SUPPLEMENTAL MATERIALS

Title: Junctional localization of septin 2 is required for organization of junctional proteins in static endothelial monolayers

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Major Resources Table

In order to allow validation and replication of experiments, all essential research materials listed in the Methods should be included in the Major Resources Table below. Authors are encouraged to use public repositories for protocols, data, code, and other materials and provide persistent identifiers and/or links to repositories when available. Authors may add or delete rows as needed.

Animals (in vivo studies)

Species	Vendor or Source	Background Strain	Sex	Persistent ID / URL

Genetically Modified Animals

	Species	Vendor or Source	Background Strain	Other Information	Persistent ID / URL
Parent - Male					
Parent - Female					

Antibodies

Target antigen	Vendor or Source	Catalog #	Working concentration	Lot # (preferred but not required)	Persistent ID / URL
human Septin 2	Atlas	HPA018481	IF: 1 ug/mL WB: 100 ng/mL		
human VE-cadherin	BD pharmingen	555661	IF: 2 ug/mL WB: 200 ng/mL		
human GAPDH (clone 6C5)	Thermo scientific	MA5-15738	WB: 300 ng/mL		
GFP antibody (9F9.F9)	Rockland Immunochemicals	600-301-215	IF: 10 ug/mL		
human Nectin-2	R & D Systems	AF2229	IF:1 ug/mL WB: 100 ng/mL		
Human Afadin (clone 851204	R & D Systems	MAB78291	IF: 10 ug/mL WB: 500 ng/mL		
PECAM-1 (JC/70A)	Abcam	Ab9498	IF: 10 ug/mL WB: 1 ug/mL		
human ZO-1	Invitrogen	33-9100	IF: 5 ug/mL WB: 500 ng/mL		
Donkey anti-Goat IgG H&L (Alexa Fluor® 568)	Abcam	ab175704	IF: 5 ug/mL		
Donkey anti-Mouse IgG H&L (Alexa Fluor® 568)	Abcam	ab150105	IF: 5 ug/mL		
Donkey anti-Rabbit IgG H&L (Alexa Fluor® 568)	Abcam	ab150073	IF: 5 ug/mL		
Rabbit anti-Goat IgG-Peroxidase conjugated	Sigma	A5420	1:4000 dilution		
Goat anti-Mouse IgG-Peroxidase conjugated	Sigma	A4416	1:4000 dilution		
Goat anti-Rabbit IgG-Peroxidase conjugated	Sigma	A6154	1:4000 dilution		

DOI [to be added]

DNA/cDNA Clones

Clone Name	Sequence	Source / Repository	Persistent ID / URL
pBOB-Septin 2 Wt-GFP	atgtctaagcaacagccaactcagtttataaatccagaaacacctggctatgttggat ttgcaaacctccccaatcaagttcac**cgaaaa**tcagtg**aaaaaa**ggttttgagttcacac tgatggtggtcggtgaatcaggtctaggaaaatcgactctcataaacagcctattcctaa ctgatctgtacccagaaagagtcatacctggagcagcagaaaaaattgaaagaactgtcc agattgaggcttcaactgttgaaattgaagagcgaggggtcaagctacgcctgacagtgg tagataccctggctatggtgacgctatcaactgcagagattgttttaagacaattatct cctatattgatgagcaatttgagaggtacctgcatgacgagagcggcttgaacaggcggc acatcattgataatagggtgcattgttgcttttacttttatttcacctttggacatggac ttaagcccttagatgtggcgtttatgaaggcaatacacaacaaggtgaatattgtgcctg tcattgcaaaagctgacactctcaccctgaaggaacgggagcggctgaagaaaaggattc tggatgaaattgaagaacataacatcaaaatctatcacttacctgatgcagaatcagatg aagatgaagattttaaagagcagactagacttctcaaggctagcatcccattctctgtgg ttggatccaatcagttgattgaagccaaaggaaagaaggtcagaggccgcctctacccct ggggtgttgtggaagtggagaacccagagcacaatgactttctgaagctgagaaccatgc tcatcacccacatgcaggatctccaggaggtgacccaggaccttcattatgaaaacttcc gttctgagagactcaagagaggcggcaggaaagtggagaatgaggacatgaataaagacc agatcttgctggaaaaagaagctgagctccgccgcatgcaagagatgattgcaaggatgc aggcgcagatgcagatgcagatgcagggcggggatggcgatggcggggctctcgggcacc acgtg**ggaccggtcgccacc**ATGGTGAGCAAGGGCGAGGAGCTGTTCACCGGGGTGGTGC CCATCCTGGTCGAGCTGGACGGCGACGTAAACGGCCACAAGTTCAGCGTGTCCGGCGAGG GCGAGGGCGATGCCACCTACGGCAAGCTGACCCTGAAGTTCATCTGCACCACCGGCAAGC TGCCCGTGCCCTGGCCCACCCTCGTGACCACCCTGACCTACGGCGTGCAGTGCTTCAGCC GCTACCCCGACCACATGAAGCAGCACGACTTCTTCAAGTCCGCCATGCCCGAAGGCTACG TCCAGGAGCGCACCATCTTCTTCAAGGACGACGGCAACTACAAGACCCGCGCCGAGGTGA AGTTCGAGGGCGACACCCTGGTGAACCGCATCGAGCTGAAGGGCATCGACTTCAAGGAGG ACGGCAACATCCTGGGGCACAAGCTGGAGTACAACTACAACAGCCACAACGTCTATATCA TGGCCGACAAGCAGAAGAACGGCATCAAGGTGAACTTCAAGATCCGCCACAACATCGAGG ACGGCAGCGTGCAGCTCGCCGACCACTACCAGCAGAACACCCCCATCGGCGACGGCCCCG TGCTGCTGCCCGACAACCACTACCTGAGCACCCAGTCCGCCCTGAGCAAAGACCCCAACG AGAAGCGCGATCACATGGTCCTGCTGGAGTTCGTGACCGCCGCCGGGATCACTCTCGGCA TGGACGAGCTGTACAAG	Addgene	For cDNA https://www.ncbi.nlm.nih.gov/nuccore/NM_001008491.2 For Septin 2 wt-GFP http://www.addgene.org/118734/
pBOB-Septin 2 PIP_2BM-GFP	atgtctaagcaacagccaactcagtttataaatccagaaacacctggctatgttggat ttgcaaacctccccaatcaagttcac**gcagca**tcagtg**gcagca**ggttttgagttcacac tgatggtggtcggtgaatcaggtctaggaaaatcgactctcataaacagcctattcctaa ctgatctgtacccagaaagagtcatacctggagcagcagaaaaaattgaaagaactgtcc agattgaggcttcaactgttgaaattgaagagcgaggggtcaagctacgcctgacagtgg tagataccctggctatggtgacgctatcaactgcagagattgttttaagacaattatct cctatattgatgagcaatttgagaggtacctgcatgacgagagcggcttgaacaggcggc acatcattgataatagggtgcattgttgcttttacttttatttcacctttggacatggac ttaagcccttagatgtggcgtttatgaaggcaatacacaacaaggtgaatattgtgcctg tcattgcaaaagctgacactctcaccctgaaggaacgggagcggctgaagaaaaggattc tggatgaaattgaagaacataacatcaaaatctatcacttacctgatgcagaatcagatg aagatgaagattttaaagagcagactagacttctcaaggctagcatcccattctctgtgg ttggatccaatcagttgattgaagccaaaggaaagaaggtcagaggccgcctctacccct ggggtgttgtggaagtggagaacccagagcacaatgactttctgaagctgagaaccatgc tcatcacccacatgcaggatctccaggaggtgacccaggaccttcattatgaaaacttcc gttctgagagactcaagagaggcggcaggaaagtggagaatgaggacatgaataaagacc agatcttgctggaaaaagaagctgagctccgccgcatgcaagagatgattgcaaggatgc aggcgcagatgcagatgcagatgcagggcggggatggcgatggcggggctctcgggcacc acgtg**ggaccggtcgccacc**ATGGTGAGCAAGGGCGAGGAGCTGTTCACCGGGGTGGTGC CCATCCTGGTCGAGCTGGACGGCGACGTAAACGGCCACAAGTTCAGCGTGTCCGGCGAGG GCGAGGGCGATGCCACCTACGGCAAGCTGACCCTGAAGTTCATCTGCACCACCGGCAAGC TGCCCGTGCCCTGGCCCACCCTCGTGACCACCCTGACCTACGGCGTGCAGTGCTTCAGCC GCTACCCCGACCACATGAAGCAGCACGACTTCTTCAAGTCCGCCATGCCCGAAGGCTACG TCCAGGAGCGCACCATCTTCTTCAAGGACGACGGCAACTACAAGACCCGCGCCGAGGTGA AGTTCGAGGGCGACACCCTGGTGAACCGCATCGAGCTGAAGGGCATCGACTTCAAGGAGG ACGGCAACATCCTGGGGCACAAGCTGGAGTACAACTACAACAGCCACAACGTCTATATCA TGGCCGACAAGCAGAAGAACGGCATCAAGGTGAACTTCAAGATCCGCCACAACATCGAGG ACGGCAGCGTGCAGCTCGCCGACCACTACCAGCAGAACACCCCCATCGGCGACGGCCCCG TGCTGCTGCCCGACAACCACTACCTGAGCACCCAGTCCGCCCTGAGCAAAGACCCCAACG AGAAGCGCGATCACATGGTCCTGCTGGAGTTCGTGACCGCCGCCGGGATCACTCTCGGCA TGGACGAGCTGTACAAG **Mutations: RK29,30 AA, KK 33, 34 AA**		For cDNA https://www.ncbi.nlm.nih.gov/nuccore/NM_001008491.2

Cultured Cells

Name	Vendor or Source	Sex (F, M, or unknown)	Persistent ID / URL
HDMVEC	Lonza	Male	
HEK293T	ATCC	unknown	

Data & Code Availability

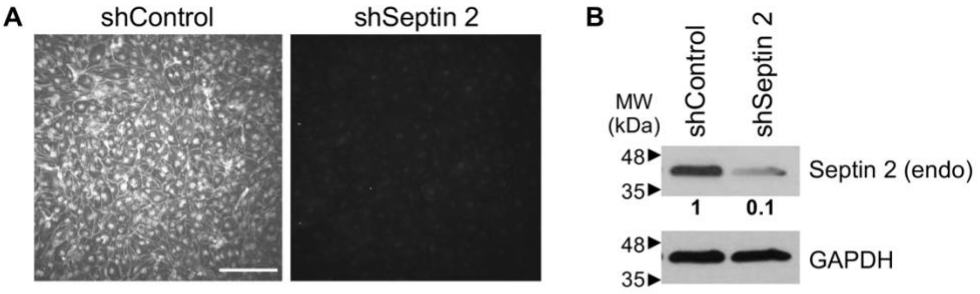
Description	Source / Repository	Persistent ID / URL

DOI [to be added]

Reagents

Description	Source / Repository	Persistent ID / URL
Tumor necrosis factor alpha (TNF-α)	Gibco ThermoFisher	
Fibronectin	Sigma-Aldrich	
Prolong Gold	Molecular Probes ThermoFisher	
T4 DNA ligase	Invitrogen ThermoFisher	
PfuTurbo DNA polymerase	Agilent Technologies	
QuikChange Site-Directed mutagenesis kit	Agilent Technologies	
Bimake Cell Counting Kit-8	Bimake.com	

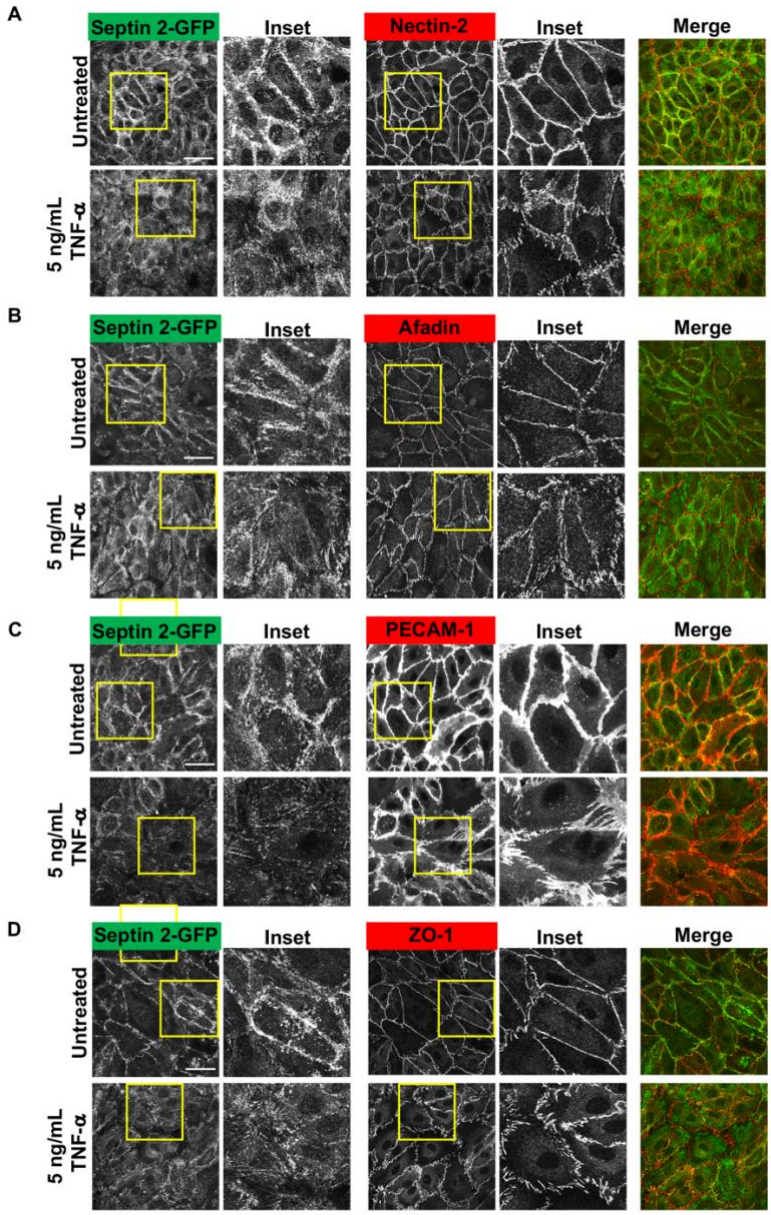
DOI [to be added]



C

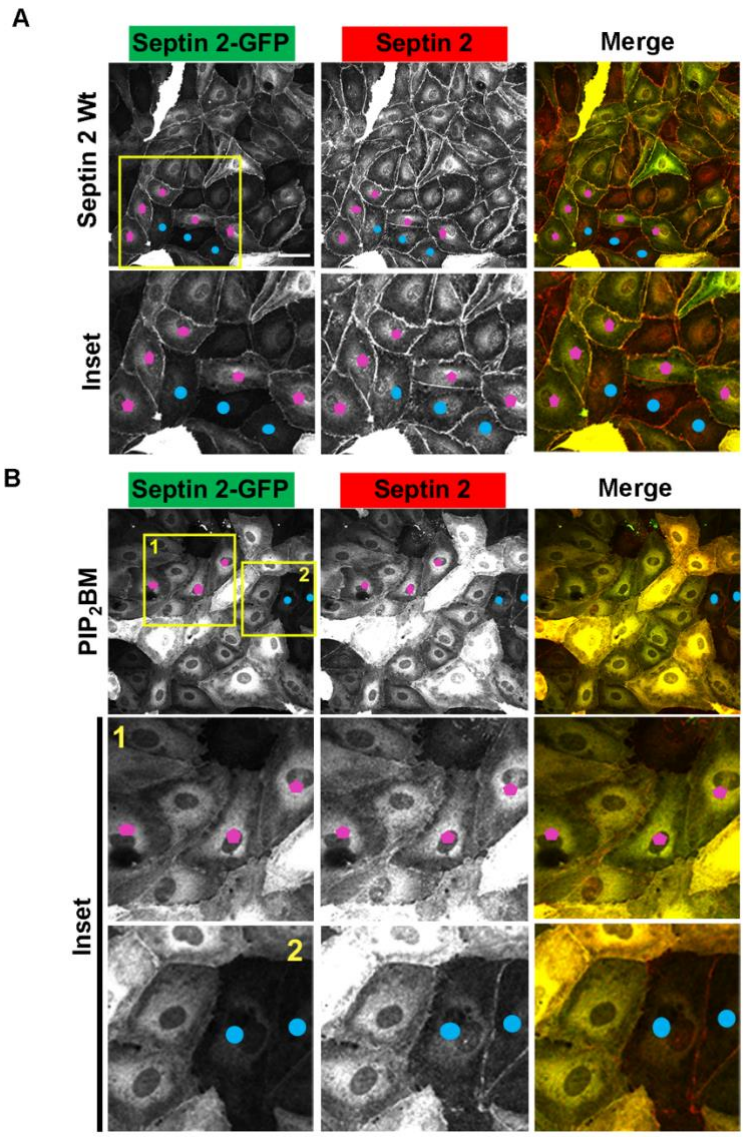
Incubation days after infection	Normal cells	shControl infected	shSeptin 2 infected
Before infection	1.14 ± 0.068	1.16 ± 0.045	1.19 ± 0.027
2 days	1.07 ± 0.039	1.01 ± 0.042	0.98 ± 0.026
3 days	1.20 ± 0.237	1.04 ± 0.085	0.97 ± 0.014
3.5 days	0.97 ± 0.025	1.05 ± 0.075	1.15 ± 0.172

Supplemental Figure I. Suppression level of septin 2 by lentivirus.
(A) Immunofluorescence staining against septin 2 shows population of HDMVECs infected with lentivirus carrying shControl and shSeptin 2. Scale bar; 200 μm. (B) Immunoblot against septin 2 shows suppression level of septin 2 by infection of lentivirus carrying shseptin 2. GAPDH is an internal loading control. Normalized band intensities using ImageJ are shown (C) Cell viability of HDMVECs following lentiviral infection. Representative data from 3 independent experiments with average values and SD is shown.



Supplemental Figure II. 5 ng/mL TNF-α treatment has the same effect as 20 ng/mL TNF-α treatment.

Immunofluorescence staining for endogenous septin 2 (green), cell-cell adhesion proteins (red), and actin filaments (A-D). Inset indicates enlarged area of the image. (A) Endogenous septin 2, nectin-2, and actin filaments are shown in untreated (Upper) and TNF-α-treated HDMVECs (Lower). (B) Endogenous septin 2, afadin, and actin filaments are shown in untreated (Upper) and TNF-α-treated HDMVECs (Lower). (C) Endogenous septin 2, PECAM-1, and actin filaments are shown in untreated (Upper) and TNF-α-treated HDMVECs (Lower). (D) Endogenous septin 2, ZO-1, and actin filaments are shown in untreated (Upper) and TNF-α-treated HDMVECs (Lower). Scale bars: 50 μm.



Supplemental Figure III. Overexpression of septin 2 PIP_2BM-GFP shows a dominant negative effect.

(A) Immunofluorescence staining for overexpressed septin 2 wt-GFP with anti-GFP antibody (green) and total level of septin 2 (red) with anti-septin 2 antibody. (B) Immunofluorescence staining for overexpressed septin 2 PIP_2BM-GFP with anti-GFP antibody (green) and total level of septin 2 (red) with anti-septin 2 antibody. Blue pentagons indicate the cells overexpressing septin 2 (wt and PIP_2BM). Magenta dots indicate non-overexpressing cells. Scale bars: 50 μm.

Supplemental Table I. Criteria for blind scoring of nectin-2, afadin, and ZO-1

Score	Junction structure	Variation	Character
1	One continuous solid line	Curvature or hook can exist at any region.	Functionally normal Stable and mature
2	One continuous line with short region of extra discontinuous lines		Functionally normal
	Two lines with one continuous. Two lines with both curved and discontinuous but intact and solid at the tricellular junctions (the ends)		Functionally normal Immature and ruffles
3	Discontinuous lines with multiple breaks but without perpendicularity	Discontinuity consists of many short fragments. Discontinuity exists across whole line from the end to end including tri(multi)cellular junctions.	Functionally disrupted
		Or Discontinuous lines exist Partially	
	One line with many breaks from end to end		Functionally disrupted
4	Discontinuous line(s) with perpendicularity		Functionally disrupted
	One continuous line with multiple perpendicular sections		Functionally disrupted

Supplemental Table II. Genes that show significant expression change by Septin 2 KD

Gene Names	Down (Log2(FC))	Gene Names	Up (Log2(FC))
CNR1	-5.85	LRRC38	5.38
COL1A2	-5.66	MMP1	5.23
HAPLN1	-5.50	PTPRR	4.96
PLCXD3	-5.32	ENKUR	4.89
TWIST2	-5.18	BEST3	4.77
SEP2	-4.64	MAR11	4.64
PRR15	-4.63	NCKAP5	4.62
SPOCD1	-4.62	ADGRG4	4.59
NUDT11	-4.37	SORL1	4.45
ESX1	-4.21	NOG	4.32
VCAN	-4.15	CYGB	4.27
RCAN3	-4.06	SLC7A14	4.02
SLCO4A1	-3.94	EPN3	3.99
CBR3	-3.87	CD22	3.98
NEIL3	-3.86	KCNH3	3.90
CLMP	-3.84	TMEM236	3.71
SLC7A2	-3.83	MAR4	3.64
CENPM	-3.66	AL683807.1	3.62
UHRF1	-3.53	CD226	3.58
ENOX1	-3.49	C3AR1	3.56
CAMK4	-3.46	HIST1H2BC	3.56
G0S2	-3.44	COL17A1	3.56
SAPCD2	-3.40	BCAN	3.52
CRISPLD2	-3.39	JPH2	3.49
GBP2	-3.39	ELFN2	3.40
CDKN2C	-3.38	ADAM12	3.38
COL8A2	-3.38	NPAS3	3.38
CDC20	-3.33	COLQ	3.37
PKMYT1	-3.33	HIF1A-AS2	3.36
PCDH10	-3.31	AL353740.1	3.35
CDC25C	-3.30	HDAC9	3.30
CBLN2	-3.25	CLSTN2	3.17
FSD1	-3.24	LINC01186	3.15
UBE2C	-3.23	XYLT1	3.15
GTSE1	-3.23	PCDH12	3.12
EDIL3	-3.22	CLDN3	3.04
FAM111B	-3.21	GATA3	3.03
GLIPR1	-3.21	SMIM10L2A	3.02
FAM167A	-3.20	HIST1H2AD	2.96
HTR1B	-3.18	DPEP1	2.95
MCM10	-3.16	CYTL1	2.94
CLSPN	-3.16	TRAC	2.89
ALDH1L2	-3.13	TFEC	2.82

NUF2	-3.12	NR4A1	2.75
PTGS2	-3.10	PGK1.00	2.69
TK1	-3.04	ACOX2	2.68
KCTD16	-3.03	HIST1H2BD	2.64
SHCBP1	-3.03	TMC8	2.57
PIMREG	-3.00	IL16	2.57
CCNB2	-2.98	LOXL4	2.50
NDRG4	-2.98	AL359643.2	2.50
BUB1	-2.97	CPM	2.49
SPC25	-2.95	HIST1H2AC	2.46
CLIC3	-2.95	CST6	2.46
KIF14	-2.94	KCNJ15	2.44
RAB20	-2.94	GNA15	2.44
MYBL2	-2.94	TSPAN1	2.36
SKA1	-2.93	ACER2	2.35
NDC80	-2.93	CCND2	2.33
BMPER	-2.92	TMC7	2.32
FAM129A	-2.92	WDR66	2.31
ERCC6L	-2.91	HIST1H2BG	2.30
PLK1	-2.90	AL121718.1	2.28
SUSD5	-2.90	LINC01480	2.24
ESCO2	-2.90	MMP28	2.24
CKAP2L	-2.88	LINC02356	2.23
PBK	-2.86	FLT1	2.22
DLGAP5	-2.86	DCBLD2	2.21
MEST	-2.86	ANO4	2.20
KIF20A	-2.84	NOXA1	2.14
KIF18B	-2.84	KRT15	2.13
CEP55	-2.82	LHX6	2.10
HMMR	-2.81	NR5A2	2.10
BLM	-2.80	LINC01836	2.10
AC091057.1	-2.79	ZNF429	2.08
PLA1A	-2.79	NT5E	2.08
KIF4A	-2.78	SFXN1	2.08
ORC1	-2.77	MAP2	2.05
KHK	-2.77	LYNX1	2.03
SH3BP1	-2.77	HIST1H3D	2.02
WDR62	-2.76	LNCOG	2.01
CDC45	-2.76	DGKI	1.97
CIT	-2.76	MYLK2	1.96
BUB1B	-2.76	GABRP	1.95
POLE2	-2.75	CFAP57	1.94
EXO1	-2.75	ACVR2B	1.93
HJURP	-2.75	AL139280.1	1.93
RRM2	-2.74	CEACAM19	1.92

RRM2	-2.74	SLC6A4	1.91
E2F1	-2.74	PCSK6	1.89
AURKB	-2.74	TXLNB	1.89
E2F8	-2.74	ITM2A	1.88
KIF2C	-2.74	GPIHBP1	1.87
NSG1	-2.73	TTC30B	1.85
KIF15	-2.72	BCHE	1.84
NUSAP1	-2.72	SLC16A6	1.83
ASF1B	-2.70	FAM107A	1.83
BIRC5	-2.70	MYO7A	1.81
NCAPH	-2.70	SPNS3	1.79
RAD54L	-2.69	CLMN	1.78
MKI67	-2.69	SLC26A2	1.78
NEK2	-2.69	SLC2A9	1.77
CENPA	-2.69	ARHGEF16	1.77
GINS2	-2.67	SRPX2	1.76
HACD4	-2.66	ANKRD46	1.76
CDCA8	-2.66	ADAM9	1.76
HEY2	-2.65	KLHL6	1.75
ASPM	-2.64	SULT1A1	1.75
SPC24	-2.63	PLCXD2	1.74
CDCA3	-2.63	FUCA1	1.73
HSD3B7	-2.63	LRP4	1.72
DRAXIN	-2.62	ASTN2	1.66
MXD3	-2.62	LYRM9	1.66
DEPDC1B	-2.61	HIST1H2BK	1.66
TTK	-2.61	CETP	1.65
KIF18A	-2.61	HSPA4L	1.64
TICRR	-2.60	CD274	1.64
BRIP1	-2.60	SLC39A6	1.62
KNL1	-2.60	PPME1	1.60
TICAM2	-2.60	ITM2C	1.59
STMN3	-2.59	CMTM4	1.59
NEO1	-2.58	TMEM87B	1.58
PRR11	-2.58	PPM1H	1.58
TCF19	-2.58	AC243960.3	1.58
RAD51AP1	-2.58	SCAMP5	1.58
SLC39A8	-2.53	PTPRU	1.58
TROAP	-2.53	RNASET2	1.57
NCAPG	-2.52	PDE6A	1.57
ENTPD6	-2.52	PTCHD4	1.57
PIM1	-2.51	PRKCE	1.57
MICAL1	-2.51	WNT3	1.56
C20orf27	-2.49	TGFA	1.55
IMPA2	-2.48	FAS	1.54

PSRC1	-2.47	SESN1	1.54
IQGAP3	-2.46	TLR1	1.54
WDR76	-2.46	MEGF6	1.53
ARHGAP11A	-2.46	MYCT1	1.53
SLFN11	-2.45	OSTM1	1.53
GPR162	-2.44	RAB11FIP2	1.52
PCLAF	-2.43	KRT80	1.52
SGO1	-2.42	NEDD4L	1.50
HASPIN	-2.42	TNFRSF10C	1.50
DIXDC1	-2.41	MAPRE3	1.49
HMOX1	-2.41	IL1RAP	1.49
AKR1C1	-2.41	HIST1H1C	1.48
ANLN	-2.40	GADD45A	1.48
CENPE	-2.39	MERTK	1.48
CDCA5	-2.39	VSIR	1.47
FKBP1B	-2.38	UGCG	1.46
PLK4	-2.38	VAV3	1.46
MPZL2	-2.37	EPB41L1	1.46
MELK	-2.37	HIST1H2AG	1.46
KREMEN1	-2.37	PLAU	1.46
CENPO	-2.37	ADGRG6	1.45
PTTG1	-2.36	BACH2	1.45
EHBP1L1	-2.36	SRGAP3	1.43
CDT1	-2.36	ST8SIA4	1.43
IL7R	-2.34	SPATA18	1.43
PRC1	-2.34	PHTF2	1.42
TMEM158	-2.33	MIR503HG	1.42
FOXM1	-2.33	MYO1F	1.41
KIF11	-2.33	PIEZO2	1.41
SPAG5	-2.33	POU2F2	1.41
KIF23	-2.33	PRNP	1.40
CCNB1	-2.33	ARHGAP25	1.40
TOP2A	-2.32	YOD1	1.39
LMNB1	-2.31	HIST1H4I	1.38
CIP2A	-2.30	CDKN1A	1.38
CENPI	-2.30	LINC01094	1.38
HHIPL1	-2.29	PTPRN2	1.38
SKA3	-2.29	DCP2	1.38
FAM20C	-2.28	RRM2B	1.38
CCNA2	-2.27	CFAP54	1.37
ABCA6	-2.27	KLHL28	1.37
ADAMTS4	-2.26	LYSMD1	1.37
POLQ	-2.25	TNFRSF10B	1.36
KIFC1	-2.23	MRC1	1.36
FBLN5	-2.23	ERO1A	1.36

CDCA2	-2.22	LNX1	1.36
BASP1	-2.22	ZNF493	1.36
CHEK1	-2.21	KBTBD8	1.36
CENPW	-2.20	SLC2A4	1.35
MAD2L1	-2.19	B3GLCT	1.33
KIF24	-2.18	E2F5	1.33
TPX2	-2.18	LINC02188	1.33
FANCA	-2.18	BACH1	1.32
CSRP2	-2.18	PLA2G4C	1.32
S1PR3	-2.17	LIFR	1.30
S1PR3	-2.17	SLC25A45	1.30
MCM4	-2.17	ALS2CL	1.29
CDC6	-2.17	TRAPPC6A	1.29
CXCL5	-2.17	CTSD	1.29
MCM2	-2.14	FJX1	1.29
NCEH1	-2.14	VEGFA	1.29
PTGER4	-2.12	C5orf15	1.28
RFC3	-2.12	TTC30A	1.28
CAPG	-2.12	CPEB3	1.27
TMCC2	-2.11	PTPRS	1.27
DPYSL3	-2.11	FAM214A	1.27
APOL4	-2.09	CBX7	1.27
ESPL1	-2.09	SGSM1	1.27
ASB13	-2.09	SLC25A13	1.27
SGO2	-2.08	PHACTR2	1.27
RACGAP1	-2.07	CDKN2B	1.27
LRRCC1	-2.06	MAPK6	1.26
CASZ1	-2.06	INKA2	1.26
LIPG	-2.06	CDH5	1.26
H1FX	-2.05	GPR143	1.26
UBE2T	-2.05	RIC1	1.25
CDC7	-2.05	AJUBA	1.25
STAC	-2.04	THBD	1.25
CDK1	-2.03	PCMTD1	1.25
CENPF	-2.02	TCAF2	1.24
NAALADL1	-2.02	CYYR1	1.24
PASK	-2.00	LINC01679	1.24
NCAPG2	-2.00	DENND1B	1.23
BRI3BP	-2.00	CLIP4	1.23
FAM83D	-2.00	GLRB	1.23
SCARA3	-1.99	HOXA1	1.22
DEPDC1	-1.99	BRWD3	1.22
RECQL4	-1.99	SLCO2B1	1.22
EME1	-1.99	REPS2	1.22
FMNL1	-1.98	B4GALT4	1.21

FAM84A	-1.98	PLK2	1.19
SLC20A1	-1.98	DENND5B	1.19
CTDSP1	-1.98	ITGA3	1.19
PITPNM1	-1.96	INPP4B	1.19
H2AFY	-1.95	SLC22A18	1.18
SALL2	-1.94	HELB	1.17
GPR37	-1.93	PBXIP1	1.17
C1orf112	-1.92	LRP12	1.17
PRDX1	-1.90	SLC49A4	1.16
CDCA7	-1.90	LRG1	1.16
ETV4	-1.88	FRS2	1.16
MEX3B	-1.88	SLC35G2	1.16
MCM6	-1.88	ZNF626	1.16
OST4	-1.88	AMER1	1.15
CENPU	-1.88	ARSB	1.14
H2AFX	-1.87	OLFML2A	1.14
FLNA	-1.87	DKK3.00	1.14
PFKFB3	-1.87	C1orf56	1.14
TGFB1I1	-1.87	DICER1	1.13
GINS1	-1.87	SDSL	1.13
CLEC11A	-1.87	PDE4D	1.13
AKR1B1	-1.87	IL11RA	1.13
MIEN1	-1.87	AK9	1.13
ORC6	-1.86	TCTN1	1.12
OXCT1	-1.85	TSKU	1.12
SUSD2	-1.85	DDAH1	1.12
BRCA2	-1.85	CAVIN2	1.12
SRF	-1.85	LRPAP1	1.12
ANKLE1	-1.84	SMURF2	1.12
PYGB	-1.84	LDLRAP1	1.12
GINS4	-1.83	RMND5A	1.11
LSM14B	-1.83	HMGA2	1.11
TRAIP	-1.83	MPZL3	1.11
STIL	-1.83	PVR	1.11
SAT1	-1.82	TMEM64	1.10
RAC3	-1.81	PTP4A3	1.10
NAGS	-1.81	LNPK	1.10
NPTX2	-1.81	STX3	1.10
PSMC3IP	-1.80	LY96	1.10
AC103746.1	-1.80	C8orf58	1.10
B4GALT1	-1.79	SGPP1	1.10
HELLS	-1.79	TUSC2	1.09
FSCN1	-1.79	CREBRF	1.08
AIFM2	-1.78	GALNT7	1.08
UNC13B	-1.78	MAMLD1	1.08

KIF20B	-1.78	SERINC1	1.08
CTSH	-1.78	CEACAM1	1.08
ATP6V0E2	-1.76	OCIAD2	1.07
RFLNA	-1.76	RTTN	1.07
RFLNA	-1.76	RAMP2-AS1	1.06
MID1IP1	-1.76	NMT2	1.06
DDIAS	-1.75	STN1.00	1.06
DTL	-1.75	MAN2A2	1.06
TENT5A	-1.75	TMEM68	1.05
TRIP13	-1.74	DDX3Y	1.05
IGFBP6	-1.74	DLC1	1.05
ACOT11	-1.74	KLHL24	1.05
MGAT5	-1.74	ATP9A	1.04
TCAF1	-1.72	ENTPD7	1.04
PAQR4	-1.72	C1D	1.04
FNDC11	-1.72	PRKAB1	1.03
MYRF	-1.72	GPX8	1.03
PC	-1.72	UHMK1	1.03
AGAP2	-1.71	DPY19L3	1.03
SORD	-1.71	PALD1	1.03
LY75	-1.70	SLC39A11	1.03
SHMT1	-1.70	LCOR	1.02
ZWINT	-1.70	LMBR1L	1.02
SEMA3D	-1.69	FAM91A1	1.02
CHAF1A	-1.69	MAR9	1.02
VEGFC	-1.68	PTPRE	1.01
MBOAT1	-1.68	NAGLU	1.01
KIF21B	-1.68	ZNF462	1.01
CALHM2	-1.67	BRWD1	1.01
WDR4	-1.66	SLC16A13	1.01
PDLIM1	-1.65	RHPN1	1.01
LGALS1	-1.65	NUDT7	1.00
NUDT1	-1.64	RAMAC	1.00
UAP1L1	-1.63	SNX4	0.99
RBL1	-1.63	GNS	0.99
CBX2	-1.63	PPARA	0.99
CCNF	-1.62	TMCC1	0.99
ZNF703	-1.61	MAP3K2	0.99
AURKA	-1.61	TIGAR	0.98
KIF22	-1.61	STRADB	0.97
CLDN7	-1.61	TXNRD2	0.97
HMGB3	-1.61	ITGB5	0.97
PTPN9	-1.60	RPS6KA3	0.97
ZEB2	-1.60	PLCG2	0.97
FUT8	-1.59	IL17D	0.97

HEY1	-1.59	C1QTNF6	0.96
MBD3	-1.59	PRKACB	0.96
CLIP2	-1.59	BTBD3	0.96
ATAD2	-1.59	ZBTB18	0.96
KIAA0513	-1.58	BMF	0.96
GPSM2	-1.58	BTD	0.95
BRCA1	-1.58	MAP1LC3B	0.95
BIN1	-1.58	WNK4	0.95
GINS3	-1.58	MGST2	0.95
INCENP	-1.58	LONRF1	0.95
C1QTNF1	-1.58	SLC2A10	0.95
NACC1	-1.57	HIST2H2BE	0.95
MBOAT2	-1.57	RHOBTB1	0.95
B3GALT6	-1.55	CASP4	0.95
PFN1	-1.54	KHNYN	0.95
SRPX	-1.54	GABARAPL1	0.94
SUN2	-1.54	OSBP2	0.94
VPS51	-1.54	ARHGAP45	0.94
SCUBE2	-1.54	PDIA5	0.94
WDHD1	-1.53	TM7SF3	0.94
LMAN2	-1.53	SPTBN5	0.93
RAD51	-1.53	CD164	0.93
TACC3	-1.53	IQCK	0.93
SMPD4	-1.53	LMO2	0.93
NEXN	-1.53	OSCP1	0.93
SIX1	-1.52	GGT1	0.93
GCH1	-1.52	LATS2	0.93
ERMP1	-1.52	SLC12A4	0.92
OSBPL6	-1.51	PPP3CB	0.92
THG1L	-1.51	FAM84B	0.92
DLGAP1	-1.51	MBNL2	0.92
MTCH2	-1.50	TMEM254	0.92
SPHK1	-1.50	MRS2	0.92
MRPS27	-1.50	SH3D19	0.92
C4orf46	-1.50	NDUFA8	0.91
PPIH	-1.49	DOCK7	0.91
SNCA	-1.49	TUFT1	0.91
FAM171A1	-1.49	YBX3	0.91
CDC42EP4	-1.49	LMLN	0.91
LINC00607	-1.49	UBN2	0.91
LBR	-1.49	SYCE1L	0.91
TNFAIP8	-1.49	BTBD19	0.91
ETS1	-1.48	SLC6A8	0.91
IDH2	-1.48	NF1	0.90
SNHG19	-1.47	CLN8	0.90

EZH2	-1.47	PAFAH2	0.90
BARD1	-1.46	TMED5	0.90
AC080038.1	-1.44	ATP7B	0.90
RPGR	-1.44	KRT18	0.90
C14orf119	-1.44	SACM1L	0.89
ABL1	-1.44	THAP6	0.89
UBE2S	-1.43	TMTC3	0.89
RMDN1	-1.43	ZBTB43	0.89
SLC52A2	-1.43	ARSD	0.89
RNF220	-1.43	TESK2	0.89
PLCB3	-1.42	VWA8	0.89
ELOVL6	-1.42	SLC25A4	0.89
DOLPP1	-1.41	CPT2	0.89
STEAP3	-1.41	GYPC	0.89
FANCI	-1.41	PPP1R13L	0.88
PPM1F	-1.41	SLC35F5	0.88
ECI2	-1.41	MSRB2	0.88
LMNB2	-1.40	STK4	0.88
VAMP2	-1.40	ASAP2	0.87
ZNF467	-1.39	TEAD1	0.87
TRIM59	-1.39	MICA	0.87
TONSL	-1.39	HTATIP2	0.87
MKRN1	-1.39	PAQR7	0.87
MYBL1	-1.39	SLC20A2	0.87
AFAP1	-1.38	SC5D	0.86
EPAS1	-1.38	TEK	0.86
CHTF18	-1.38	PUDP	0.86
C12orf75	-1.37	TDRP	0.85
PARP1	-1.37	COA5	0.85
ARL4D	-1.36	ZNF43	0.85
ANKRD18B	-1.36	SESN2	0.85
TTL	-1.35	APPL2	0.85
CACNB3	-1.35	MCFD2	0.85
PPP1CA	-1.35	OTUD4	0.85
NAPRT	-1.35	DCUN1D1	0.85
SYT11	-1.35	CCPG1	0.85
PLAUR	-1.35	MIGA1	0.84
GLIPR2	-1.35	MT-TP	0.84
DPCD	-1.34	ADARB1	0.84
SYTL4	-1.34	ASPH	0.84
NFIC	-1.34	TMEM132A	0.84
POC1B	-1.34	EXOSC5	0.84
HIC1	-1.34	ECE2	0.84
CTSO	-1.34	CCNDBP1	0.84
MCM5	-1.34	ADGRL4	0.84

CD99L2	-1.34	GDE1	0.84
RNASEH2A	-1.34	SIL1	0.84
RAC2	-1.34	HIPK3	0.83
RFC4	-1.33	NEK3	0.83
POLD3	-1.33	PDGFA	0.83
LHFPL2	-1.33	CCNJ	0.83
ATP6V1B2	-1.33	IMMP2L	0.83
RUSC1	-1.33	GNB4	0.83
ARFGAP2	-1.32	CARD8	0.82
NCAPH2	-1.31	RSPH3	0.82
CDCA7L	-1.31	EFNA1	0.82
DSN1	-1.31	RAB5A	0.82
TMEM161A	-1.30	CNEP1R1	0.82
RMI2	-1.30	SUMF1	0.82
SLC35E2B	-1.30	LIPA	0.82
CCDC18	-1.30	MFSD8	0.82
CALM3	-1.29	NT5C2	0.81
PCSK7	-1.29	PIGP	0.81
FAM89B	-1.29	AVL9	0.81
SNRPA	-1.29	RALGAPA1	0.81
SCLT1	-1.29	SLC35D1	0.80
PPP1R14B	-1.29	MLH3	0.80
GMPPB	-1.29	TMEM63B	0.80
C17orf53	-1.28	CDKN1B	0.80
SSR1	-1.28	CYB5R1	0.80
GPR176	-1.28	CHCHD10	0.80
NPM3	-1.28	XPC	0.80
STK38	-1.28	ORAI3	0.79
MECOM	-1.28	FKBP4	0.79
DYNLL2	-1.28	KRT8	0.79
IL17RA	-1.28	MFAP3	0.79
DNA2	-1.27	ABHD4	0.79
CDC25B	-1.27	PEX5	0.79
THOC6	-1.27	KLC2	0.78
PFAS	-1.27	ENTPD4	0.78
BCL3	-1.27	B9D1	0.78
PIF1	-1.27	CCDC28A	0.78
NIPAL3	-1.27	CCNT2	0.78
KLF13	-1.27	M6PR	0.78
STK17B	-1.27	TSC22D2	0.78
ANXA6	-1.26	ATAD1	0.78
ADCY7	-1.26	KDSR	0.78
MTHFD1	-1.26	ATPAF1	0.78
NBEAL2	-1.26	ABCC1	0.77
TIMM44	-1.26	RNF170	0.77

MAP3K12	-1.25	NDFIP2	0.77
SGSH	-1.25	RB1CC1	0.77
TP53I13	-1.25	UTP25	0.76
DBF4B	-1.25	ZCCHC14	0.76
MARVELD2	-1.25	CRBN	0.76
RAB27A	-1.24	RGL2	0.76
TMCO3	-1.24	NRROS	0.76
C19orf71	-1.24	PLCL2	0.76
SIPA1L1	-1.24	GNPTG	0.76
APOOL	-1.23	KDM3A	0.76
DNMT1	-1.23	CRADD	0.76
MARVELD1	-1.22	XKR8	0.76
A1BG	-1.22	KCTD11	0.75
USP1	-1.22	FKTN	0.75
FEN1	-1.22	PHLPP2	0.75
RAB3B	-1.22	SMIM20	0.75
SERPINH1	-1.22	CYBRD1	0.75
CMTM3	-1.22	PCNX4	0.75
NCBP3	-1.22	KCTD20	0.75
MMP19	-1.22	VTA1	0.75
PMM1	-1.22	DNAJC16	0.75
PSKH1	-1.22	NBR1	0.74
EPS8L1	-1.22	MINPP1	0.74
CLCF1	-1.22	GLO1	0.74
DNAJC9	-1.22	FBXL20	0.74
RELT	-1.22	DNAJB9	0.74
AP3B1	-1.22	KLC4	0.74
EFNB2	-1.21	DAGLA	0.74
TMEM106C	-1.21	ESAM	0.74
INSIG1	-1.21	KIF3B	0.74
MAP3K5	-1.21	TPRG1L	0.73
GALNT15	-1.21	VPS4B	0.73
RAPH1	-1.21	NCSTN	0.73
WDR34	-1.20	BSDC1	0.72
PDCD1LG2	-1.20	EFR3A	0.72
POTEF	-1.20	SYS1	0.72
TLNRD1	-1.19	TMEM59	0.72
ILF3-DT	-1.19	CHST12	0.72
MADD	-1.19	MAN1A2	0.72
TRMT112	-1.19	GOLGA2	0.71
NAMPTP1	-1.19	MOCS3	0.71
ZNF512	-1.19	SLC9A1	0.71
RCC1L	-1.19	TRMT6	0.71
CHN1	-1.19	ACVR1B	0.71
UBXN2B	-1.18	ATP6V1G1	0.71

LRP8	-1.18	TMX2	0.71
CENPJ	-1.18	PTPN4	0.71
MCUB	-1.18	NECAP1	0.70
PNPO	-1.18	YTHDF3	0.70
MICAL2	-1.18	TMEM106B	0.70
MICAL2	-1.18	SYNJ1	0.70
MAP3K6	-1.18	SLC30A6	0.70
FAM53B	-1.16	LRRC75A	0.70
ECH1	-1.16	RPS6KC1	0.70
SFRP1	-1.16	LIMD1	0.69
ARPC4	-1.16	SERTAD1	0.69
FAAP100	-1.16	POLD4	0.69
ARHGDIA	-1.16	WLS	0.69
PRKD1	-1.16	CYTH3	0.69
GIMAP7	-1.16	PRUNE2	0.69
SBF1	-1.15	JMY	0.68
NCAPD3	-1.15	TRAM2	0.68
CALU	-1.15	RUFY3	0.68
ZNF785	-1.15	ZNF800	0.68
NME3	-1.15	SMIM13	0.68
ADGRA2	-1.15	ATP7A	0.68
RNF24	-1.15	ERGIC2	0.68
PIGC	-1.15	ERLIN2	0.67
SLC25A22	-1.15	NHLRC2	0.67
TYMP	-1.15	MIA3	0.67
POLD1	-1.14	DYRK1B	0.66
FAM171A2	-1.14	NMRK1	0.66
VARS	-1.14	GAA	0.66
NAMPT	-1.14	CBWD2	0.66
PTGES2	-1.14	ZNF268	0.66
DAXX	-1.14	IFNAR1	0.65
DHRS4	-1.13	PELO	0.65
CBX6	-1.13	C1GALT1	0.65
DNAJC5	-1.13	STMP1	0.65
NUDT3	-1.12	DNAL1	0.65
MLXIP	-1.12	ICAM2	0.65
NME4	-1.12	ANKIB1	0.65
LPCAT1	-1.12	SUN1	0.64
SUPT6H	-1.11	MRRF	0.64
SESTD1	-1.11	DNAJB12	0.64
KDM1A	-1.11	TCAIM	0.64
LRFN3	-1.11	PIAS2	0.64
SFT2D1	-1.11	EIF4G3	0.64
CRNDE	-1.11	LEMD2	0.64
HPSE	-1.11	UNC50	0.64

WDR54	-1.10	MBTPS2	0.64
MAP3K13	-1.10	SLFN12	0.64
CCR10	-1.10	RTCA	0.63
REPIN1	-1.10	RBM18	0.63
ENO2	-1.10	SETD7	0.63
NCKIPSD	-1.10	STX17	0.63
INTS9	-1.10	CDYL	0.63
DHRS4L2	-1.10	RHOBTB3	0.63
PYCR3	-1.10	PRMT3	0.63
PLP2	-1.10	ANXA3	0.63
MVK	-1.09	CMPK1	0.63
SUFU	-1.09	ADAM17	0.62
ARL6IP1	-1.09	ERCC1	0.62
ODC1	-1.09	SERINC3	0.62
DAZAP1	-1.08	RIT1	0.62
CHST7	-1.08	PLXNB1	0.62
C15orf61	-1.08	CPPED1	0.62
TTLL12	-1.08	SLC7A6	0.62
STARD10	-1.08	ERCC5	0.62
LRBA	-1.08	ERCC5	0.62
CCDC71L	-1.07	UBE3B	0.62
ZNF48	-1.07	PPM1A	0.61
GLUL	-1.07	C6orf120	0.61
RCAN1	-1.07	DDX1	0.61
TAGLN2	-1.07	ERCC4	0.60
ARPIN	-1.07	TKFC	0.60
SLC37A4	-1.07	FAM214B	0.60
NAXD	-1.07	CHMP5	0.60
MYDGF	-1.07	PCAT19	0.60
MFAP2	-1.07	TMEM9	0.59
FANCG	-1.07	PPP1R15B	0.59
PRPS2	-1.07	RNF6	0.59
NRM	-1.06	RHOQ	0.59
CTSC	-1.06	SHTN1	0.59
MEX3A	-1.06	BAK1	0.59
AP001505.1	-1.06	NDUFB5	0.59
TNPO1	-1.06	CNOT6	0.59
SLC39A3	-1.06	LDB1	0.59
FSTL3	-1.06	MOSPD2	0.59
BNC1	-1.06	UBE2H	0.59
GPR161	-1.06	ATP6V1D	0.59
ZNF746	-1.06	LZIC	0.58
AP2S1	-1.06	EMC7	0.58
RANBP1	-1.06	HSD17B12	0.58
PITPNA	-1.06	SNAPC5	0.58

FZD1	-1.06	CHMP1B	0.58
ACOT8	-1.05	CRY2	0.58
C11orf95	-1.05	SPR	0.58
VMA21	-1.05	MICB	0.58
FECH	-1.05	IGF2BP3	0.57
PTMS	-1.05	APH1B	0.57
UBR7	-1.05	NEK6	0.57
AC092171.2	-1.04	ZMAT3	0.57
AP1M1	-1.04	SWI5	0.57
HNRNPD	-1.04	NAPG	0.57
THOC3	-1.04	GGA1	0.57
WASF3	-1.04	AHR	0.57
SRSF2	-1.04	GID4	0.56
JKAMP	-1.04	NR1D2	0.56
EXTL3	-1.03	PDZD8	0.56
TOMM34	-1.03	PIK3R3	0.56
DGCR2	-1.03	CTR9	0.56
ZNF205	-1.03	GMFG	0.56
NYAP1	-1.03	TTC19	0.56
TRAPPC9	-1.03	GTF3C3	0.56
SAMD10	-1.02	GOLGA4	0.56
LINC00987	-1.02	SENP2	0.55
TTLL11	-1.02	MGME1	0.55
AGPAT2	-1.02	FXR1	0.55
EIF2AK1	-1.02	OCIAD1	0.55
ALDH16A1	-1.01	AC010618.1	0.54
CNOT9	-1.01	CLN5	0.54
EIF4EBP1	-1.01	SIRT2	0.54
NSD2	-1.01	POFUT1	0.54
RBFOX2	-1.01	SRA1	0.54
ERI1	-1.01	TMEM167B	0.54
CEP89	-1.01	SPPL2A	0.54
SLC45A3	-1.01	SCD5	0.53
ASL	-1.00	GIPC1	0.53
SEMA6B	-1.00	ANAPC13	0.53
HAUS2	-1.00	FHL3	0.53
PDE4DIP	-1.00	CERS2	0.53
TACC1	-1.00	HDAC1	0.53
ALDH9A1	-1.00	TMEM9B	0.53
LRFN4	-0.99	RARS2	0.52
RTL8C	-0.99	RDH14	0.52
CORO1C	-0.99	RTL10	0.52
MVD	-0.99	TAX1BP1	0.52
FBXL18	-0.98	NTPCR	0.52
SMC4	-0.98	TBCK	0.52

C16orf45	-0.98
TPRN	-0.98
EGLN2	-0.98
PSEN2	-0.97
SAP30BP	-0.97
AP3S2	-0.97
UBAC1	-0.97
PRUNE1	-0.97
FARSA	-0.96
TXNDC15	-0.96
NDUFA9	-0.96
AC080112.1	-0.96
BLOC1S4	-0.96
SLC12A7	-0.96
TSPAN14	-0.96
KCTD12	-0.96
ARHGAP22	-0.95
FOXK1	-0.95
WTAP	-0.95
EXOSC6	-0.95
PAXX	-0.95
INTS13	-0.95
CNNM4	-0.95
TMEM104	-0.95
GOLM1	-0.95
NDST1	-0.95
DFFA	-0.94
CDK2	-0.94
MIS18BP1	-0.94
RNF126	-0.94
MACROD1	-0.94
ADIPOR1	-0.94
LLGL1	-0.94
FAM126A	-0.94
ADH5	-0.93
KIF3C	-0.93
SURF4	-0.93
RHOT2	-0.93
G6PD	-0.93
VAT1	-0.93
TBC1D16	-0.93
UBFD1	-0.93
FOXP1	-0.93
BOP1.00	-0.92
NIPA2	-0.92

MTMR3	0.52
HEG1	0.50
MAP2K4	0.50
MTMR9	0.50
PDHX	0.50
CAPN7	0.50
TRPC4AP	0.49
CSNK1G3	0.48
TM9SF4	0.48
IARS2	0.48
SNX11	0.48
HBP1	0.47
PCNP	0.46
ANKRD40	0.46
TCEA1	0.45
SS18	0.45
CHFR	0.44

FAM234A	-0.92
STARD7	-0.92
NCOA7	-0.92
RAB8B	-0.92
PARVA	-0.92
WRAP53	-0.92
SH3PXD2B	-0.91
TRABD	-0.91
RBM10	-0.91
ICMT	-0.91
MEX3D	-0.91
TOR3A	-0.91
H2AFV	-0.91
MRPS12	-0.90
TCEAL3	-0.90
UNKL	-0.90
CIAO3	-0.90
ARF5	-0.89
ATP6V1A	-0.89
CCDC88A	-0.89
PLPP3	-0.89
BCAT2	-0.89
SUMO3	-0.88
DTYMK	-0.88
TRIM65	-0.88
ANKRD9	-0.88
STOML1	-0.88
INPP5F	-0.88
NR2F2	-0.88
MAP3K1	-0.88
ZFP36L1	-0.88
NUMBL	-0.87
EML3	-0.87
MGST1	-0.87
SMAD3	-0.87
BAZ1A	-0.87
MSRB1	-0.87
TPM4	-0.87
FAR2	-0.86
POLR3H	-0.86
TMCC3	-0.86
FAM120A	-0.86
TTYH3	-0.86
B3GNT2	-0.86
PGAM1	-0.85

NARF	-0.85
RBMX2	-0.85
SPATA2L	-0.85
CNTNAP1	-0.85
CXXC1	-0.85
SEC62	-0.85
ARL10.00	-0.85
YME1L1	-0.85
KDELC2	-0.84
PPP3CC	-0.84
MCM3	-0.84
FPGS	-0.84
CNTLN	-0.84
ZBED1	-0.84
KLHL42	-0.84
RASIP1	-0.83
DCAF7	-0.83
ACOT7	-0.83
TBC1D14	-0.83
CEP78	-0.83
ZDHHC7	-0.83
PIAS4	-0.83
NABP2	-0.83
SPECC1L	-0.83
IER5	-0.83
SNHG9	-0.83
AP1B1	-0.82
LARP4B	-0.82
MIEF1	-0.82
HDHD5	-0.82
ACLY	-0.82
AL162171.1	-0.82
EVA1C	-0.82
SMAP2	-0.81
CHTF8	-0.81
CHTF8	-0.81
PRXL2B	-0.81
UGDH	-0.81
GAB2	-0.81
PCYT2	-0.81
SEP9	-0.81
ANKFY1	-0.80
AKTIP	-0.80
MAPKAPK2	-0.80
PUF60	-0.80

ALDH1B1	-0.80
UBTD2	-0.80
ALMS1	-0.80
TMEM260	-0.80
ASF1A	-0.80
BCL6	-0.80
ZNF512B	-0.79
TAL1	-0.79
ZYX	-0.79
DNAJC10	-0.79
SLC2A4RG	-0.79
DOCK9	-0.79
SHQ1	-0.79
SSRP1	-0.79
VMP1	-0.79
PKD1	-0.79
KLHL5	-0.79
NCDN	-0.78
SGF29	-0.78
PQLC1	-0.78
ZZEF1	-0.78
STK25	-0.78
GFOD1	-0.78
KIAA0586	-0.78
PXN	-0.77
ANP32E	-0.77
LRRC8A	-0.77
GTF2IRD1	-0.77
FAM129B	-0.77
CTU2	-0.77
POP7	-0.77
AKAP1	-0.77
ARMC6	-0.76
AAAS	-0.76
RILPL2	-0.76
BLOC1S3	-0.76
TNK2	-0.76
ZNF775	-0.76
USP22	-0.76
ACTR2	-0.76
RCN3	-0.75
POLDIP2	-0.75
DBR1	-0.75
USP19	-0.75
RTL8B	-0.75

ABCC10	-0.75
JMJD8	-0.75
ADAMTSL1	-0.74
TCTA	-0.74
PRR14	-0.74
LSM14A	-0.74
BCS1L	-0.74
SGTA	-0.74
RTL8A	-0.74
ZBTB45	-0.74
MAPK14	-0.74
TRAFD1	-0.74
TIGD5	-0.74
ZBTB47	-0.74
MGAT4B	-0.73
GRB10	-0.73
EIF2B5	-0.73
LHFPL6	-0.73
EIF4H	-0.73
CCM2	-0.73
SLC22A23	-0.73
ORAI2	-0.73
NAV2	-0.73
PIGS	-0.73
PRR12	-0.72
NGRN	-0.72
ZNF330	-0.72
SLC16A1	-0.72
SH3TC1	-0.72
CAVIN1	-0.72
CSNK1G2	-0.72
STMN1	-0.72
C8orf33	-0.72
SLC39A13	-0.72
WIPI2	-0.72
KLF16	-0.71
ST3GAL2	-0.71
SNX8	-0.71
TOR4A	-0.71
PJA1	-0.71
DHX37	-0.71
UBE2I	-0.71
DTD1	-0.71
SQOR	-0.71
FADD	-0.71

MARK3	-0.71
DPH7	-0.70
TSPYL1	-0.70
MAP4K5	-0.70
ALYREF	-0.70
CTDSP2	-0.70
NDE1	-0.70
TTC38	-0.70
VPS37C	-0.70
GRB2	-0.70
RCOR1	-0.70
CCNG2	-0.70
FP565260.2	-0.70
CELF1	-0.70
MLST8	-0.70
C19orf54	-0.70
MAP4	-0.70
TULP3	-0.70
BAZ1B	-0.70
SLC29A1	-0.70
CARS2	-0.69
CACNA2D1	-0.69
NCLN	-0.69
TPGS2	-0.69
PAPSS1	-0.69
TCF20	-0.69
AXIN1	-0.68
SMC1A	-0.68
IP6K1	-0.68
MKRN2	-0.68
ZNF428	-0.68
FBXO46	-0.68
MAD2L1BP	-0.68
LRRC47	-0.68
CNRIP1	-0.68
GPD2	-0.68
TOP3A	-0.68
RUBCN	-0.68
DCAKD	-0.67
POLRMT	-0.67
FZR1	-0.67
SART1	-0.67
MED16	-0.67
CSNK1G1	-0.67
WDTC1	-0.67

TCF7L1	-0.66
CANT1	-0.66
CPT1A	-0.66
CLUH	-0.66
GRK6	-0.66
DIP2B	-0.66
SLC10A3	-0.66
PKM	-0.65
TOPBP1	-0.65
FBXO31	-0.65
NES	-0.65
BAHCC1	-0.65
MAP4K4	-0.64
CAD	-0.64
TIMM50	-0.64
ARHGAP35	-0.64
TUBB6	-0.64
DDAH2	-0.64
PTTG1IP	-0.63
SSU72	-0.63
DPM3	-0.63
ZNF74	-0.63
PISD	-0.63
SLC25A39	-0.63
MAFG	-0.63
TRIM3	-0.63
HDAC6	-0.63
PRMT2	-0.62
CHST2	-0.62
ATN1	-0.62
RALY	-0.62
CHID1	-0.62
NPLOC4	-0.62
SLC25A11	-0.62
ARL4A	-0.62
BRD4	-0.62
NLGN2	-0.62
SPOUT1	-0.62
CMAS	-0.61
GRK2	-0.61
SLC35A4	-0.61
FBXO7	-0.61
SIPA1	-0.61
MTDH	-0.61
NELFB	-0.60

CCDC124	-0.60
CREB3L2	-0.60
PPP4C	-0.60
RSPRY1	-0.60
POM121	-0.60
CHERP	-0.60
CRKL	-0.60
MRPL28	-0.59
IDH1	-0.59
GIMAP5	-0.59
STRN4	-0.59
PHB	-0.59
PIGQ	-0.59
MECP2	-0.59
ZMIZ2	-0.59
SF3A3	-0.59
SERPINB9	-0.59
RNF19B	-0.58
RPA1	-0.58
DCTPP1	-0.58
DBNL	-0.58
WDR45B	-0.58
GTPBP1	-0.57
LMF2	-0.57
CYBA	-0.57
COPS7B	-0.57
DIAPH1	-0.57
BRK1	-0.57
UPF1	-0.57
CTBP1	-0.57
RHOG	-0.56
SH3RF3	-0.56
NDUFV1	-0.56
YWHAQ	-0.56
UBL4A	-0.56
SHISA5	-0.56
TCF3	-0.56
ANP32A	-0.56
ZBTB1	-0.55
OGFOD3	-0.55
SAFB2	-0.55
GIMAP8	-0.55
WDR6	-0.55
BTBD2	-0.55
IVNS1ABP	-0.55

MUS81	-0.55	
B3GALNT2	-0.54	
LRCH3	-0.54	
MCRIP1	-0.54	
GRWD1	-0.54	
RNH1	-0.54	
SNAP47	-0.54	
ARID1B	-0.54	
ARMC5	-0.53	
RNF34	-0.53	
ABCB8	-0.53	
ACO2	-0.53	
PSMD5	-0.52	
EXD2	-0.52	
MON1B	-0.52	
ZFYVE1	-0.51	
NNT	-0.51	
YY1AP1	-0.51	
SEC22C	-0.50	
DLST	-0.49	
ASXL1	-0.49	
RAP2B	-0.48	
SNX1	-0.48	
RSU1	-0.48	
NUBP2	-0.48	
ASB6	-0.47	
RER1	-0.47	
LETM1	-0.47	
USF1	-0.46	
CHMP7	-0.45	
PPP2R1A	-0.45	
ATXN7L3	-0.45	
PCNX3	-0.44	
RAB35	-0.44	

Supplement Table III. Genes that show significant expression change by TNF-a

Gene Names	Down (log2(FC))	Gene Names	Up (log2(FC))
CCL1	-3.18	U2AF1	1.34
FOXF1	-1.72	BEST1	1.30
WHRN	-1.39	CXCL11	1.08
FAAH	-1.05	AC007383.2	0.97
SPATA13	-1.01	FBXO41	0.87
ZNF443	-0.94	LINC00513	0.83
TYW1B	-0.80	TRAF1	0.81
ZNF433	-0.78	CEACAM16	0.74
ZNF230	-0.73	Sept1	0.68
IQCA1	-0.72	GAL3ST4	0.63
ZNF684	-0.69	PCDHB8	0.62
AMOT	-0.64	LDLRAD2	0.61
ZNF624	-0.54	MIR126	0.58
AC103746.1	-0.52	AC006001.3	0.56
SCUBE2	-0.46	SPTBN5	0.55
TBC1D19	-0.45	MIR222HG	0.52
WDSUB1	-0.45	NEAT1	0.52
CBR4	-0.37	DPF3	0.52
SOCS5	-0.34	KIF16B	0.47
RHOU	-0.33	GOLGA8A	0.46
AC026785.2	-0.32	GABRE	0.43
BBS9	-0.27	SMN2	0.40
LMBRD1	-0.25	LINC00346	0.40
TMEM87A	-0.24	NPIPB4	0.39
ELF1	-0.23	KCTD13	0.39
ASB8	-0.23	RABGEF1	0.36
VPS37A	-0.21	COL27A1	0.33
		BTBD19	0.33
		CBWD5	0.31
		MYEF2	0.30
		EP400P1	0.28
		MIR22HG	0.26
		HIP1R	0.26
		DNAJC11	0.24
		PNN	0.23
		CFLAR	0.20

Supplemental Table IV. Changes of Intercellular adhesion molecules by septin 2 KD

Gene name	log2 (FC)	negative log10 (adj.P.Value)
CDH5 **	1.26	1.8
CTNNB1	0.91	1.12
CTNNA1	0.13	0.23
CTNND1	0.02	0.02
NECTIN1	0.43	0.42
NECTIN2 **	0.27	0.59
NECTIN3	-0.08	0.07
AFDN **	0.00	0
PECAM1 **	0.68	0.91
TJP1 **	0.09	0.07
TJP2	0.24	0.34
OCLN	-0.28	0.12
CLDN1	-0.92	0.7
CLDN3	3.04	1.51
CLDN4	1.10	0.72
CLDN5	0.54	0.21
CLDN7	-1.61	1.37
CLDN10	-4.66	0.89
CLDN11	-0.29	0.12
CLDN12	0.38	0.51
CLDN14	0.96	0.87
CLDN15	0.14	0.1
JAM3	0.63	0.78
CD99	-0.35	0.73
ACTB	-0.76	0.88
ACTA1	-0.79	0.57
ACTA2	1.03	1.18
ACTG1	-0.20	0.18

Supplemental Table V. Changes of intercellular adhesion molecules by TNF-α treatment

Gene name	log2 (FC)	negative log10 (P.Value)
CDH5 **	0.09	0.21
CTNNA1	0.04	0.15
CTNNB1	-0.02	0.03
CTNND1	0.03	0.09
NECTIN1	-0.08	0.15
NECTIN2 **	0.01	0.03
NECTIN3	-0.06	0.15
AFDN **	-0.03	0.1
PECAM1 **	-0.03	0.07
TJP1 **	-0.05	0.12
TJP2	0.04	0.12
OCLN	0.21	0.26
CLDN11	0.15	0.17
CLDN15	0.06	0.09
CLDN10	-0.23	0.1
CLDN12	-0.12	0.3
CLDN14	0.31	0.52
CLDN1	0.38	0.44
CLDN3	0.20	0.16
CLDN7	0.08	0.12
CLDN5	-0.25	0.23
CLDN4	-0.11	0.1
CD99	-0.07	0.26
JAM3	-0.13	0.3
ACTB	0.14	0.28
ACTA2	-0.02	0.03
ACTA1	0.19	0.26
ACTG1	0.10	0.25

Supplemental Table VI. Increase in cell size by septin 2 suppression

Average cell sizes of HDMVECs infected with shControl and shSeptin 2 with SD are shown. Average cell sizes were calculated with cells from 3 independent experiments with triplicates for each experiment (N=1764 cells for shControl and N=1138 cells for shSeptin 2).

Cell sizes (μm^2/cell)	
shControl	**shSeptin 2**
1688.3 ± 36.47	2869.0 ± 276.25