

REAGENT or RESOURCE	Source	Catalog Numbers
Antibodies		
SUMO2/3 mouse monoclonal	University of Iowa	8A2; RRID: AB_2198421
SUMO1 mouse monoclonal	Thermo Fisher Scientific	21C7, Cat# 33-2400 RRID:AB_2198257
Ubiquitin mouse monoclonal	Santa Cruz Biotechnology	Cat# sc-8017; RRID:AB_628423
STAT1 rabbit monoclonal	Cell Signaling Technology	Cat# 14994; RRID:AB_2737027
Phospho-STAT1 (Tyr701) rabbit monoclonal	Cell Signaling Technology	Cat# 9167; RRID: AB_561284
I-A/I-E-BV421(M5/114) mouse monoclonal	BD Biosciences	Cat# 562564; RRID: AB_2716857
IgM-Biotin mouse monoclonal	BD Biosciences	Cat# 563018; RRID: AB_2737954
CD62L-BV421(MEL-14) mouse monoclonal	Biolegend	Cat# 104436; RRID: AB_10900082
CD138-BV421 mouse monoclonal	Biolegend	Cat# 142507; RRID:AB_11204257
CD25-BV-480 (PC61)	BD Biosciences	Cat# 566120; RRID:AB_2739522
CD3-BV510 (145-2C11) mouse monoclonal	BD Biosciences	Cat# 563024; RRID: AB_2737959
CD19-BV510 (1D3) mouse monoclonal	BD Biosciences	Cat# 562956; RRID: AB_2737915
NK1.1-BV510 (PK136) mouse monoclonal	Biolegend	Cat# 108738; RRID: AB_2562217
Ly6C-BV605 (HK1.4) mouse monoclonal	Biolegend	Cat# 128036; RRID: AB_2562353
CD4-BV605 (RM4-5) mouse monoclonal	Biolegend	Cat# 100547; RRID: AB_11125962
Siglec-H-BV650 (440C) mouse monoclonal	BD Biosciences	Cat# 747672; RRID: AB_2744233
NK1.1-BV650 (PK136) mouse monoclonal	Biolegend	Cat# 108735; RRID: AB_11147949
Siglec-F-BV711 (E50-2440) mouse monoclonal	BD Biosciences	Cat# 740764; RRID: AB_2740427
PD-L2-BV711 (TY25) mouse monoclonal	BD Biosciences	Cat# 107205; RRID: AB_2299418
CD19-BV750 (6D5) mouse monoclonal	Biolegend	Cat# 115561; RRID:AB_2813978
Ly6G-BV785 (1A8) mouse monoclonal	Biolegend	Cat# 127645; RRID: AB_2566317
CD44-BV785 (IM-7) mouse monoclonal	Biolegend	Cat# 103041; RRID: AB_11218802
Streptavidin-BV786 mouse monoclonal	BD Biosciences	Cat# 563858; RRID: AB_2869529
CD21/CD35-BUV395(7G6) mouse monoclonal	BD Biosciences	Cat# 740249; RRID:AB_2739995
CD95-BUV661 (Jo2) mouse monoclonal	BD Biosciences	Cat# 751537; RRID: AB_2875532
CD86-FITC (GL-1) mouse monoclonal	eBiosciences (Invitrogen)	Cat# MA1-10300; RRID: AB_11153707
CD19-FITC (1D3) mouse monoclonal	eBiosciences (Invitrogen)	Cat# 11-0193-82; RRID: AB_657666
GL-FITC(GL7) mouse monoclonal	BD Biosciences	Cat# 562080; RRID: AB_394981
CD103-PerCP-Cy5.5 (2E7) mouse monoclonal	Biolegend	Cat# 121415; RRID: AB_1574957
CD8- PerCP-Cy5.5 (53-6.7) mouse monoclonal	Biolegend	Cat# 100733; RRID: AB_2075239
CD23-PerCP-Cy5.5 (B3B4) mouse monoclonal	Biolegend	Cat# 101617; RRID:AB_2562923
Egr2-PE (Erogrn2) mouse monoclonal	eBiosciences (Invitrogen)	Cat# 12-6691-82; RRID: AB_10717804
TACI-PE (8F10) mouse monoclonal	Biolegend	Cat# 133403; RRID: AB_2203542
FoxP3-PE (FIK-16s) mouse monoclonal	eBiosciences (Invitrogen)	Cat# 12-5773-82; RRID: AB_465936
CD5-PE-Dazzle594 mouse monoclonal	Biolegend	Cat# 100643; RRID: AB_2819771
F4/80-PE-Cy5 (BM8) mouse monoclonal	Biolegend	Cat# 123111; RRID: AB_893494
CD3-PECF594 (145-2C11) mouse monoclonal	BD Biosciences	Cat# 562286 ; RRID: AB_11153307
CD11b-PE-Cy7(M1/70) mouse monoclonal	eBiosciences (Invitrogen)	Cat# MA1-10082 ; RRID: AB_11154207
CD38-PE-Cy7(90) mouse monoclonal	Biolegend	Cat# 102717; RRID: AB_2072892
CD80-PE-Cy7(16-10A1) mouse monoclonal	Biolegend	Cat# 104733; RRID: AB_2563112
GranzymeB-PE-Cy7(NGZB) mouse monoclonal	eBiosciences (Invitrogen)	Cat# 25-8898-82; RRID: AB_10853339
IgD-pacific blue(11-26C.2a)	Biolegend	Cat# 405711; RRID: AB_1937245

iNOS-APC (CXNFT) mouse monoclonal	eBiosciences (Invitrogen)	Cat# 17-5920-82; RRID: AB_2573244
CD69-APC (H1.2F3) mouse monoclonal	Biolegend	Cat# 104513; RRID: AB_492844
CD45-aF700 (30F11) mouse monoclonal	Biolegend	Cat# 103127; RRID: AB_493714
CXCR4-aF647(L276F12) mouse monoclonal	Biolegend	Cat# 146503; RRID: AB_2562590
B220-Af700 (RA3-6B2) mouse monoclonal	Thermo Fischer Scientific	Cat# 56-0452-82, RRID:AB_891458
CD11c-APC-Cy7 (N418) mouse monoclonal	Biolegend	Cat# 117323; RRID: AB_830646
Single cell sequencing Hashtag antibodies		
C0301 Hashtag 1 (M1/42 + 30-F11)	Biolegend	Cat# 155861
C0302 Hashtag 2 (M1/42 + 30-F11)	Biolegend	Cat# 155863
C0303 Hashtag 3 (M1/42 + 30-F11)	Biolegend	Cat# 155865
C0301 Hashtag 4 (M1/42 + 30-F11)	Biolegend	Cat# 155867
C0302 Hashtag 5 (M1/42 + 30-F11)	Biolegend	Cat# 155869
C0303 Hashtag 6 (M1/42 + 30-F11)	Biolegend	Cat# 155871
C0301 Hashtag 7 (M1/42 + 30-F11)	Biolegend	Cat# 155873
C0302 Hashtag 9 (M1/42 + 30-F11)	Biolegend	Cat# 155877
Chemicals and Inhibitors		
TAK-981	Millennium-Takeda Pharmaceuticals	N/A
Hydroxypropyl β -cyclodextrin (HPBCD)	Sigma-Aldrich	Cat# H-107
MG132	Sigma-Aldrich	Cat# C2211
Doxycycline	Sigma-Aldrich	Cat# D9891
Geneticin (G418)	Life technologies	Cat# 11811-031
Propidium iodide	Sigma-Aldrich	Cat# P4170
Deposited data		
ProteomeXchange (via PRIDE database)	This paper	PXD024521
NCBI's Gene Expression Omnibus	This paper	GSE189576
Experimental models: cell lines		
MiaPaCa2	Provided by Dr. Bernadette van den Hoogen Erasmus MC, Rotterdam, The Netherlands	N/A
HPAF	Provided by Dr. Bernadette van den Hoogen Erasmus MC, Rotterdam, The Netherlands	N/A
PANC1	Provided by Dr. Bernadette van den Hoogen Erasmus MC, Rotterdam, The Netherlands	N/A
KPC3	Provided by Dr. Lukas Hawinkels, Leiden University Medical Center, Leiden, The Netherlands	N/A
BxPC3	Provided by Dr. Lukas Hawinkels, Leiden University Medical Center, Leiden, The Netherlands	N/A
PaTu 8988s	Provided by Prof. Peter Ten Dijke, Leiden University	N/A

	Medical Center, Leiden, The Netherlands	
PaTu 8988t	Provided by Prof. Peter Ten Dijke, Leiden University Medical Center, Leiden, The Netherlands	N/A
VH10	Provided by Dr. A.G. Jochemsen, Leiden University Medical Center, Leiden, The Netherlands	N/A
Pmel CD8+ T cells	Provided by Prof. Thorbald van Hall, Leiden University Medical Center, Leiden, The Netherlands	N/A
Human CD8+ T cells	Provided by Prof. Thorbald van Hall, Leiden University Medical Center, Leiden, The Netherlands	N/A
MiaPaCa2-His10-SUMO2- IRES GFP	This paper	N/A
PANC1-His10-SUMO2- His10-SUMO2 IRES GFP	This paper	N/A
Experimental models: organisms/strains		
Mouse: C57BL/6	Charles River Laboratories France	N/A
Mouse: Cg-Prkdc ^{scid} Il2rg ^{tm1Wjl} /SzJ (NSG)	In house breeding	N/A
Primers		
NTshRNA_FW TCCCGAGGATAGACGCTTTAAATAATTCA AGAGATTATTTAAAGCGTCTATCCTCTTTT TC NT shRNA_RV TCGAGAAAAGAGGATAGACGCTTTAAAT AATCTCTTGAATTATTTAAAGCGTCTATCC TC	(Eifler, K et al; 2018 Nature Commun.)	N/A
SAE1 shRNA_FW TCCCGCTATGTTGGTCCTTTGTTTATTCAA GAGATAAACAAAGGACCAACATAGCTTTT TC SAE1 shRNA_RV CTCGAGAAAAGCTATGTTGGTCCTTTGT TTATCTCTTGAATAAACAAAGGACCAACAT AGC	(Eifler, K et al; 2018 Nature Commun.)	N/A
SAE2 shRNA1_FW: TCCCGCTGTATTGAAAGTAGGAATATTCA AGAGATATTCCTACTTTCAATACAGCTTTT TC SAE2 shRNA1_RV CTCGAGAAAAGCTGTATTGAAAGTAGGA ATATCTCTTGAATATTCCTACTTTCAATAC AGC	(Eifler, K et al; 2018 Nature Commun.)	N/A
SAE2 shRNA2_FW TCCCGCACCAGATGTCCAAATTGAATTCA AGAGATTCATTTGGACATCTGGTGCTTTT TC SAE2 shRNA2_RV CTCGAGAAAAGCACCAGATGTCCAAATT GAATCTCTTGAATTCATTTGGACATCTGG TGC	(Eifler, K et al; 2018 Nature Commun.)	N/A
qPCR primers (Mouse)		
<i>Iffa</i> -FW GGATGTGACCTTCCTCAGACTC <i>Iffa</i> -RV	Sigma	N/A

ACCTTCTCCTGCGGGAATCCAA		
<i>Ifnβ</i> -FW GCCTTTGCCATCCAAGAGATGC <i>Ifnβ</i> -RV ACACTGTCTGCTGGTGGAGTTC	Sigma	N/A
<i>Ifny</i> -FW CAGCAACAGCAAGGCGAAAAAGG <i>Ifny</i> -Rev TTCCGCTTCCTGAGGCTGGAT	Sigma	N/A
<i>Irf7</i> -FW CCTCTGCTTTCTAGTGATGCCG <i>Irf7</i> -RV CGTAAACACGGTCTTGCTCCTG	Sigma	N/A
<i>Gzmb</i> -FW CAGGAGAAGACCCAGCAAGTCA <i>Gzmb</i> -Rev CTCACAGCTCTAGTCCTCTTGG	Sigma	N/A
<i>Prf1</i> -FW ACACAGTAGAGTGTGCGCATGTAC <i>Prf1</i> -RV GTGGAGCTGTTAAAGTTGCGGG	Sigma	N/A
<i>Ifit1</i> -FW CTGGACAAGGTGGAGAAGGT <i>Ifit1</i> -RV AGGGTTTTCTGGCTCCACTT	Sigma	N/A
<i>Ifg15</i> -FW CATCCTGGTGAGGAACGAAAGG <i>Ifg15</i> -RV CTCAGCCAGAACTGGTCTTCGT	Sigma	N/A
<i>Ddx58</i> -FW AAGGCCACAGTTGATCCAAA <i>Ddx58</i> -RV TTGGCCAGTTTTCTTGTCG	Sing	N/A
<i>Ubc</i> -FW GCCAGTGTTA CCACCAAGA <i>Ubc</i> -RV CCCATCACAC CCAAGAACA	Sigma	N/A
<i>Mzt2</i> -FW TCGGTGCCCATATCTCTGTC <i>Mzt2</i> -RV CTGCTTCGGGAGTTGCTTTT	Sigma	N/A
<i>Ptp4a2</i> -FW AGCCCCTGTGGAGATCTCTT <i>Ptp4a2</i> -RV AGCATCACAACCTCGAACCA	Sigma	N/A
qPCR primers (Human)		
<i>ISG15</i> -FW CAGCGAACTCATCTTTGCCAGTA <i>ISG15</i> -RV CCAGCATCTTCACCGTCAGG	Sigma	N/A
<i>ISG56</i> -FW GGGCAGACTGGCAGAAGC <i>ISG56</i> -RV TATAGCGGAAGGGATTTGAAAGC	Sing	N/A
<i>DDX58</i> -FW CACCTCAGTTGCTGATGAAGGC <i>DDX58</i> -RV GTCAGAAGGAAGCACTTGCTACC	Sigma	N/A
<i>TBP</i> -FW CGGCTGTTTAACTTCGCTTC <i>TBP</i> -RV CACACGCCAAGAAACAGTGA	Sigma	N/A
<i>ActinB</i> -FW CGGGACCTGACTGACTACCTC	Sigma	N/A

<i>ActinB</i> -RV CTCCTTAATGTCACGCACGATTC		
<i>SRPR</i> -FW CATTGCTTTTGCACGTAACCAA <i>SRPR</i> -Rev ATTGTCTTGCATGCGGCC	Sigma	N/A
<i>RPS11</i> -FW AAGCAGCCGACCATCTTTCA <i>RPS11</i> -RV CGGGAGCTTCTCCTTGCC	Sigma	N/A
Software and algorithms		
MaxQuant v1.6.14	Max Planck Institute	https://www.maxquant.org
Perseus, version v1.6.14	Max Planck Institute	https://www.maxquant.org
Cytoscape v3.8+ stringApp v1.6.0, + MCODE v2.0.0	National Resource for Network Biology	https://cytoscape.org
GraphPad Prism v8	GraphPad Software	www.graphpad.com
Leica LAS X v3.7.0	Leica	https://www.leica-microsystems.com/products/microscope-software/p/leica-las-x-ls
ImageJ	Fiji	https://imagej.net/Welcome
FlowJo v10	TreeStar	https://www.flowjo.com/solutions/flowjo

KEY RESOURCES TABLE