light polypeptide gene enhancer in B-cells inhibitor, zeta | 20,768 | 9,96E-08 | Nucleus | Transcription regulator |
| FOSB | <i>FOSB</i> | FBJ murine osteosarcoma viral oncogene homolog B | 20,664 | 8,43E-04 | Nucleus | Transcription regulator |
| CDK5RAP2 | <i>CDK5RAP2</i> | CDK5 regulatory subunit associated protein 2 | 18,191 | 5,74E-06 | Cytoplasm | Other |
| IER3 | <i>IER3</i> | Immediate early response 3 | 16,916 | 6,98E-07 | Cytoplasm | Other |
| GADD45A | <i>GADD45A</i> | Growth arrest and DNA-damage-inducible, alpha | 16,198 | 1,81E-06 | Nucleus | Other |
| GPR84 | <i>GPR84</i> | G protein-coupled receptor 84 | 14,966 | 1,70E-05 | Plasma membrane | G-protein coupled receptor |
| C19orf59 | <i>MCEMP1</i> | Mast cell-expressed membrane protein 1 | 14,443 | 8,60E-05 | Other | Other |
| HP | <i>HP</i> | Haptoglobin | 12,731 | 1,74E-04 | Extracellular space | Peptidase |
| TDRD9 | <i>TDRD9</i> | Tudor domain containing 9 | 12,628 | 2,50E-04 | Cytoplasm | Other |
| PLAC8 | <i>PLAC8</i> | Placenta-specific 8 | 11,682 | 1,88E-03 | Nucleus | Other |
| KLF4 | <i>KLF4</i> | Kruppel-like factor 4 | 11,312 | 3,39E-04 | Nucleus | Transcription regulator |
| C9orf103 | <i>IDNK</i> | IdnK, gluconokinase homolog (E. coli) | 11,076 | 2,62E-05 | Cytoplasm | Other |
| HPR | <i>HPR</i> | Haptoglobin-related protein | 10,605 | 1,27E-04 | Extracellular space | Peptidase |
| STOM | <i>STOM</i> | Stomatin | 10,305 | 1,90E-04 | Plasma membrane | Other |
| IL18R1 | <i>IL18R1</i> | Interleukin 18 receptor 1 | 9,922 | 7,60E-05 | Plasma membrane | Transmembrane receptor |
| NFKBIA | <i>NFKBIA</i> | Nuclear factor of kappa light polypeptide gene enhancer in B-cells inhibitor, alpha | 9,504 | 9,96E-08 | Cytoplasm | Transcription regulator |
| EDN1 | <i>EDN1</i> | Endothelin 1 | 9,300 | 2,50E-04 | Extracellular space | Cytokine |
| TBC1D8 | <i>TBC1D8</i> | TBC1 domain family, member 8 (with GRAM domain) | 9,146 | 1,63E-03 | Plasma membrane | Other |
| OSTalpha | <i>SLC51A</i> | organic solute transporter alpha | 8,676 | 3,15E-03 | Plasma membrane | Other |
| PTX3 | <i>PTX3</i> | Pentraxin 3, long | 8,283 | 4,73E-05 | Extracellular space | Other |
| LOC646626 | <i>LOC646626</i> | Uncharacterized LOC646626 | 8,158 | 1,11E-03 | Other | Other |
| CYP1B1 | <i>CYP1B1</i> | Cytochrome P450, family 1, subfamily B, polypeptide 1 | 8,129 | 3,12E-04 | Cytoplasm | Enzyme |
| FOLR3 | <i>FOLR3</i> | Folate receptor 3 (gamma) | 8,067 | 4,97E-03 | Extracellular space | Other |

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|-----------------|--------------------|-------------------------------------------------------------------------------|-------|----------|---------------------|----------------------------|
| HIST2H3A | <i>HIST2H3A</i> | Histone cluster 2, H3a | 7,973 | 2,69E-04 | Nucleus | other |
| S1PR1 | <i>S1PR1</i> | Sphingosine-1-phosphate receptor 1 | 7,894 | 7,28E-04 | Plasma membrane | G-protein coupled receptor |
| LRRC70 | <i>LRRC70</i> | Leucine rich repeat containing 70 | 7,580 | 5,63E-05 | Other | Other |
| BLMH | <i>BLMH</i> | Bleomycin hydrolase | 7,411 | 7,95E-03 | Cytoplasm | Peptidase |
| ENST00000383834 | <i>THUMPD3-AS1</i> | THUMPD3 antisense RNA 1 | 7,402 | 1,16E-04 | Other | Other |
| CXCL2 | <i>CXCL2</i> | Chemokine (C-X-C motif) ligand 2 | 7,357 | 1,31E-05 | Extracellular space | Cytokine |
| SAMSN1 | <i>SAMSN1</i> | SAM domain, SH3 domain and nuclear localization signals 1 | 7,259 | 9,44E-04 | Nucleus | Other |
| ZSWIM4 | <i>ZSWIM4</i> | Zinc finger, SWIM-type containing 4 | 7,081 | 4,50E-05 | Other | Other |
| MAFF | <i>MAFF</i> | V-maf avian musculoaponeurotic fibrosarcoma oncogene homolog F | 7,068 | 4,05E-06 | Nucleus | Transcription regulator |
| PPP1R15A | <i>PPP1R15A</i> | Protein phosphatase 1, regulatory subunit 15A | 7,037 | 1,36E-05 | Cytoplasm | Other |
| CD83 | <i>CD83</i> | CD83 molecule | 7,021 | 2,24E-03 | Plasma membrane | Transmembrane receptor |
| FRMD4B | <i>FRMD4B</i> | FERM domain containing 4B | 7,003 | 1,44E-03 | Cytoplasm | Other |
| ENST00000495094 | <i>WWTR1-AS1</i> | WWTR1 antisense RNA 1 | 6,825 | 7,11E-03 | Other | Other |
| PTGER2 | <i>PTGER2</i> | Prostaglandin E receptor 2 (subtype EP2), 53kDa | 6,596 | 2,23E-03 | Plasma membrane | G-protein coupled receptor |
| IRAK3 | <i>IRAK3</i> | Interleukin-1 receptor-associated kinase 3 | 6,580 | 8,21E-05 | Cytoplasm | Kinase |
| GYG1 | <i>GYG1</i> | Glycogenin 1 | 6,566 | 2,79E-04 | Cytoplasm | Enzyme |
| C22orf37 | <i>LINC00528</i> | Long intergenic non-protein coding RNA 528 | 6,531 | 8,65E-06 | Other | Other |
| C1orf162 | <i>C1orf162</i> | Chromosome 1 open reading frame 162 | 6,386 | 1,36E-05 | Other | Transporter |
| PNP | <i>PNP</i> | Purine nucleoside phosphorylase | 6,384 | 4,83E-04 | Nucleus | Enzyme |
| C1QB | <i>C1QB</i> | Complement component 1, q subcomponent, B chain | 6,336 | 9,00E-05 | Extracellular space | Other |
| GRB10 | <i>GRB10</i> | Growth factor receptor-bound protein 10 | 6,318 | 6,87E-03 | Cytoplasm | Other |
| TULP2 | <i>TULP2</i> | Tubby like protein 2 | 6,292 | 5,03E-05 | Other | Enzyme |
| DUSP2 | <i>DUSP2</i> | Dual specificity phosphatase 2 | 6,283 | 1,16E-04 | Nucleus | Phosphatase |
| FOSL1 | <i>FOSL1</i> | FOS-like antigen 1 | 6,198 | 2,89E-05 | Nucleus | Transcription regulator |
| PLEKHG2 | <i>PLEKHG2</i> | Pleckstrin homology domain containing, family G (with RhoGef domain) member 2 | 6,162 | 5,93E-04 | Cytoplasm | Other |
| C4BPA | <i>C4BPA</i> | Complement component 4 binding protein, alpha | 6,151 | 2,58E-03 | Extracellular space | Other |
| FCAR | <i>FCAR</i> | Fc fragment of IgA, receptor for | 6,148 | 1,13E-05 | Plasma membrane | Other |
| STX1A | <i>STX1A</i> | Syntaxin 1A (brain) | 6,053 | 7,29E-03 | Cytoplasm | Transporter |
| ANXA1 | <i>ANXA1</i> | Annexin A1 | 6,033 | 1,58E-05 | Plasma membrane | Enzyme |
| C13orf15 | <i>RGCC</i> | Regulator of cell cycle | 6,021 | 1,25E-03 | Cytoplasm | Other |
| IL18RAP | <i>IL18RAP</i> | Interleukin 18 receptor accessory protein | 5,983 | 7,95E-03 | Plasma membrane | Transmembrane receptor |
| ENST00000504546 | <i>NAIP</i> | NLR family, apoptosis inhibitory protein | 5,904 | 7,08E-05 | Cytoplasm | Other |

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|--------------|------------------------------|---------------------------------------------------------------------------------------|-------|----------|---------------------|-------------------------|
| EMILIN2 | <i>EMILIN2</i> | Elastin microfibril interfacier 2 | 5,903 | 1,21E-04 | Extracellular space | Other |
| RNU11 | <i>RNU11</i> | RNA, U11 small nuclear | 5,887 | 1,86E-03 | Nucleus | Other |
| IL1B | <i>IL1B</i> | Interleukin 1, beta | 5,874 | 1,09E-03 | Extracellular space | Cytokine |
| CD69 | <i>CD69</i> | CD69 molecule | 5,857 | 9,40E-04 | Plasma Membrane | Transmembrane receptor |
| UPP1 | <i>UPP1</i> | Uridine phosphorylase 1 | 5,839 | 9,12E-04 | Cytoplasm | Enzyme |
| ETS2 | <i>ETS2</i> | V-ets avian erythroblastosis virus E26 oncogene homolog 2 | 5,838 | 1,03E-05 | Nucleus | Transcription regulator |
| HIST2H2AA4 | <i>HIST2H2AA3/HIST2H2AA4</i> | Histone cluster 2, H2aa3 | 5,830 | 3,92E-05 | Nucleus | Other |
| HIST2H2BE | <i>HIST2H2BE</i> | Histone cluster 2, H2be | 5,809 | 2,17E-05 | Nucleus | Other |
| HIST1H2AE | <i>HIST1H2AE</i> | Histone cluster 1, H2ae | 5,770 | 3,75E-04 | Other | Other |
| HIST2H2BF | <i>HIST2H2BF</i> | Histone cluster 2, H2bf | 5,700 | 8,60E-05 | Nucleus | Other |
| PLK2 | <i>PLK2</i> | Polo-like kinase 2 | 5,616 | 6,12E-06 | Nucleus | Kinase |
| ADCY3 | <i>ADCY3</i> | Adenylate cyclase 3 | 5,572 | 5,20E-03 | Plasma membrane | Enzyme |
| PFKFB3 | <i>PFKFB3</i> | 6-phosphofructo-2-kinase/fructose-2,6-biphosphatase 3 | 5,549 | 1,48E-05 | Cytoplasm | Kinase |
| IL7R | <i>IL7R</i> | Interleukin 7 receptor | 5,542 | 9,24E-03 | Plasma membrane | Transmembrane receptor |
| ARG1 | <i>ARG1</i> | arginase 1 | 5,514 | 4,68E-04 | Cytoplasm | Enzyme |
| CST7 | <i>CST7</i> | cystatin F (leukocystatin) | 5,483 | 6,43E-04 | Extracellular space | Other |
| TOMM40L | <i>TOMM40L</i> | translocase of outer mitochondrial membrane 40 homolog (yeast)-like | 5,395 | 1,34E-04 | Cytoplasm | Other |
| PFKFB2 | <i>PFKFB2</i> | 6-phosphofructo-2-kinase/fructose-2,6-biphosphatase 2 | 5,342 | 2,19E-03 | Cytoplasm | Kinase |
| MAP2K6 | <i>MAP2K6</i> | mitogen-activated protein kinase kinase 6 | 5,322 | 1,66E-05 | Cytoplasm | Kinase |
| EIF4A3 | <i>EIF4A3</i> | eukaryotic translation initiation factor 4A3 | 5,249 | 3,06E-04 | Nucleus | Enzyme |
| FBXO30 | <i>FBXO30</i> | F-box protein 30 | 5,221 | 7,54E-03 | Extracellular space | Other |
| PDGFC | <i>PDGFC</i> | platelet derived growth factor C | 5,185 | 3,09E-03 | Extracellular space | Growth factor |
| EXOSC4 | <i>EXOSC4</i> | exosome component 4 | 5,146 | 7,53E-04 | Nucleus | Enzyme |
| ZC3H12A | <i>ZC3H12A</i> | zinc finger CCCH-type containing 12A | 5,120 | 1,13E-05 | Cytoplasm | Other |
| NFKBIE | <i>NFKBIE</i> | nuclear factor of kappa light polypeptide gene enhancer in B-cells inhibitor, epsilon | 5,085 | 1,75E-05 | Nucleus | Transcription regulator |
| LOC100289495 | <i>LOC100289495</i> | uncharacterized LOC100289495 | 5,082 | 6,25E-05 | Other | Other |
| ADM | <i>ADM</i> | adrenomedullin | 5,066 | 1,21E-04 | Extracellular space | Other |
| CCL5 | <i>CCL5</i> | chemokine (C-C motif) ligand 5 | 5,051 | 4,87E-04 | Extracellular space | Cytokine |
| DNAJB1 | <i>DNAJB1</i> | DnaJ (Hsp40) homolog, subfamily B, member 1 | 5,045 | 7,93E-03 | Nucleus | Other |
| SNORA81 | <i>SNORA81</i> | small nucleolar RNA, H/ACA box 81 | 5,030 | 9,10E-05 | Other | Other |
| BATF | <i>BATF</i> | basic leucine zipper transcription factor, ATF-like | 5,020 | 3,21E-04 | Nucleus | Transcription regulator |
| RHOH | <i>RHOH</i> | ras homolog family member H | 4,999 | 2,97E-04 | Plasma membrane | Enzyme |

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|-----------|------------------|------------------------------------------------------------------------------------------------------------------|--------|----------|---------------------|-------------------------|
| SEMA4C | <i>SEMA4C</i> | sema domain, immunoglobulin domain (Ig), transmembrane domain (TM) and short cytoplasmic domain, (semaphorin) 4C | 4,990 | 7,77E-05 | Plasma membrane | Other |
| HIST1H2BJ | <i>HIST1H2BJ</i> | histone cluster 1, H2bj | 4,988 | 6,91E-05 | Nucleus | Other |
| APOE | <i>APOE</i> | apolipoprotein E | 4,972 | 1,77E-03 | Extracellular space | Transporter |
| ATP9A | <i>ATP9A</i> | ATPase, class II, type 9A | 4,914 | 3,32E-03 | Cytoplasm | Transporter |
| HIST2H2AB | <i>HIST2H2AB</i> | histone cluster 2, H2ab | 4,875 | 9,67E-05 | Nucleus | Other |
| TOB1 | <i>TOB1</i> | transducer of ERBB2, 1 | 4,808 | 3,97E-04 | Nucleus | Transcription regulator |
| MEI1 | <i>MEI1</i> | meiosis inhibitor 1 | 4,806 | 5,55E-03 | Other | Other |
| PLEKHG3 | <i>PLEKHG3</i> | pleckstrin homology domain containing, family G (with RhoGef domain) member 3 | -3,136 | 2,00E-04 | Other | Other |
| BRI3BP | <i>BRI3BP</i> | BRI3 binding protein | -3,138 | 1,20E-04 | Extracellular space | Other |
| GNB4 | <i>GNB4</i> | guanine nucleotide binding protein (G protein), beta polypeptide 4 | -3,138 | 4,33E-04 | Plasma membrane | Enzyme |
| C16orf91 | <i>C16orf91</i> | chromosome 16 open reading frame 91 | -3,148 | 1,16E-04 | Other | Other |
| KCNK7 | <i>KCNK7</i> | potassium channel, subfamily K, member 7 | -3,152 | 2,48E-03 | Plasma membrane | Ion channel |
| PARP12 | <i>PARP12</i> | poly (ADP-ribose) polymerase family, member 12 | -3,175 | 4,76E-04 | Nucleus | Other |
| FLVCR1 | <i>FLVCR1</i> | feline leukemia virus subgroup C cellular receptor 1 | -3,176 | 1,12E-03 | Plasma membrane | Transporter |
| ASCL2 | <i>ASCL2</i> | achaete-scute family bHLH transcription factor 2 | -3,182 | 2,28E-03 | Nucleus | Transcription regulator |
| NARS | <i>NARS</i> | Asparaginyl-tRNA synthetase | -3,187 | 1,57E-05 | Cytoplasm | Enzyme |
| BBC3 | <i>BBC3</i> | BCL2 binding component 3 | -3,198 | 8,30E-03 | Cytoplasm | Other |
| MCM5 | <i>MCM5</i> | Minichromosome maintenance complex component 5 | -3,206 | 1,81E-06 | Nucleus | Enzyme |
| PRKAG2 | <i>PRKAG2</i> | Protein kinase, AMP-activated, gamma 2 non-catalytic subunit | -3,265 | 3,67E-04 | Cytoplasm | Kinase |
| NHS | <i>NHS</i> | Nance-Horan syndrome (congenital cataracts and dental anomalies) | -3,268 | 1,81E-03 | Nucleus | Other |
| CLEC9A | <i>CLEC9A</i> | C-type lectin domain family 9, member A | -3,272 | 1,23E-03 | Plasma membrane | Other |
| HLA-DMB | <i>HLA-DMB</i> | Major histocompatibility complex, class II, DM beta | -3,280 | 2,74E-04 | Plasma membrane | Transmembrane receptor |
| MXD4 | <i>MXD4</i> | MAX dimerization protein 4 | -3,281 | 1,07E-05 | Nucleus | Transcription regulator |
| SNN | <i>SNN</i> | Stannin | -3,290 | 2,13E-05 | Plasma membrane | Other |
| OGFRL1 | <i>OGFRL1</i> | Opioid growth factor receptor-like 1 | -3,298 | 1,28E-04 | Other | Other |
| TAF4 | <i>TAF4</i> | TAF4 RNA polymerase II, TATA box binding protein (TBP)-associated factor, 135kDa | -3,303 | 2,89E-05 | Nucleus | Transcription regulator |
| C7orf41 | <i>MTURN</i> | Maturin, neural progenitor differentiation regulator homolog (Xenopus) | -3,306 | 8,12E-05 | Other | Other |
| RNF216P1 | <i>RNF216P1</i> | Ring finger protein 216 pseudogene 1 | -3,309 | 1,36E-05 | Other | Other |
| TRIM24 | <i>TRIM24</i> | Tripartite motif containing 24 | -3,315 | 1,44E-04 | Nucleus | Transcription regulator |
| C9orf91 | <i>C9orf91</i> | Chromosome 9 open reading frame 91 | -3,329 | 2,00E-05 | Cytoplasm | Other |

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|-----------------|--------------------------------|---------------------------------------------------------------|--------|----------|---------------------|---------------|
| DUSP23 | <i>DUSP23</i> | Dual specificity phosphatase 23 | -3,349 | 1,16E-04 | Cytoplasm | Phosphatase |
| DPF2 | <i>DPF2</i> | D4, zinc and double PHD fingers family 2 | -3,377 | 6,64E-03 | Nucleus | Other |
| DPEP2 | <i>DPEP2</i> | Dipeptidase 2 | -3,432 | 3,60E-04 | Plasma membrane | Peptidase |
| TMCC1 | <i>TMCC1</i> | Transmembrane and coiled-coil domain family 1 | -3,442 | 3,43E-04 | Other | Other |
| ENST00000450304 | <i>MIR4674HG</i> | MIR4674 host gene (non-protein coding) | -3,443 | 2,08E-04 | Other | Other |
| TNFSF12 | <i>TNFSF12</i> | Tumor necrosis factor (ligand) superfamily, member 12 | -3,452 | 1,51E-03 | Extracellular space | Cytokine |
| CTSS | <i>CTSS</i> | Cathepsin S | -3,453 | 3,55E-04 | Cytoplasm | Peptidase |
| CCDC146 | <i>CCDC146</i> | Coiled-coil domain containing 146 | -3,466 | 1,45E-03 | Other | Other |
| CLN6 | <i>CLN6</i> | Ceroid-lipofuscinosis, neuronal 6, late infantile, variant | -3,501 | 1,36E-03 | Cytoplasm | Other |
| XKR8 | <i>XKR8</i> | XK, Kell blood group complex subunit-related family, member 8 | -3,524 | 1,37E-05 | Plasma membrane | Other |
| GBP4 | <i>GBP4</i> | Guanylate binding protein 4 | -3,549 | 1,26E-03 | Cytoplasm | Enzyme |
| RNPEPL1 | <i>RNPEPL1</i> | Arginyl aminopeptidase (aminopeptidase B)-like 1 | -3,553 | 2,09E-05 | Other | Peptidase |
| SSPN | <i>SSPN</i> | Sarcospan | -3,593 | 1,11E-03 | Plasma membrane | Other |
| PCGF5 | <i>PCGF5</i> | Polycomb group ring finger 5 | -3,596 | 1,93E-04 | Cytoplasm | Other |
| DUSP6 | <i>DUSP6</i> | Dual specificity phosphatase 6 | -3,599 | 1,20E-04 | Cytoplasm | Phosphatase |
| FAM111A | <i>FAM111A</i> | Family with sequence similarity 111, member A | -3,608 | 3,02E-04 | Nucleus | Other |
| FAM26F | <i>FAM26F</i> | Family with sequence similarity 26, member F | -3,671 | 1,29E-03 | Other | Other |
| C2orf55 | <i>KIAA1211L</i> | KIAA1211-like | -3,723 | 1,24E-05 | Other | Other |
| VPS41 | <i>VPS41</i> | Vacuolar protein sorting 41 homolog (<i>S. cerevisiae</i>) | -3,758 | 5,88E-06 | Cytoplasm | Transporter |
| ANGPT1 | <i>ANGPT1</i> | Angiotensinogen 1 | -3,804 | 1,30E-03 | Extracellular space | Growth factor |
| RPS6KA5 | <i>RPS6KA5</i> | Ribosomal protein S6 kinase, 90kDa, polypeptide 5 | -3,892 | 4,43E-04 | Nucleus | Kinase |
| LAP3 | <i>LAP3</i> | Leucine aminopeptidase 3 | -3,913 | 4,37E-03 | Cytoplasm | Peptidase |
| DDX28 | <i>DDX28</i> | DEAD (Asp-Glu-Ala-Asp) box polypeptide 28 | -3,936 | 9,12E-04 | Nucleus | Enzyme |
| GPX4 | <i>GPX4</i> | Glutathione peroxidase 4 | -3,969 | 1,05E-04 | Cytoplasm | Enzyme |
| TGM3 | <i>TGM3</i> | Transglutaminase 3 | -4,025 | 2,28E-03 | Cytoplasm | Enzyme |
| STK40 | <i>STK40</i> | Serine/threonine kinase 40 | -4,042 | 5,42E-06 | Cytoplasm | Kinase |
| SMS | <i>SMS</i> | Spermine synthase | -4,053 | 4,53E-04 | Cytoplasm | Enzyme |
| GRAMD1C | <i>GRAMD1C</i> | GRAM domain containing 1C | -4,127 | 5,38E-03 | Other | Other |
| ZCCHC2 | <i>ZCCHC2</i> | Zinc finger, CCHC domain containing 2 | -4,142 | 1,46E-04 | Cytoplasm | Other |
| MAPKAPK3 | <i>MAPKAPK3</i> | Mitogen-activated protein kinase-activated protein kinase 3 | -4,145 | 5,51E-08 | Nucleus | Kinase |
| AGAP7 | <i>AGAP6 (includes others)</i> | ArfGAP with GTPase domain, ankyrin repeat and PH domain 6 | -4,164 | 1,61E-04 | Other | Other |
| C7orf59 | <i>LAMTOR4</i> | Late endosomal/lysosomal adaptor, MAPK and MTOR activator 4 | -4,165 | 6,40E-05 | Cytoplasm | Other |
| ISG20 | <i>ISG20</i> | Interferon stimulated exonuclease gene 20kDa | -4,173 | 2,85E-05 | Nucleus | Enzyme |

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|-----------|------------------|-----------------------------------------------------------------------------------|--------|----------|---------------------|----------------------------|
| HSH2D | <i>HSH2D</i> | Hematopoietic SH2 domain containing | -4,190 | 6,87E-05 | Cytoplasm | Other |
| NKX3-1 | <i>NKX3-1</i> | NK3 homeobox 1 | -4,219 | 9,33E-04 | Nucleus | Transcription regulator |
| SRGAP2 | <i>SRGAP2</i> | SLIT-ROBO Rho GTPase activating protein 2 | -4,235 | 1,05E-04 | Cytoplasm | Other |
| HERC5 | <i>HERC5</i> | HECT and RLD domain containing E3 ubiquitin protein ligase 5 | -4,271 | 3,50E-04 | Cytoplasm | Enzyme |
| C15orf39 | <i>C15orf39</i> | Chromosome 15 open reading frame 39 | -4,295 | 3,37E-05 | Cytoplasm | Other |
| NDST1 | <i>NDST1</i> | N-deacetylase/N-sulfotransferase (heparan glucosaminyl) 1 | -4,296 | 2,90E-04 | Cytoplasm | Enzyme |
| SULF2 | <i>SULF2</i> | Sulfatase 2 | -4,337 | 1,90E-04 | Plasma membrane | Enzyme |
| TREX1 | <i>TREX1</i> | Three prime repair exonuclease 1 | -4,374 | 1,48E-05 | Nucleus | Enzyme |
| OASL | <i>OASL</i> | 2'-5'-oligoadenylate synthetase-like | -4,377 | 1,91E-04 | Cytoplasm | Enzyme |
| ARRB1 | <i>ARRB1</i> | Arrestin, beta 1 | -4,395 | 3,13E-05 | Cytoplasm | Other |
| PMM2 | <i>PMM2</i> | Phosphomannomutase 2 | -4,412 | 1,60E-03 | Cytoplasm | Enzyme |
| P2RY10 | <i>P2RY10</i> | Purinergic receptor P2Y, G-protein coupled, 10 | -4,481 | 8,12E-05 | Plasma membrane | G-protein coupled receptor |
| LOC285181 | <i>LOC285181</i> | Uncharacterized LOC285181 | -4,486 | 1,97E-03 | Other | Other |
| CYSLTR1 | <i>CYSLTR1</i> | Cysteinyl leukotriene receptor 1 | -4,490 | 7,00E-05 | Plasma membrane | G-protein coupled receptor |
| IFI6 | <i>IFI6</i> | Interferon, alpha-inducible protein 6 | -4,532 | 1,94E-03 | Cytoplasm | Other |
| OLIG1 | <i>OLIG1</i> | Oligodendrocyte transcription factor 1 | -4,546 | 4,24E-03 | Nucleus | Transcription regulator |
| NCOA4 | <i>NCOA4</i> | Nuclear receptor coactivator 4 | -4,557 | 1,29E-04 | Nucleus | Transcription regulator |
| LYSMD2 | <i>LYSMD2</i> | LysM, putative peptidoglycan-binding, domain containing 2 | -4,652 | 6,27E-04 | Other | Other |
| MEF2C | <i>MEF2C</i> | Myocyte enhancer factor 2C | -4,725 | 7,23E-06 | Nucleus | Transcription regulator |
| IFIT3 | <i>IFIT3</i> | Interferon-induced protein with tetratricopeptide repeats 3 | -4,813 | 2,71E-04 | Cytoplasm | Other |
| GBP5 | <i>GBP5</i> | Guanylate binding protein 5 | -5,110 | 5,29E-03 | Plasma membrane | Enzyme |
| PHOSPHO1 | <i>PHOSPHO1</i> | Phosphatase, orphan 1 | -5,195 | 1,30E-03 | Extracellular space | Enzyme |
| CLC | <i>CLC</i> | Charcot-Leyden crystal galectin | -5,221 | 1,80E-03 | Cytoplasm | Enzyme |
| SPINT1 | <i>SPINT1</i> | Serine peptidase inhibitor, Kunitz type 1 | -5,869 | 1,39E-03 | Extracellular space | Other |
| TCTN1 | <i>TCTN1</i> | Tectonic family member 1 | -6,163 | 2,89E-05 | Extracellular space | Other |
| FGL2 | <i>FGL2</i> | Fibrinogen-like 2 | -6,279 | 2,11E-03 | Extracellular space | Peptidase |
| CYB561 | <i>CYB561</i> | Cytochrome b561 | -6,567 | 5,19E-06 | Cytoplasm | Enzyme |
| MFNG | <i>MFNG</i> | MFNG O-fucosylpeptide 3-beta-N-acetylglucosaminyltransferase | -6,670 | 8,65E-06 | Cytoplasm | Enzyme |
| ASF1B | <i>ASF1B</i> | Anti-silencing function 1B histone chaperone | -6,828 | 3,91E-06 | Nucleus | Other |
| TIGD3 | <i>TIGD3</i> | Tigger transposable element derived 3 | -6,990 | 2,09E-04 | Other | Other |
| RSAD2 | <i>RSAD2</i> | Radical S-adenosyl methionine domain containing 2 | -7,371 | 3,07E-03 | Cytoplasm | Enzyme |
| SMPD3 | <i>SMPD3</i> | Sphingomyelin phosphodiesterase 3, neutral membrane (neutral sphingomyelinase II) | -7,449 | 4,76E-04 | Cytoplasm | Enzyme |

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|---------|----------------|-------------------------------------------------------------|---------|----------|---------------------|----------------------------|
| RPGRIP1 | <i>RPGRIP1</i> | Retinitis pigmentosa GTPase regulator interacting protein 1 | -7,499 | 2,46E-05 | Extracellular space | Other |
| ISG15 | <i>ISG15</i> | ISG15 ubiquitin-like modifier | -7,627 | 4,64E-04 | Extracellular space | Other |
| MYBPH | <i>MYBPH</i> | Myosin binding protein H | -8,077 | 6,13E-03 | Cytoplasm | Other |
| PLEKHO1 | <i>PLEKHO1</i> | Pleckstrin homology domain containing, family O member 1 | -9,676 | 7,26E-05 | Plasma membrane | Other |
| MPEG1 | <i>MPEG1</i> | Macrophage expressed 1 | -9,973 | 1,19E-05 | Cytoplasm | Other |
| NOV | <i>NOV</i> | Nephroblastoma overexpressed | -10,869 | 7,94E-04 | Extracellular space | Growth factor |
| CCR3 | <i>CCR3</i> | Chemokine (C-C motif) receptor 3 | -10,939 | 2,44E-04 | Plasma membrane | G-protein coupled receptor |
| HVCN1 | <i>HVCN1</i> | Hydrogen voltage-gated channel 1 | -10,989 | 1,42E-05 | Plasma membrane | Ion channel |
| IFIT1 | <i>IFIT1</i> | Interferon-induced protein with tetratricopeptide repeats 1 | -11,044 | 4,54E-04 | Cytoplasm | Other |
| GPR162 | <i>GPR162</i> | G protein-coupled receptor 162 | -14,311 | 1,36E-04 | Plasma membrane | G-protein coupled receptor |
| CSF1R | <i>CSF1R</i> | Colony stimulating factor 1 receptor | -14,827 | 4,91E-05 | Plasma membrane | Kinase |
| CHI3L1 | <i>CHI3L1</i> | Chitinase 3-like 1 (cartilage glycoprotein-39) | -16,888 | 9,13E-04 | Extracellular space | Enzyme |