

Supplementary information

DLEU1 promotes oral squamous cell carcinoma progression by activating interferon-stimulated genes

Yui Hatanaka^{1,2}, Takeshi Niinuma², Hiroshi Kitajima², Koyo Nishiyama¹, Reo Maruyama³, Kazuya Ishiguro^{2,4}, Mutsumi Toyota², Eiichiro Yamamoto², Masahiro Kai², Akira Yorozu^{2,5}, Shohei Sekiguchi^{1,2}, Kazuhiro Ogi¹, Hironari Dehari¹, Masashi Idogawa⁶, Yasushi Sasaki⁷, Takashi Tokino⁶, Akihiro Miyazaki¹, Hiromu Suzuki²

¹Department of Oral Surgery, Sapporo Medical University School of Medicine, Sapporo, Japan

²Department of Molecular Biology, Sapporo Medical University School of Medicine, Sapporo, Japan

³Project for Cancer Epigenomics, Cancer Institute, Japanese Foundation for Cancer Research, Tokyo, Japan

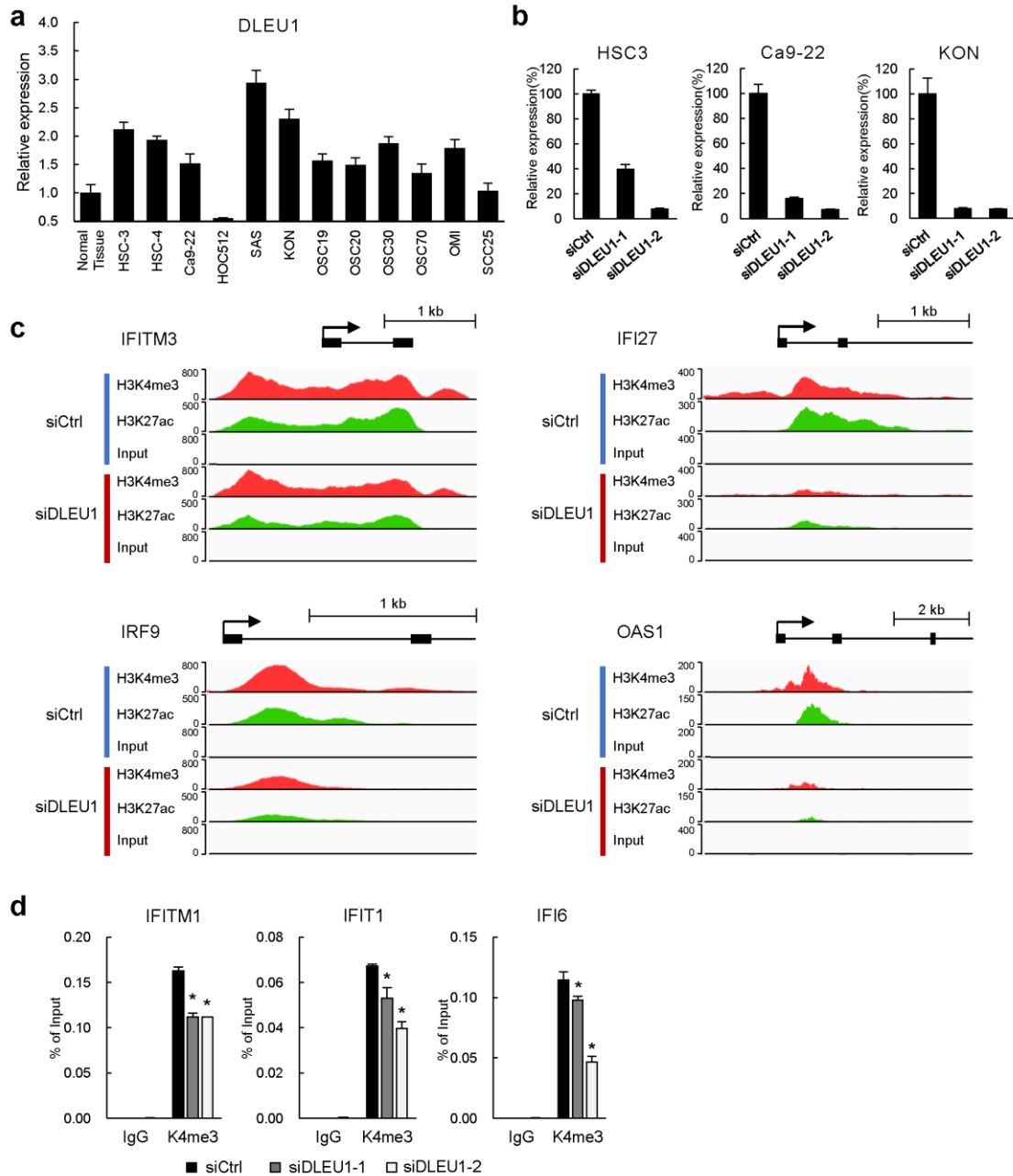
⁴Department of Gastroenterology and Hepatology, Sapporo Medical University School of Medicine, Sapporo, Japan

⁵Department of Otolaryngology, Sapporo Medical University School of Medicine, Sapporo, Japan

⁶Department of Medical Genome Science, Research Institute for Frontier Medicine, Sapporo Medical University School of Medicine, Sapporo, Japan

⁷Biology Division, Department of Liberal Arts and Sciences, Center for Medical Education, Sapporo Medical University, Sapporo, Japan.

Supplementary Figure S1



Supplementary Figure S1

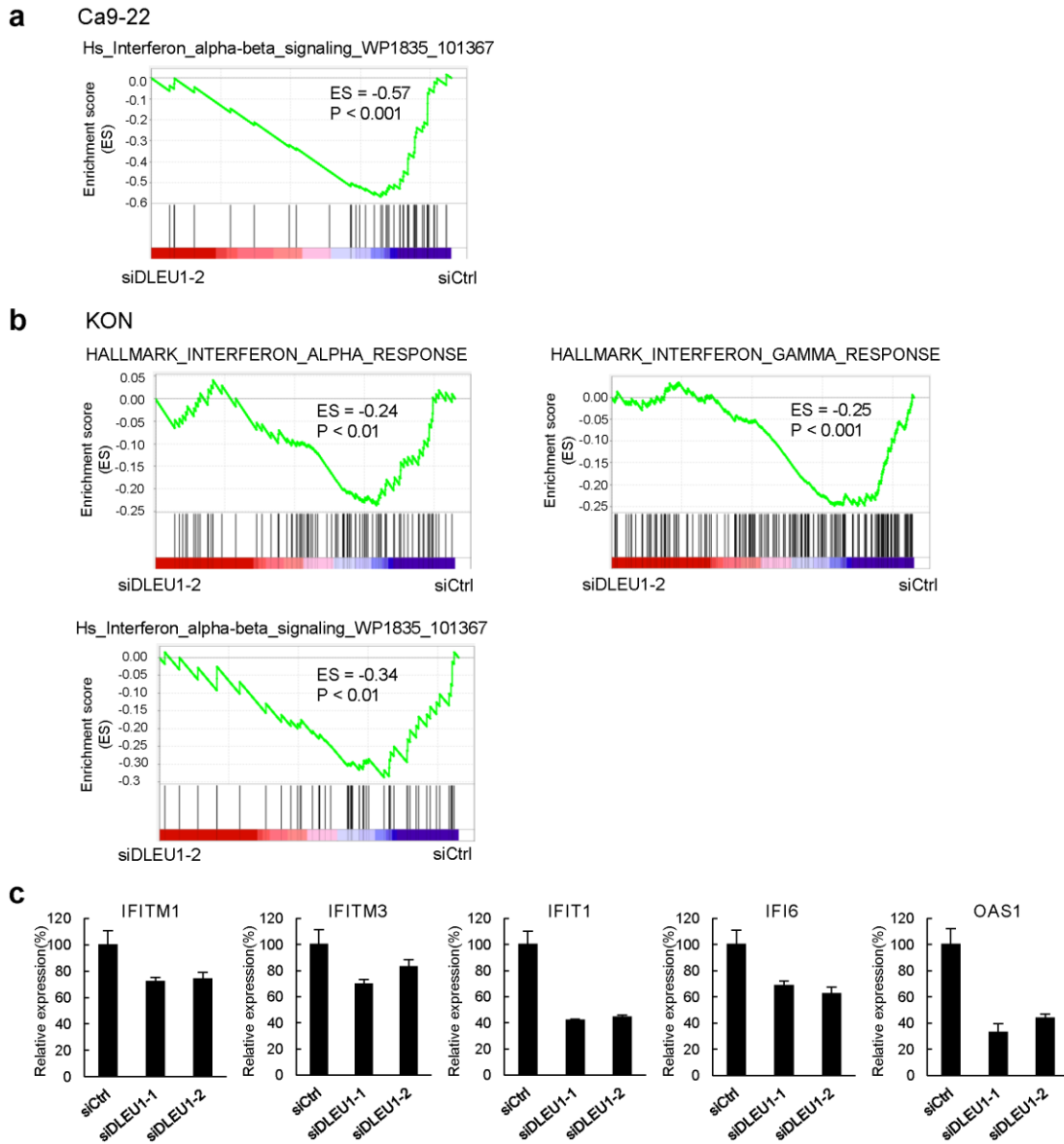
Effects of DLEU1 depletion on histone modification at interferon-signaling related genes in OSCC cells. (a) qRT-PCR analysis of DLEU1 in a series of OSCC cell lines and in normal tongue tissue. (b)

qRT-PCR analysis of DLEU1 in the indicated OSCC cell lines transfected with control siRNA (siCtrl) or siRNA targeting DLEU1 (siDLEU1-1 or siDLEU1-2). (c) Results of ChIP-seq showing levels of H3K4me3 and H3K27ac at TSS regions of representative interferon-stimulated genes (ISGs) in HSC3 cells transfected with the indicated siRNAs. Gene structures are shown at the top. (d) Results of ChIP-qPCR analysis showing levels of H3K4me3 at the TSS regions of representative ISGs in HSC3 cells transfected with the indicated siRNA. * $P < 0.05$.

Software used to draw Figure S1c

Integrative Genomics Viewer 2.6 <https://software.broadinstitute.org/software/igv/>

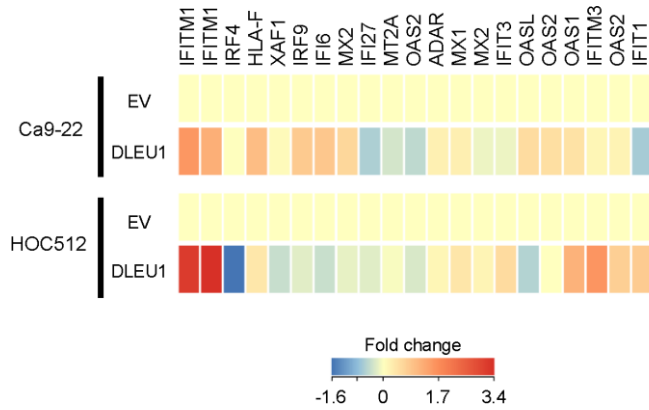
Supplementary Figure S2



Supplementary Figure S2

DLEU1 knockdown suppresses interferon signaling-related genes in OSCC cells. (a) Gene Set Enrichment Analysis (GSEA) of interferon α/β signaling genes in Ca9-22 cells. (b) GSEA of the indicated gene sets in KON cells. (c) qRT-PCR analysis of the indicated ISGs in KON cells transfected with the indicated siRNA.

Supplementary Figure S3



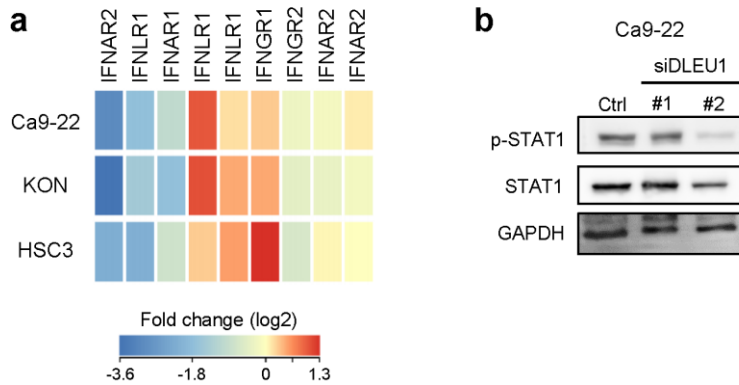
Supplementary Figure S3

DLEU1 overexpression upregulates interferon-signaling related genes in OSCC cells. Heatmaps showing microarray results for the indicated genes in Ca9-22 (upper) and HOC512 (lower) cells infected with an empty lentivirus vector (EV) or a DLEU1 expression vector. Results are normalized to cells with an empty vector.

Software used to draw Figure S3

GeneSpring GX version 13 <https://www.agilent.com/en/product/software-informatics/genomics-software-informatics/gene-expression/genespring-gx>

Supplementary Figure S4



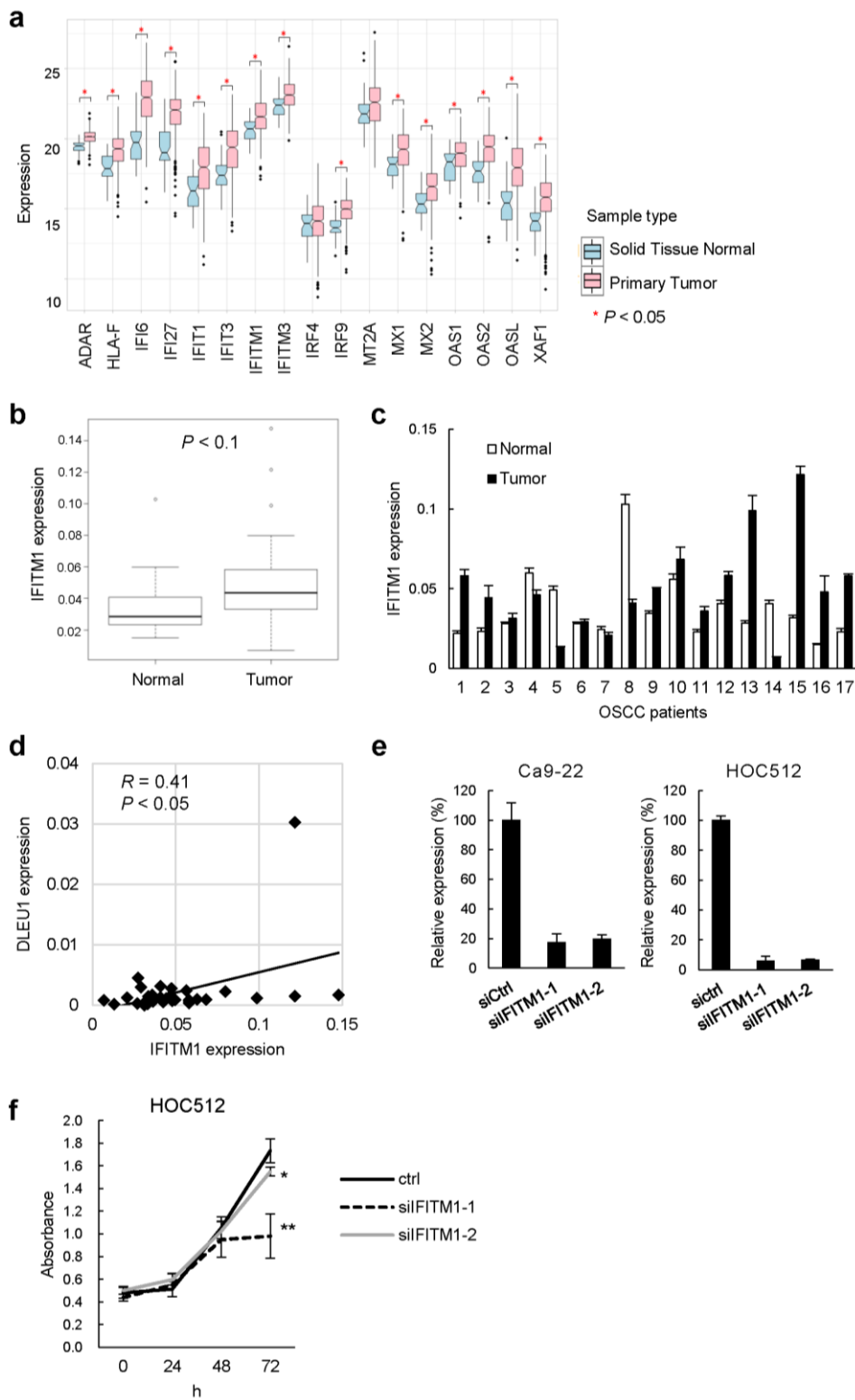
Supplementary Figure S4

DLEU1 upregulates interferon receptor genes and activates JAK-STAT signaling in OSCC cells. (a) Heatmaps showing microarray results for interferon receptor genes in the indicated OSCC cell lines transfected with siRNA targeting DLEU1. Results are normalized to cells transfected with control siRNA. (b) Western blot analysis of total and phosphorylated STAT1 in Ca9-22 cells transfected with the indicated siRNA.

Software used to draw Figure S4a

GeneSpring GX version 13 <https://www.agilent.com/en/product/software-informatics/genomics-software-informatics/gene-expression/genespring-gx>

Supplementary Figure S5



Supplementary Figure S5

Expression and functional analysis of interferon-stimulated genes (ISGs) in OSCC. (a) Summarized RNA-seq results from datasets for the indicated ISGs in head and neck squamous cell carcinoma (HNSCC) primary tumor and normal tissues in The Cancer Genome Atlas. (b) Summarized qRT-PCR results for IFITM1 in primary OSCC tumors (n = 32) and adjacent normal tissues (n = 17). (c) qRT-PCR analysis of IFITM1 in paired normal tissues and primary OSCC tumors. (d) Correlation between expression levels of DLEU1 and those of IFITM1 in primary OSCC tumors (n = 32). Pearson's correlation coefficient (R) is shown. (e) qRT-PCR analysis of IFITM1 in indicated OSCC cell lines transfected with the indicated siRNA. (f) Cell viability assays in HOC512 cells transfected with the indicated siRNA. * $P < 0.05$, ** $P < 0.01$.

Figure 4c

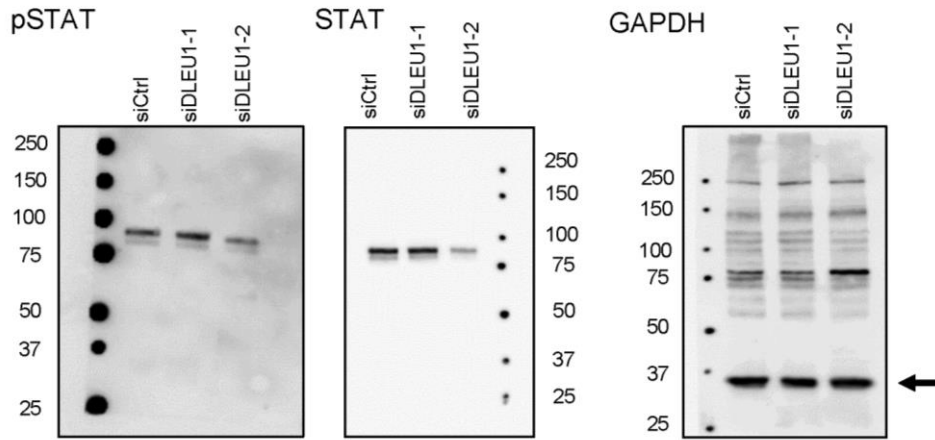


Figure 4d

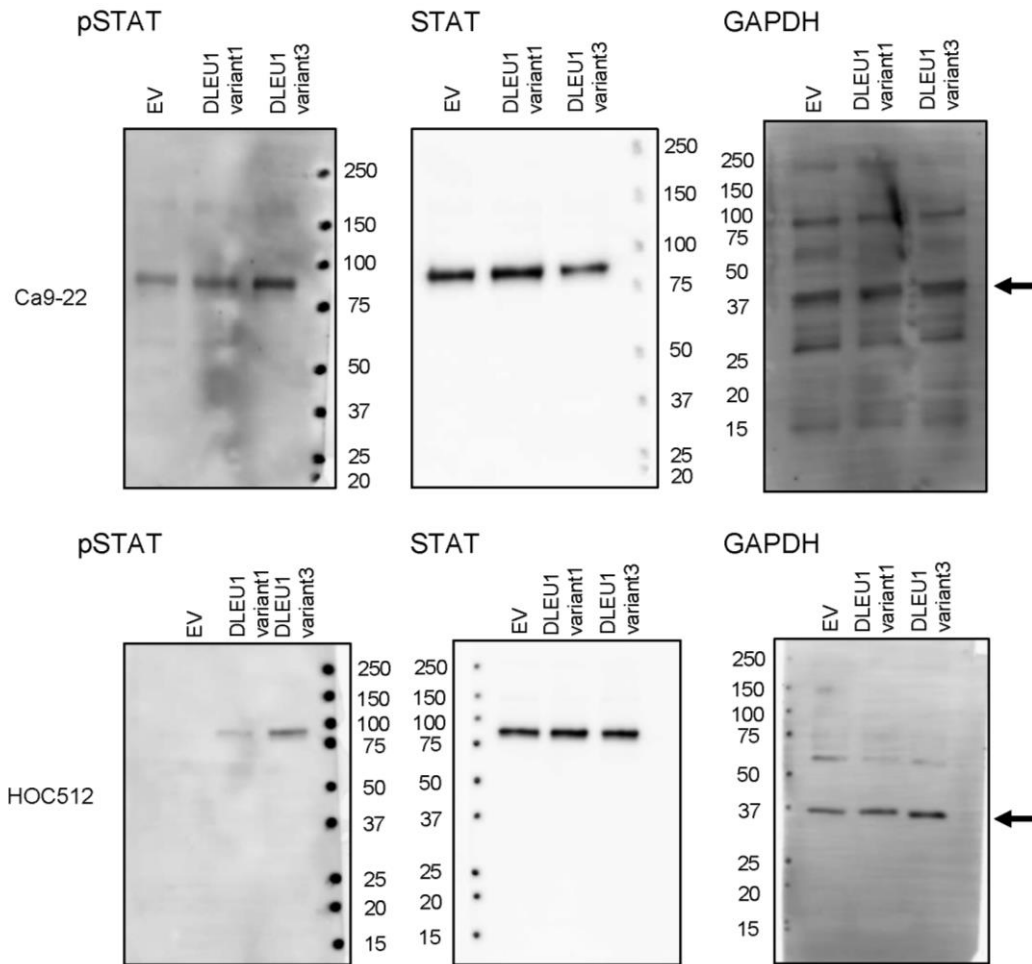
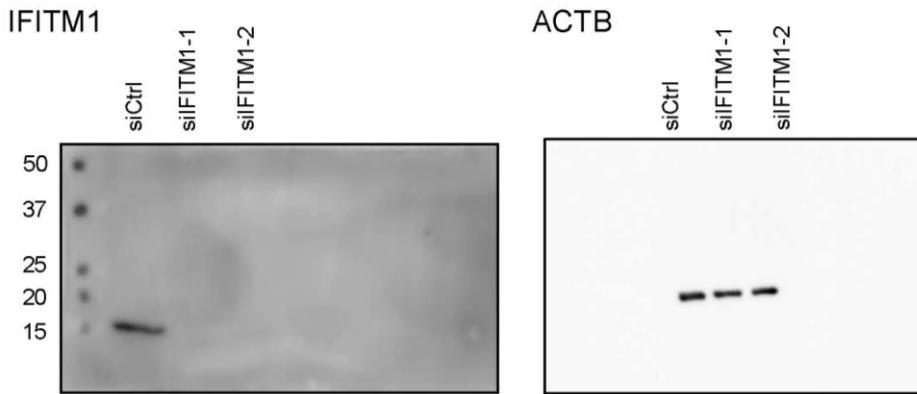
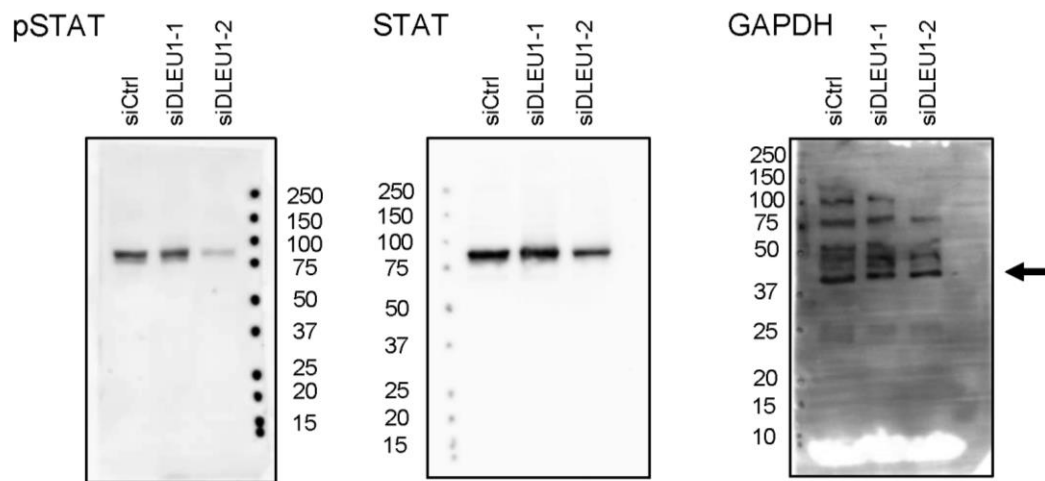


Figure 6b



Supplementary Figure S4b



Note: In Figure 4d, we analyzed the effects of ectopic expression of DLEU1 variants 1 (NR_109973) and 3 (NR_109974) and obtained similar results. Because variant 1 was dominantly expressed in OSCC cells, we show results using variant 1 in the main figure.

Supplementary Table S1. Top 300 genes whose H3K27ac levels were decreased by DLEU1 knockdown in HSC3 cells

| GeneSymbol | GeneName | PANTHER Gene ID |
|------------|--|-----------------------------------|
| OSER1 | Oxidative stress-responsive serine-rich protein 1;OSER1;ortholog | HUMAN HGNC=16105 UniProtKB=Q9NX31 |
| ZFP36L1 | mRNA decay activator protein ZFP36L1;ZFP36L1;ortholog | HUMAN HGNC=1107 UniProtKB=Q07352 |
| LY6E | Lymphocyte antigen 6E;LY6E;ortholog | HUMAN HGNC=6727 UniProtKB=Q16553 |
| SNX12 | Sorting nexin-12;SNX12;ortholog | HUMAN HGNC=14976 UniProtKB=Q9UMY4 |
| SRSF11 | Serine/arginine-rich splicing factor 11;SRSF11;ortholog | HUMAN HGNC=10782 UniProtKB=Q05519 |
| WASL | Neural Wiskott-Aldrich syndrome protein;WASL;ortholog | HUMAN HGNC=12735 UniProtKB=O00401 |
| PHLDA3 | Pleckstrin homology-like domain family A member 3;PHLDA3;ortholog | HUMAN HGNC=8934 UniProtKB=Q9Y5J5 |
| MYADM | Myeloid-associated differentiation marker;MYADM;ortholog | HUMAN HGNC=7544 UniProtKB=Q96S97 |
| BICD1 | Protein bicaudal D homolog 1;BICD1;ortholog | HUMAN HGNC=1049 UniProtKB=Q96G01 |
| DHCR24 | Delta(24)-sterol reductase;DHCR24;ortholog | HUMAN HGNC=2859 UniProtKB=Q15392 |
| JMY | Junction-mediating and -regulatory protein;JMY;ortholog | HUMAN HGNC=28916 UniProtKB=Q8N9B5 |
| SYNE2 | Nesprin-2;SYNE2;ortholog | HUMAN HGNC=17084 UniProtKB=Q8WXH0 |
| ZNF317 | Zinc finger protein 317;ZNF317;ortholog | HUMAN HGNC=13507 UniProtKB=Q96PQ6 |
| ACSS2 | Acetyl-coenzyme A synthetase, cytoplasmic;ACSS2;ortholog | HUMAN HGNC=15814 UniProtKB=Q9NR19 |
| SIX4 | Homeobox protein SIX4;SIX4;ortholog | HUMAN HGNC=10890 UniProtKB=Q9UIU6 |
| LGALS3 | Galectin-3;LGALS3;ortholog | HUMAN HGNC=6563 UniProtKB=P17931 |
| B3GNT5 | Lactosylceramide 1,3-N-acetyl-beta-D-glucosaminyltransferase;B3GNT5;ortholog | HUMAN HGNC=15684 UniProtKB=Q9BYG0 |
| OAS1 | 2'-5'-oligoadenylate synthase 1;OAS1;ortholog | HUMAN HGNC=8086 UniProtKB=P00973 |
| POLG | DNA polymerase subunit gamma-1;POLG;ortholog | HUMAN HGNC=9179 UniProtKB=P54098 |
| DCT | L-dopachrome tautomerase;DCT;ortholog | HUMAN HGNC=2709 UniProtKB=P40126 |
| SEC61B | Protein transport protein Sec61 subunit beta;SEC61B;ortholog | HUMAN HGNC=16993 UniProtKB=P60468 |
| ATP6V1E1 | V-type proton ATPase subunit E 1;ATP6V1E1;ortholog | HUMAN HGNC=857 UniProtKB=P36543 |
| SHF | SH2 domain-containing adapter protein F;SHF;ortholog | HUMAN HGNC=25116 UniProtKB=Q7M4L6 |
| THOC3 | THO complex subunit 3;THOC3;ortholog | HUMAN HGNC=19072 UniProtKB=Q96J01 |
| DCK | Deoxycytidine kinase;DCK;ortholog | HUMAN HGNC=2704 UniProtKB=P27707 |
| JMJD1C | Probable JmjC domain-containing histone demethylation protein 2C;JMJD1C;ortholog | HUMAN HGNC=12313 UniProtKB=Q15652 |
| PFN2 | Profilin-2;PFN2;ortholog | HUMAN HGNC=8882 UniProtKB=P35080 |
| LASP1 | LIM and SH3 domain protein 1;LASP1;ortholog | HUMAN HGNC=6513 UniProtKB=Q14847 |
| PTPDC1 | Protein tyrosine phosphatase domain-containing protein 1;PTPDC1;ortholog | HUMAN HGNC=30184 UniProtKB=A2A3K4 |
| TSG101 | Tumor susceptibility gene 101 protein;TSG101;ortholog | HUMAN HGNC=15971 UniProtKB=Q99816 |

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|-----------|--|---------------------------------------|
| FBXO5 | F-box only protein 5;FBXO5;ortholog | HUMAN HGNC=13584 UniProtKB=Q9UKT4 |
| AJUBA | LIM domain-containing protein ajuba;AJUBA;ortholog | HUMAN HGNC=20250 UniProtKB=Q96IF1 |
| OASL | 2'-5'-oligoadenylate synthase-like protein;OASL;ortholog | HUMAN HGNC=8090 UniProtKB=Q15646 |
| PARP12 | Poly [ADP-ribose] polymerase 12;PARP12;ortholog | HUMAN HGNC=21919 UniProtKB=Q9H0J9 |
| DOK1 | Ecto-ADP-ribosyltransferase 4;ART4;ortholog | HUMAN HGNC=726 UniProtKB=Q93070 |
| RNF39 | RING finger protein 39;RNF39;ortholog | HUMAN HGNC=18064 UniProtKB=Q9H2S5 |
| HIST1H2AC | Histone H2A type 1-C;HIST1H2AC;ortholog | HUMAN HGNC=4733 UniProtKB=Q93077 |
| MED21 | Mediator of RNA polymerase II transcription subunit 21;MED21;ortholog | HUMAN HGNC=11473 UniProtKB=Q13503 |
| SMIM26 | Small integral membrane protein 26;SMIM26;ortholog | HUMAN HGNC=43430 UniProtKB=A0A096LP01 |
| IFI27 | Interferon alpha-inducible protein 27, mitochondrial;IFI27;ortholog | HUMAN HGNC=5397 UniProtKB=P40305 |
| GADD45B | Growth arrest and DNA damage-inducible protein GADD45 beta;GADD45B;ortholog | HUMAN HGNC=4096 UniProtKB=O75293 |
| PPP1R13L | RelA-associated inhibitor;PPP1R13L;ortholog | HUMAN HGNC=18838 UniProtKB=Q8WUF5 |
| DCAF11 | DDB1- and CUL4-associated factor 11;DCAF11;ortholog | HUMAN HGNC=20258 UniProtKB=Q8TEB1 |
| PRMT5 | Protein arginine N-methyltransferase 5;PRMT5;ortholog | HUMAN HGNC=10894 UniProtKB=O14744 |
| DDX47 | Probable ATP-dependent RNA helicase DDX47;DDX47;ortholog | HUMAN HGNC=18682 UniProtKB=Q9H0S4 |
| SRGAP1 | SLIT-ROBO Rho GTPase-activating protein 1;SRGAP1;ortholog | HUMAN HGNC=17382 UniProtKB=Q7Z6B7 |
| STRAP | Tetratricopeptide repeat protein 5;TTC5;ortholog | HUMAN HGNC=19274 UniProtKB=Q8N0Z6 |
| VTA1 | Vacuolar protein sorting-associated protein VTA1 homolog;VTA1;ortholog | HUMAN HGNC=20954 UniProtKB=Q9NP79 |
| ACVR1B | Activin receptor type-1B;ACVR1B;ortholog | HUMAN HGNC=172 UniProtKB=P36896 |
| GLUL | Glutamine synthetase;GLUL;ortholog | HUMAN HGNC=4341 UniProtKB=P15104 |
| IER5 | Immediate early response gene 5 protein;IER5;ortholog | HUMAN HGNC=5393 UniProtKB=Q5VY09 |
| CEBPD | CCAAT/enhancer-binding protein delta;CEBPD;ortholog | HUMAN HGNC=1835 UniProtKB=P49716 |
| PRKDC | DNA-dependent protein kinase catalytic subunit;PRKDC;ortholog | HUMAN HGNC=9413 UniProtKB=P78527 |
| BTN3A1 | Butyrophilin subfamily 3 member A1;BTN3A1;ortholog | HUMAN HGNC=1138 UniProtKB=O00481 |
| KTN1 | Kinectin;KTN1;ortholog | HUMAN HGNC=6467 UniProtKB=Q86UP2 |
| IFIT1 | Interferon-induced protein with tetratricopeptide repeats 1;IFIT1;ortholog | HUMAN HGNC=5407 UniProtKB=P09914 |
| CD109 | CD109 antigen;CD109;ortholog | HUMAN HGNC=21685 UniProtKB=Q6YHK3 |
| PGRMC2 | Membrane-associated progesterone receptor component 2;PGRMC2;ortholog | HUMAN HGNC=16089 UniProtKB=O15173 |
| TDRD7 | Tudor domain-containing protein 7;TDRD7;ortholog | HUMAN HGNC=30831 UniProtKB=Q8NHU6 |
| CCDC50 | Coiled-coil domain-containing protein 50;CCDC50;ortholog | HUMAN HGNC=18111 UniProtKB=Q8IVM0 |
| NDUFS2 | NADH dehydrogenase [ubiquinone] iron-sulfur protein 2, mitochondrial;NDUFS2;ortholog | HUMAN HGNC=7708 UniProtKB=O75306 |
| RPS29 | 40S ribosomal protein S29;RPS29;ortholog | HUMAN HGNC=10419 UniProtKB=P62273 |

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| FGGY | FGGY carbohydrate kinase domain-containing protein;FGGY;ortholog | HUMAN HGNC=25610 UniProtKB=Q96C11 |
| TPST2 | Protein-tyrosine sulfotransferase 2;TPST2;ortholog | HUMAN HGNC=12021 UniProtKB=O60704 |
| RAB21 | Ras-related protein Rab-21;RAB21;ortholog | HUMAN HGNC=18263 UniProtKB=Q9UL25 |
| EFNA1 | Ephrin-A1;EFNA1;ortholog | HUMAN HGNC=3221 UniProtKB=P20827 |
| NFKBIA | NF-kappa-B inhibitor alpha;NFKBIA;ortholog | HUMAN HGNC=7797 UniProtKB=P25963 |
| DBP | D site-binding protein;DBP;ortholog | HUMAN HGNC=2697 UniProtKB=Q10586 |
| PHF13 | PHD finger protein 13;PHF13;ortholog | HUMAN HGNC=22983 UniProtKB=Q86Y18 |
| ATP9A | Probable phospholipid-transporting ATPase IIA;ATP9A;ortholog | HUMAN HGNC=13540 UniProtKB=O75110 |
| MX1 | Interferon-induced GTP-binding protein Mx1;MX1;ortholog | HUMAN HGNC=7532 UniProtKB=P20591 |
| PPFIA1 | Liprin-alpha-1;PPFIA1;ortholog | HUMAN HGNC=9245 UniProtKB=Q13136 |
| PHPT1 | 14 kDa phosphohistidine phosphatase;PHPT1;ortholog | HUMAN HGNC=30033 UniProtKB=Q9NRX4 |
| MX2 | Interferon-induced GTP-binding protein Mx2;MX2;ortholog | HUMAN HGNC=7533 UniProtKB=P20592 |
| SNRPA1 | U2 small nuclear ribonucleoprotein A';SNRPA1;ortholog | HUMAN HGNC=11152 UniProtKB=P09661 |
| GAS2L1 | GAS2-like protein 1;GAS2L1;ortholog | HUMAN HGNC=16955 UniProtKB=Q99501 |
| IFITM3 | Interferon-induced transmembrane protein 3;IFITM3;ortholog | HUMAN HGNC=5414 UniProtKB=Q01628 |
| MUM1 | PWWP domain-containing protein MUM1;MUM1;ortholog | HUMAN HGNC=29641 UniProtKB=Q2TAK8 |
| SELENOF | Selenoprotein F;SELENOF;ortholog | HUMAN Gene=SEP15 UniProtKB=O60613 |
| CXCL1 | Growth-regulated alpha protein;CXCL1;ortholog | HUMAN HGNC=4602 UniProtKB=P09341 |
| KLF10 | Krueppel-like factor 10;KLF10;ortholog | HUMAN HGNC=11810 UniProtKB=Q13118 |
| IFI44L | Interferon-induced protein 44-like;IFI44L;ortholog | HUMAN HGNC=17817 UniProtKB=Q53G44 |
| CALR | Calreticulin;CALR;ortholog | HUMAN HGNC=1455 UniProtKB=P27797 |
| SLC35B4 | UDP-xylose and UDP-N-acetylglucosamine transporter;SLC35B4;ortholog | HUMAN HGNC=20584 UniProtKB=Q969S0 |
| FLOT1 | Folate transporter 1;SLC19A1;ortholog | HUMAN HGNC=10937 UniProtKB=P41440 |
| GGNBP2 | Gametogenetin-binding protein 2;GGNBP2;ortholog | HUMAN HGNC=19357 UniProtKB=Q9H3C7 |
| ELF3 | ETS-related transcription factor Elf-3;ELF3;ortholog | HUMAN HGNC=3318 UniProtKB=P78545 |
| ZBTB41 | Zinc finger and BTB domain-containing protein 41;ZBTB41;ortholog | HUMAN HGNC=24819 UniProtKB=Q5SVQ8 |
| EIF4A1 | Eukaryotic initiation factor 4A-I;EIF4A1;ortholog | HUMAN HGNC=3282 UniProtKB=P60842 |
| SAP30 | Histone deacetylase complex subunit SAP30;SAP30;ortholog | HUMAN HGNC=10532 UniProtKB=O75446 |
| SERINC1 | Serine incorporator 1;SERINC1;ortholog | HUMAN HGNC=13464 UniProtKB=Q9NRX5 |
| ADAR | Double-stranded RNA-specific adenosine deaminase;ADAR;ortholog | HUMAN HGNC=225 UniProtKB=P55265 |
| DDX58 | Probable ATP-dependent RNA helicase DDX58;DDX58;ortholog | HUMAN HGNC=19102 UniProtKB=O95786 |
| DHX40 | Probable ATP-dependent RNA helicase DHX40;DHX40;ortholog | HUMAN HGNC=18018 UniProtKB=Q8IX18 |
| EPN3 | Epsin-3;EPN3;ortholog | HUMAN HGNC=18235 UniProtKB=Q9H201 |

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|----------|---|-----------------------------------|
| MRPS22 | 28S ribosomal protein S22, mitochondrial;MRPS22;ortholog | HUMAN HGNC=14508 UniProtKB=P82650 |
| PSMA3 | Proteasome subunit alpha type-3;PSMA3;ortholog | HUMAN HGNC=9532 UniProtKB=P25788 |
| PIP5K1A | Phosphatidylinositol 4-phosphate 5-kinase type-1 alpha;PIP5K1A;ortholog | HUMAN HGNC=8994 UniProtKB=Q99755 |
| CAPZA1 | F-actin-capping protein subunit alpha-1;CAPZA1;ortholog | HUMAN HGNC=1488 UniProtKB=P52907 |
| SMARCA2 | Probable global transcription activator SNF2L2;SMARCA2;ortholog | HUMAN HGNC=11098 UniProtKB=P51531 |
| ARHGAP29 | Rho GTPase-activating protein 29;ARHGAP29;ortholog | HUMAN HGNC=30207 UniProtKB=Q52LW3 |
| CHCHD2 | Coiled-coil-helix-coiled-coil-helix domain-containing protein 2;CHCHD2;ortholog | HUMAN HGNC=21645 UniProtKB=Q9Y6H1 |
| ZBTB20 | Zinc finger and BTB domain-containing protein 20;ZBTB20;ortholog | HUMAN HGNC=13503 UniProtKB=Q9HC78 |
| SEC22B | Vesicle-trafficking protein SEC22b;SEC22B;ortholog | HUMAN HGNC=10700 UniProtKB=O75396 |
| MON1B | Vacuolar fusion protein MON1 homolog B;MON1B;ortholog | HUMAN HGNC=25020 UniProtKB=Q7L1V2 |
| POLR3E | DNA-directed RNA polymerase III subunit RPC5;POLR3E;ortholog | HUMAN HGNC=30347 UniProtKB=Q9NVU0 |
| HSPA6 | Heat shock 70 kDa protein 6;HSPA6;ortholog | HUMAN HGNC=5239 UniProtKB=P17066 |
| ANKRD65 | Ankyrin repeat domain-containing protein 65;ANKRD65;ortholog | HUMAN HGNC=42950 UniProtKB=E5RJM6 |
| EEF1A1 | Elongation factor 1-alpha 1;EEF1A1;ortholog | HUMAN HGNC=3189 UniProtKB=P68104 |
| EFCAB11 | EF-hand calcium-binding domain-containing protein 11;EFCAB11;ortholog | HUMAN HGNC=20357 UniProtKB=Q9BUY7 |
| SWAP70 | Switch-associated protein 70;SWAP70;ortholog | HUMAN HGNC=17070 UniProtKB=Q9UH65 |
| PIM1 | Serine/threonine-protein kinase pim-1;PIM1;ortholog | HUMAN HGNC=8986 UniProtKB=P11309 |
| GBP4 | Guanylate-binding protein 4;GBP4;ortholog | HUMAN HGNC=20480 UniProtKB=Q96PP9 |
| CDCA2 | Cell division cycle-associated protein 2;CDCA2;ortholog | HUMAN HGNC=14623 UniProtKB=Q69YH5 |
| TNFAIP8 | Tumor necrosis factor alpha-induced protein 8;TNFAIP8;ortholog | HUMAN HGNC=17260 UniProtKB=O95379 |
| ANG | Angiogenin;ANG;ortholog | HUMAN HGNC=483 UniProtKB=P03950 |
| TRIP10 | Cdc42-interacting protein 4;TRIP10;ortholog | HUMAN HGNC=12304 UniProtKB=Q15642 |
| IFIT3 | Interferon-induced protein with tetratricopeptide repeats 3;IFIT3;ortholog | HUMAN HGNC=5411 UniProtKB=O14879 |
| VCL | Vinculin;VCL;ortholog | HUMAN HGNC=12665 UniProtKB=P18206 |
| ATF3 | Cyclic AMP-dependent transcription factor ATF-3;ATF3;ortholog | HUMAN HGNC=785 UniProtKB=P18847 |
| ARAP1 | Arf-GAP with Rho-GAP domain, ANK repeat and PH domain-containing protein 1;ARAP1;ortholog | HUMAN HGNC=16925 UniProtKB=Q96P48 |
| ETV6 | Transcription factor ETV6;ETV6;ortholog | HUMAN HGNC=3495 UniProtKB=P41212 |
| BCL2L13 | Bcl-2-like protein 13;BCL2L13;ortholog | HUMAN HGNC=17164 UniProtKB=Q9BXX5 |
| CDKN2C | Cyclin-dependent kinase 4 inhibitor C;CDKN2C;ortholog | HUMAN HGNC=1789 UniProtKB=P42773 |
| PYM1 | Partner of Y14 and mago;PYM1;ortholog | HUMAN HGNC=30258 UniProtKB=Q9BRP8 |
| ZCCHC2 | Zinc finger CCHC domain-containing protein 2;ZCCHC2;ortholog | HUMAN HGNC=22916 UniProtKB=Q9C0B9 |
| TARS2 | Threonine--tRNA ligase, mitochondrial;TARS2;ortholog | HUMAN HGNC=30740 UniProtKB=Q9BW92 |

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| AHCYL2 | Adenosylhomocysteinase 3;AHCYL2;ortholog | HUMAN HGNC=22204 UniProtKB=Q96HN2 |
| GABARAPL1 | Gamma-aminobutyric acid receptor-associated protein-like 1;GABARAPL1;ortholog | HUMAN HGNC=4068 UniProtKB=Q9H0R8 |
| RMDN2 | Regulator of microtubule dynamics protein 2;RMDN2;ortholog | HUMAN HGNC=26567 UniProtKB=Q96LZ7 |
| PSMD12 | 26S proteasome non-ATPase regulatory subunit 12;PSMD12;ortholog | HUMAN HGNC=9557 UniProtKB=O00232 |
| MUM1 | Interferon regulatory factor 4;IRF4;ortholog | HUMAN HGNC=6119 UniProtKB=Q15306 |
| QSER1 | Glutamine and serine-rich protein 1;QSER1;ortholog | HUMAN HGNC=26154 UniProtKB=Q2KHR3 |
| SLC12A7 | Solute carrier family 12 member 7;SLC12A7;ortholog | HUMAN HGNC=10915 UniProtKB=Q9Y666 |
| DHPS | Deoxyhypusine synthase;DHPS;ortholog | HUMAN HGNC=2869 UniProtKB=P49366 |
| EXOSC8 | Exosome complex component RRP43;EXOSC8;ortholog | HUMAN HGNC=17035 UniProtKB=Q96B26 |
| MYORG | Myogenesis-regulating glycosidase;MYORG;ortholog | HUMAN HGNC=19918 UniProtKB=Q6NSJ0 |
| HLA-F | HLA class I histocompatibility antigen, alpha chain F;HLA-F;ortholog | HUMAN HGNC=4963 UniProtKB=P30511 |
| HIBADH | 3-hydroxyisobutyrate dehydrogenase, mitochondrial;HIBADH;ortholog | HUMAN HGNC=4907 UniProtKB=P31937 |
| ZNF391 | Zinc finger protein 391;ZNF391;ortholog | HUMAN HGNC=18779 UniProtKB=Q9UJN7 |
| HNRNPC | Heterogeneous nuclear ribonucleoproteins C1/C2;HNRNPC;ortholog | HUMAN HGNC=5035 UniProtKB=P07910 |
| ATG14 | Beclin 1-associated autophagy-related key regulator;ATG14;ortholog | HUMAN HGNC=19962 UniProtKB=Q6ZNE5 |
| STRAP | Serine-threonine kinase receptor-associated protein;STRAP;ortholog | HUMAN HGNC=30796 UniProtKB=Q9Y3F4 |
| XBP1 | X-box-binding protein 1;XBP1;ortholog | HUMAN HGNC=12801 UniProtKB=P17861 |
| NINJ1 | Ninjurin-1;NINJ1;ortholog | HUMAN HGNC=7824 UniProtKB=Q92982 |
| SCARB2 | Lysosome membrane protein 2;SCARB2;ortholog | HUMAN HGNC=1665 UniProtKB=Q14108 |
| SRSF5 | Serine/arginine-rich splicing factor 5;SRSF5;ortholog | HUMAN HGNC=10787 UniProtKB=Q13243 |
| TTL | Tubulin-tyrosine ligase;TTL;ortholog | HUMAN HGNC=21586 UniProtKB=Q8NG68 |
| SARNP | SAP domain-containing ribonucleoprotein;SARNP;ortholog | HUMAN HGNC=24432 UniProtKB=P82979 |
| ANKRD12 | Ankyrin repeat domain-containing protein 12;ANKRD12;ortholog | HUMAN HGNC=29135 UniProtKB=Q6UB98 |
| FOXO1 | Forkhead box protein O1;FOXO1;ortholog | HUMAN HGNC=3819 UniProtKB=Q12778 |
| FLOT1 | Flotillin-1;FLOT1;ortholog | HUMAN HGNC=3757 UniProtKB=O75955 |
| ZNF385A | Zinc finger protein 385A;ZNF385A;ortholog | HUMAN HGNC=17521 UniProtKB=Q96PM9 |
| FBXO32 | F-box only protein 32;FBXO32;ortholog | HUMAN HGNC=16731 UniProtKB=Q969P5 |
| UGCG | Ceramide glucosyltransferase;UGCG;ortholog | HUMAN HGNC=12524 UniProtKB=Q16739 |
| RTRAF | RNA transcription, translation and transport factor protein;RTRAF;ortholog | HUMAN HGNC=23169 UniProtKB=Q9Y224 |
| LRRC23 | Leucine-rich repeat-containing protein 23;LRRC23;ortholog | HUMAN HGNC=19138 UniProtKB=Q53EV4 |
| DYNLRB1 | Dynein light chain roadblock-type 1;DYNLRB1;ortholog | HUMAN HGNC=15468 UniProtKB=Q9NP97 |
| F11R | Junctional adhesion molecule A;F11R;ortholog | HUMAN HGNC=14685 UniProtKB=Q9Y624 |
| PPP1R26 | Protein phosphatase 1 regulatory subunit 26;PPP1R26;ortholog | HUMAN HGNC=29089 UniProtKB=Q5T8A7 |

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|----------|---|-----------------------------------|
| PPWD1 | Peptidylprolyl isomerase domain and WD repeat-containing protein 1;PPWD1;ortholog | HUMAN HGNC=28954 UniProtKB=Q96BP3 |
| GJC1 | Gap junction gamma-1 protein;GJC1;ortholog | HUMAN HGNC=4280 UniProtKB=P36383 |
| NBAS | Neuroblastoma-amplified sequence;NBAS;ortholog | HUMAN HGNC=15625 UniProtKB=A2RRP1 |
| NOXA1 | NADPH oxidase activator 1;NOXA1;ortholog | HUMAN HGNC=10668 UniProtKB=Q86UR1 |
| DBP | Peroxisomal multifunctional enzyme type 2;HSD17B4;ortholog | HUMAN HGNC=5213 UniProtKB=P51659 |
| OAS2 | 2'-5'-oligoadenylate synthase 2;OAS2;ortholog | HUMAN HGNC=8087 UniProtKB=P29728 |
| KLRG1 | Killer cell lectin-like receptor subfamily G member 1;KLRG1;ortholog | HUMAN HGNC=6380 UniProtKB=Q96E93 |
| IFITM1 | Interferon-induced transmembrane protein 1;IFITM1;ortholog | HUMAN HGNC=5412 UniProtKB=P13164 |
| TAF2 | Transcription initiation factor TFIID subunit 2;TAF2;ortholog | HUMAN HGNC=11536 UniProtKB=Q6P1X5 |
| KIF14 | Kinesin-like protein KIF14;KIF14;ortholog | HUMAN HGNC=19181 UniProtKB=Q15058 |
| JAG1 | Protein jagged-1;JAG1;ortholog | HUMAN HGNC=6188 UniProtKB=P78504 |
| MDH1B | Putative malate dehydrogenase 1B;MDH1B;ortholog | HUMAN HGNC=17836 UniProtKB=Q510G3 |
| ZDHHC20 | Palmitoyltransferase ZDHHC20;ZDHHC20;ortholog | HUMAN HGNC=20749 UniProtKB=Q5W0Z9 |
| DDX60 | Probable ATP-dependent RNA helicase DDX60;DDX60;ortholog | HUMAN HGNC=25942 UniProtKB=Q81Y21 |
| LAMTOR1 | Ragulator complex protein LAMTOR1;LAMTOR1;ortholog | HUMAN HGNC=26068 UniProtKB=Q61AA8 |
| FAM129A | Protein Niban;FAM129A;ortholog | HUMAN HGNC=16784 UniProtKB=Q9BZQ8 |
| CAPN1 | Calpain-1 catalytic subunit;CAPN1;ortholog | HUMAN HGNC=1476 UniProtKB=P07384 |
| FKBP15 | FK506-binding protein 15;FKBP15;ortholog | HUMAN HGNC=23397 UniProtKB=Q5T1M5 |
| NRDC | Nardilysin;NRDC;ortholog | HUMAN HGNC=7995 UniProtKB=O43847 |
| CTC1 | CST complex subunit CTC1;CTC1;ortholog | HUMAN HGNC=26169 UniProtKB=Q2NKJ3 |
| ALOXE3 | Hydroperoxide isomerase ALOXE3;ALOXE3;ortholog | HUMAN HGNC=13743 UniProtKB=Q9BYJ1 |
| WEE1 | Wee1-like protein kinase;WEE1;ortholog | HUMAN HGNC=12761 UniProtKB=P30291 |
| GPRC5A | Retinoic acid-induced protein 3;GPRC5A;ortholog | HUMAN HGNC=9836 UniProtKB=Q8NFJ5 |
| HECTD2 | Probable E3 ubiquitin-protein ligase HECTD2;HECTD2;ortholog | HUMAN HGNC=26736 UniProtKB=Q5U5R9 |
| HIST1H4J | Histone H4;HIST1H4A;ortholog | HUMAN HGNC=20510 UniProtKB=P62805 |
| TNFRSF1A | Tumor necrosis factor receptor superfamily member 1A;TNFRSF1A;ortholog | HUMAN HGNC=11916 UniProtKB=P19438 |
| RPL37A | 60S ribosomal protein L37a;RPL37A;ortholog | HUMAN HGNC=10348 UniProtKB=P61513 |
| SLC25A25 | Calcium-binding mitochondrial carrier protein SCaMC-2;SLC25A25;ortholog | HUMAN HGNC=20663 UniProtKB=Q6KCM7 |
| PGK1 | Phosphoglycerate kinase 1;PGK1;ortholog | HUMAN HGNC=8896 UniProtKB=P00558 |
| MRPS35 | 28S ribosomal protein S28, mitochondrial;MRPS28;ortholog | HUMAN HGNC=14513 UniProtKB=Q9Y2Q9 |
| ARL4C | ADP-ribosylation factor-like protein 4C;ARL4C;ortholog | HUMAN HGNC=698 UniProtKB=P56559 |
| TRA2B | Transformer-2 protein homolog beta;TRA2B;ortholog | HUMAN HGNC=10781 UniProtKB=P62995 |
| ATP11B | Probable phospholipid-transporting ATPase IF;ATP11B;ortholog | HUMAN HGNC=13553 UniProtKB=Q9Y2G3 |

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|----------|---|-----------------------------------|
| FBXW9 | F-box/WD repeat-containing protein 9;FBXW9;ortholog | HUMAN HGNC=28136 UniProtKB=Q5XUX1 |
| KIF20B | Kinesin-like protein KIF20B;KIF20B;ortholog | HUMAN HGNC=7212 UniProtKB=Q96Q89 |
| ARVCF | Armadillo repeat protein deleted in velo-cardio-facial syndrome;ARVCF;ortholog | HUMAN HGNC=728 UniProtKB=O00192 |
| RGL2 | Ral guanine nucleotide dissociation stimulator-like 2;RGL2;ortholog | HUMAN HGNC=9769 UniProtKB=O15211 |
| MRPS16 | 28S ribosomal protein S16, mitochondrial;MRPS16;ortholog | HUMAN HGNC=14048 UniProtKB=Q9Y3D3 |
| NDUFV1 | NADH dehydrogenase [ubiquinone] flavoprotein 1, mitochondrial;NDUFV1;ortholog | HUMAN HGNC=7716 UniProtKB=P49821 |
| CAPRN1 | Caprin-1;CAPRN1;ortholog | HUMAN HGNC=6743 UniProtKB=Q14444 |
| CYP51A1 | Lanosterol 14-alpha demethylase;CYP51A1;ortholog | HUMAN HGNC=2649 UniProtKB=Q16850 |
| DOK1 | Docking protein 1;DOK1;ortholog | HUMAN HGNC=2990 UniProtKB=Q99704 |
| TRIM7 | E3 ubiquitin-protein ligase TRIM7;TRIM7;ortholog | HUMAN HGNC=16278 UniProtKB=Q9C029 |
| AK4 | Adenylate kinase 4, mitochondrial;AK4;ortholog | HUMAN HGNC=363 UniProtKB=P27144 |
| ARID4A | AT-rich interactive domain-containing protein 4A;ARID4A;ortholog | HUMAN HGNC=9885 UniProtKB=P29374 |
| FAM219B | Protein FAM219B;FAM219B;ortholog | HUMAN HGNC=24695 UniProtKB=Q5XKK7 |
| RECQL | ATP-dependent DNA helicase Q1;RECQL;ortholog | HUMAN HGNC=9948 UniProtKB=P46063 |
| RIC1 | RAB6A-GEF complex partner protein 1;RIC1;ortholog | HUMAN HGNC=17686 UniProtKB=Q4ADV7 |
| PLAU | Urokinase-type plasminogen activator;PLAU;ortholog | HUMAN HGNC=9052 UniProtKB=P00749 |
| SEMA6D | Semaphorin-6D;SEMA6D;ortholog | HUMAN HGNC=16770 UniProtKB=Q8NFY4 |
| NFKB2 | Nuclear factor NF-kappa-B p100 subunit;NFKB2;ortholog | HUMAN HGNC=7795 UniProtKB=Q00653 |
| EDAR | Tumor necrosis factor receptor superfamily member EDAR;EDAR;ortholog | HUMAN HGNC=2895 UniProtKB=Q9UNE0 |
| ATP5F1B | ATP synthase subunit beta, mitochondrial;ATP5F1B;ortholog | HUMAN HGNC=830 UniProtKB=P06576 |
| LYSMD3 | LysM and putative peptidoglycan-binding domain-containing protein 3;LYSMD3;ortholog | HUMAN HGNC=26969 UniProtKB=Q7Z3D4 |
| GJC1 | Gap junction delta-3 protein;GJD3;ortholog | HUMAN HGNC=19147 UniProtKB=Q8N144 |
| AEBP2 | Zinc finger protein AEBP2;AEBP2;ortholog | HUMAN HGNC=24051 UniProtKB=Q6ZN18 |
| ARMCX3 | Armadillo repeat-containing X-linked protein 3;ARMCX3;ortholog | HUMAN HGNC=24065 UniProtKB=Q9UH62 |
| NFE2L1 | Endoplasmic reticulum membrane sensor NFE2L1;NFE2L1;ortholog | HUMAN HGNC=7781 UniProtKB=Q14494 |
| HMGN4 | High mobility group nucleosome-binding domain-containing protein 4;HMGN4;ortholog | HUMAN HGNC=4989 UniProtKB=O00479 |
| CRYBG1 | Beta/gamma crystallin domain-containing protein 1;CRYBG1;ortholog | HUMAN HGNC=356 UniProtKB=Q9Y4K1 |
| PSMB5 | Proteasome subunit beta type-5;PSMB5;ortholog | HUMAN HGNC=9542 UniProtKB=P28074 |
| IFI44 | Interferon-induced protein 44;IFI44;ortholog | HUMAN HGNC=16938 UniProtKB=Q8TCB0 |
| MRPL18 | 39S ribosomal protein L18, mitochondrial;MRPL18;ortholog | HUMAN HGNC=14477 UniProtKB=Q9H0U6 |
| PLXDC1 | Plexin domain-containing protein 1;PLXDC1;ortholog | HUMAN HGNC=20945 UniProtKB=Q8IUK5 |
| KIAA0040 | Uncharacterized protein KIAA0040;KIAA0040;ortholog | HUMAN HGNC=28950 UniProtKB=Q15053 |
| PLSCR1 | Phospholipid scramblase 1;PLSCR1;ortholog | HUMAN HGNC=9092 UniProtKB=O15162 |

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| PFKFB3 | 6-phosphofructo-2-kinase/fructose-2,6-bisphosphatase 3;PFKFB3;ortholog | HUMAN HGNC=8874 UniProtKB=Q16875 |
| GEMIN8 | Gem-associated protein 8;GEMIN8;ortholog | HUMAN HGNC=26044 UniProtKB=Q9NWZ8 |
| LTBP2 | Latent-transforming growth factor beta-binding protein 2;LTBP2;ortholog | HUMAN HGNC=6715 UniProtKB=Q14767 |
| CDC42EP4 | Cdc42 effector protein 4;CDC42EP4;ortholog | HUMAN HGNC=17147 UniProtKB=Q9H3Q1 |
| TMEM191C | Transmembrane protein 191C;TMEM191C;ortholog | HUMAN HGNC=33601 UniProtKB=A6NGB0 |
| TMEM161B | Transmembrane protein 161B;TMEM161B;ortholog | HUMAN HGNC=28483 UniProtKB=Q8NDZ6 |
| FAM177A1 | Protein FAM177A1;FAM177A1;ortholog | HUMAN HGNC=19829 UniProtKB=Q8N128 |
| ILF2 | Interleukin enhancer-binding factor 2;ILF2;ortholog | HUMAN HGNC=6037 UniProtKB=Q12905 |
| IRF9 | Interferon regulatory factor 9;IRF9;ortholog | HUMAN HGNC=6131 UniProtKB=Q00978 |
| DROSHA | Ribonuclease 3;DROSHA;ortholog | HUMAN HGNC=17904 UniProtKB=Q9NRR4 |
| B4GAT1 | Beta-1,4-glucuronyltransferase 1;B4GAT1;ortholog | HUMAN HGNC=15685 UniProtKB=O43505 |
| E2F8 | Transcription factor E2F8;E2F8;ortholog | HUMAN HGNC=24727 UniProtKB=A0AVK6 |
| USPL1 | SUMO-specific isopeptidase USPL1;USPL1;ortholog | HUMAN HGNC=20294 UniProtKB=Q5W0Q7 |
| HMGB2 | High mobility group protein B2;HMGB2;ortholog | HUMAN HGNC=5000 UniProtKB=P26583 |
| MTUS1 | Microtubule-associated tumor suppressor 1;MTUS1;ortholog | HUMAN HGNC=29789 UniProtKB=Q9ULD2 |
| KCTD2 | BTB/POZ domain-containing protein KCTD2;KCTD2;ortholog | HUMAN HGNC=21294 UniProtKB=Q14681 |
| MRPS18A | 39S ribosomal protein S18a, mitochondrial;MRPS18A;ortholog | HUMAN HGNC=14515 UniProtKB=Q9NVS2 |
| PRPF38A | Pre-mRNA-splicing factor 38A;PRPF38A;ortholog | HUMAN HGNC=25930 UniProtKB=Q8NAV1 |
| CMPK2 | UMP-CMP kinase 2, mitochondrial;CMPK2;ortholog | HUMAN HGNC=27015 UniProtKB=Q5EBM0 |
| STOM | Erythrocyte band 7 integral membrane protein;STOM;ortholog | HUMAN HGNC=3383 UniProtKB=P27105 |
| RNF44 | RING finger protein 44;RNF44;ortholog | HUMAN HGNC=19180 UniProtKB=Q7L0R7 |
| ADPRM | Manganese-dependent ADP-ribose/CDP-alcohol diphosphatase;ADPRM;ortholog | HUMAN HGNC=30925 UniProtKB=Q3LIE5 |
| DBP | Vitamin D-binding protein;GC;ortholog | HUMAN HGNC=4187 UniProtKB=P02774 |
| SF3B1 | Splicing factor 3B subunit 1;SF3B1;ortholog | HUMAN HGNC=10768 UniProtKB=O75533 |
| MECP2 | Methyl-CpG-binding protein 2;MECP2;ortholog | HUMAN HGNC=6990 UniProtKB=P51608 |
| TRA2A | Transformer-2 protein homolog alpha;TRA2A;ortholog | HUMAN HGNC=16645 UniProtKB=Q13595 |
| HAUS6 | HAUS augmin-like complex subunit 6;HAUS6;ortholog | HUMAN HGNC=25948 UniProtKB=Q7Z4H7 |
| PLEKHH3 | Pleckstrin homology domain-containing family H member 3;PLEKHH3;ortholog | HUMAN HGNC=26105 UniProtKB=Q7Z736 |
| ZNF235 | Zinc finger protein 235;ZNF235;ortholog | HUMAN HGNC=12866 UniProtKB=Q14590 |
| INTS4 | Integrator complex subunit 4;INTS4;ortholog | HUMAN HGNC=25048 UniProtKB=Q96HW7 |
| FAM110C | Protein FAM110C;FAM110C;ortholog | HUMAN HGNC=33340 UniProtKB=Q1W6H9 |
| NGFR | Tumor necrosis factor receptor superfamily member 16;NGFR;ortholog | HUMAN HGNC=7809 UniProtKB=P08138 |
| AGAP11 | Arf-GAP with GTPase, ANK repeat and PH domain-containing protein 11;AGAP11;ortholog | HUMAN HGNC=29421 UniProtKB=Q8TF27 |

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| TGM2 | Protein-glutamine gamma-glutamyltransferase 2;TGM2;ortholog | HUMAN HGNC=11778 UniProtKB=P21980 |
| TXNRD1 | Thioredoxin reductase 1, cytoplasmic;TXNRD1;ortholog | HUMAN HGNC=12437 UniProtKB=Q16881 |
| OSGEP | Probable tRNA N6-adenosine threonylcarbamoyltransferase;OSGEP;ortholog | HUMAN HGNC=18028 UniProtKB=Q9NPF4 |
| KLK10 | Kallikrein-10;KLK10;ortholog | HUMAN HGNC=6358 UniProtKB=O43240 |
| EIPR1 | EARP-interacting protein;EIPR1;ortholog | HUMAN HGNC=12383 UniProtKB=Q53HC9 |
| OCEL1 | Occludin/ELL domain-containing protein 1;OCEL1;ortholog | HUMAN HGNC=26221 UniProtKB=Q9H607 |
| VPS8 | Vacuolar protein sorting-associated protein 8 homolog;VPS8;ortholog | HUMAN HGNC=29122 UniProtKB=Q8N3P4 |
| UQCRFS1 | Cytochrome b-c1 complex subunit Rieske, mitochondrial;UQCRFS1;ortholog | HUMAN HGNC=12587 UniProtKB=P47985 |
| FBXO9 | F-box only protein 9;FBXO9;ortholog | HUMAN HGNC=13588 UniProtKB=Q9UJK97 |
| MT2A | Metallothionein-2;MT2A;ortholog | HUMAN HGNC=7406 UniProtKB=P02795 |
| HIST1H2BD | Histone H2B type 1-D;HIST1H2BD;ortholog | HUMAN HGNC=4747 UniProtKB=P58876 |
| ERCC5 | DNA repair protein complementing XP-G cells;ERCC5;ortholog | HUMAN HGNC=3437 UniProtKB=P28715 |
| ZNF687 | Zinc finger protein 687;ZNF687;ortholog | HUMAN HGNC=29277 UniProtKB=Q8N1G0 |
| CMPK1 | UMP-CMP kinase;CMPK1;ortholog | HUMAN HGNC=18170 UniProtKB=P30085 |
| CSTF1 | Cleavage stimulation factor subunit 1;CSTF1;ortholog | HUMAN HGNC=2483 UniProtKB=Q05048 |
| HIST1H1E | Histone H1.4;HIST1H1E;ortholog | HUMAN HGNC=4718 UniProtKB=P10412 |
| CLMN | Calmin;CLMN;ortholog | HUMAN HGNC=19972 UniProtKB=Q96JQ2 |
| C2orf15 | Uncharacterized protein C2orf15;C2orf15;ortholog | HUMAN HGNC=28436 UniProtKB=Q8WU43 |
| KNL1 | Kinetochores scaffold 1;KNL1;ortholog | HUMAN HGNC=24054 UniProtKB=Q8NG31 |
| XAF1 | XIAP-associated factor 1;XAF1;ortholog | HUMAN HGNC=30932 UniProtKB=Q6GPH4 |
| ZNF440 | Zinc finger protein 440;ZNF440;ortholog | HUMAN HGNC=20874 UniProtKB=Q8IYI8 |
| UBE2C | Ubiquitin-conjugating enzyme E2 C;UBE2C;ortholog | HUMAN HGNC=15937 UniProtKB=O00762 |
| RARS | Arginine--tRNA ligase, cytoplasmic;RARS;ortholog | HUMAN HGNC=9870 UniProtKB=P54136 |
| PARP14 | Poly [ADP-ribose] polymerase 14;PARP14;ortholog | HUMAN HGNC=29232 UniProtKB=Q460N5 |
| SLC38A2 | Sodium-coupled neutral amino acid transporter 2;SLC38A2;ortholog | HUMAN HGNC=13448 UniProtKB=Q96QD8 |
| KLHL24 | Kelch-like protein 24;KLHL24;ortholog | HUMAN HGNC=25947 UniProtKB=Q6TFL4 |
| CHURC1 | Protein Churchill;CHURC1;ortholog | HUMAN HGNC=20099 UniProtKB=Q8WUH1 |
| NDUFB6 | NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 6;NDUFB6;ortholog | HUMAN HGNC=7701 UniProtKB=O95139 |
| SOCS2 | Suppressor of cytokine signaling 2;SOCS2;ortholog | HUMAN HGNC=19382 UniProtKB=O14508 |
| IFI6 | Interferon alpha-inducible protein 6;IFI6;ortholog | HUMAN HGNC=4054 UniProtKB=P09912 |
| TOMM40 | Mitochondrial import receptor subunit TOM40 homolog;TOMM40;ortholog | HUMAN HGNC=18001 UniProtKB=O96008 |
| HELZ2 | Helicase with zinc finger domain 2;HELZ2;ortholog | HUMAN HGNC=30021 UniProtKB=Q9BYK8 |
| APOOL | MICOS complex subunit MIC27;APOOL;ortholog | HUMAN HGNC=24009 UniProtKB=Q6UXV4 |

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| UNC93B1 | Protein unc-93 homolog B1;UNC93B1;ortholog | HUMAN HGNC=13481 UniProtKB=Q9H1C4 |
| MRPS35 | 28S ribosomal protein S35, mitochondrial;MRPS35;ortholog | HUMAN HGNC=16635 UniProtKB=P82673 |
| ZNHIT6 | Box C/D snoRNA protein 1;ZNHIT6;ortholog | HUMAN HGNC=26089 UniProtKB=Q9NWK9 |
| TMED7 | Transmembrane emp24 domain-containing protein 7;TMED7;ortholog | HUMAN HGNC=24253 UniProtKB=Q9Y3B3 |
| AGO1 | Protein argonaute-1;AGO1;ortholog | HUMAN HGNC=3262 UniProtKB=Q9UL18 |
| B3GALT4 | Beta-1,3-galactosyltransferase 4;B3GALT4;ortholog | HUMAN HGNC=919 UniProtKB=O96024 |
| SEL1L | Protein sel-1 homolog 1;SEL1L;ortholog | HUMAN HGNC=10717 UniProtKB=Q9UBV2 |
| FGF19 | Fibroblast growth factor 19;FGF19;ortholog | HUMAN HGNC=3675 UniProtKB=O95750 |

Supplementary Table S2. Sequences of the primers used in this study

| qRT-PCR | | |
|------------|--------------|------------------------------|
| DLEU1 | Forward | 5'-TCAGAATGCCGACTCTATGCT-3' |
| | Reverse | 5'-GGTGAGGACAGAGTTAAACGC-3' |
| | Product size | 103 bp |
| OAS1 iso1 | Forward | 5'-TGTGTGTCCAAGGTGGTAAAG-3' |
| | Reverse | 5'-TGAGAGGACTGAGGAAGACAA-3' |
| | Product size | 97 bp |
| IFITM3 | Forward | 5'-TCTTCCAGGCCTATGGATAGAT-3' |
| | Reverse | 5'-GAAGTTGGAGTACGTGGGATAC-3' |
| | Product size | 84 bp |
| IFITM1 | Forward | 5'-TGCACAAGGAGGAACATGAG-3' |
| | Reverse | 5'-GTCTCGCTGTGGATGTTGAT-3' |
| | Product size | 91 bp |
| IFI6 | Forward | 5'-GCAGCGTCGTCATAGGTAAT-3' |
| | Reverse | 5'-ACTCCTCATCCTCCTCACTATC-3' |
| | Product size | 81 bp |
| IFIT1 iso1 | Forward | 5'-CCAACAGTGTAGTAGCCTCAAA-3' |
| | Reverse | 5'-GGTGCGTCCTTAGAAGAAAGAG-3' |
| | Product size | 97 bp |
| IFNAR1 | Forward | 5'-CACAGTGGCTCATGCCTATAA-3' |
| | Reverse | 5'-TACCCAGGTTGGTTGATCTTG-3' |
| | Product size | 94 bp |
| IFMGR2 | Forward | 5'-CTGGGACTCTGTGTCCATTATC-3' |
| | Reverse | 5'-CTCCGATGGCTTGATCTCTTC-3' |
| | Product size | 121 bp |
| B2M | Forward | 5'-ACTCTCTCTTTCTGGCCTGGA-3' |
| | Reverse | 5'-TCTCTGCTGGATGACGTGAG-3' |

| | | |
|-----------|--------------|------------------------------|
| | Product size | 3883bp |
| ChIP-qPCR | | |
| IFI6 | Forward | 5'-ACTAAAAGGGACCCAGGAGTG-3' |
| | Reverse | 5'-ATGAAGTGTGGGCATCAAGC-3' |
| | Product size | 121 bp |
| IFIT1 | Forward | 5'-TGTGTGCATGCATGTGTGTG-3' |
| | Reverse | 5'-TTTTCCCATTCCCTCCCCTTC-3' |
| | Product size | 129 bp |
| IFITM1 | Forward | 5'-TGTGTGTGTGTGTGGCTTTG-3' |
| | Reverse | 5'-ACTGGGCTATAGGGAGAATTGC-3' |
| | Product size | 131 bp |
| OAS1 | Forward | 5'-CCGCATGCAAATCAACCATG-3' |
| | Reverse | 5'-TGGA CTACCTTTACCACCTTG-3' |
| | Product size | 112 bp |

Supplementary Table S3. Sequences of the siRNAs used in this study

| siRNA name | | |
|------------|-----------|-----------------------------|
| siDLEU1-1 | Sense | 5'-GAGGGGUCGUCUUAUAGCUAC-3' |
| | Antisense | 5'-AGCUAUAAGACGACCCCUCGG-3' |
| siDLEU1-2 | Sense | 5'-CAGGGGUUAUCGCACUUAAGC-3' |
| | Antisense | 5'-UUAAGUGCGAUAACCCCUGUA-3' |
| siFITM1-1 | Sense | 5'-AGGUCCACCGUGAUCAAC-3' |
| | Antisense | 5'-UGUGGAUGUUGAUCACG-3' |
| siFITM1-2 | Sense | 5'-GUCCUGCCCCUAGAUACA-3' |
| | Antisense | 5'-AACUGCUGUAUCUAGGG-3' |