

Supplementary Tables

Supplementary Table 1

Oligonucleotide sequences

Name	Sequence (5'-3')
CD5#1 sgRNA cloning oligo FW	CACC GCTTCCTGCCCAAGGTACCCA
CD5#1 sgRNA cloning oligo RE	AAAC TGGGTACCTTGGGCAGGAAGC
CD5#3 sgRNA cloning oligo FW	CACC GACTTCAAACATGGGTGACGC
CD5#3 sgRNA cloning oligo RE	AAAC GCGTCACCCATGTTTGAAGTC
CD5#4 sgRNA cloning oligo FW	CACC GCAGGGCTGCCATTCAAACAG
CD5#4 sgRNA cloning oligo RE	AAAC CTGTTTGAATGGCAGCCCTGC
CXCR4#1 gRNA cloning oligo FW	ACC GCGGGTGGTCCGGTAGTGAGTC
CXCR4#1 gRNA cloning oligo RE	AAC GACTCACTACCGACCACCCGC
CXCR4#2 gRNA cloning oligo FW	ACC GGACGCGAGGAAGGAGGGCGC
CXCR4#2 gRNA cloning oligo RE	AAC GCGCCCTCCTTCTCGCGTCC
dSpCas9-VPR Gibson fragment 1 (Fw)	AAGAGTAAGAAGAAATATAGCTAGCGCCACCATGGACAAGAAGTACTC C
dSpCas9-VPR Gibson fragment 1 (Rv)	GTGTTTCATGCGTGAATCGAGAATTTGG
dSpCas9-VPR Gibson fragment 2 (Fw)	AAGGCAGCTTGTGAGACACGC
dSpCas9-VPR Gibson fragment 2 (Rv)	AGAAGGCAGCTTAATTAAGCGGCCGCTCAAAACAGAGATGTGTGCGAA GATGGAC
KRAB-dSpCas9 Gibson (fw)	AAGAGTAAGAAGAAATATAGCTAGCCACCATGGATGCTAAGTCACTA ACTGC
KRAB-dSpCas9 Gibson (Rv)	AGAAGGCAGCTTAATTAAGCGGCCGCTTAGGATCCGCTGCTGCC
dSaCas9-VPR Gibson (Fw)	AAGAGTAAGAAGAAATATAGCTAGCGCCACCATGGCCCCAAAG
dSaCas9-VPR Gibson (Rv)	AGCTTAATTAAGCGGCCGCTCAAAACAGAGATGTGTGCAAGATGGA CAG
dSpCas9-VP64 Gibson (Fw)	ATAAGAGAGAAAAAGAGTAAGAAGAAATATAGCTAGCGCCACCATG AAAAGGCCGGCGCCAC
dSpCas9-VP64 Gibson (Rv)	GCCCCGAGAAAGGCAGCTTAATTAAGCGGCCGCTCAGTTAATCAGCA TGTCCAGGTGCGAAATC
MS2-p65-HSF1 Gibson (Fw)	GAAATAAGAGAGAAAAAGAGTAAGAAGAAATATAGCTAGCGCCACC ATGGCTTCAAACCTTAC
MS2-p65-HSF1 Gibson (Rv)	GGCCAGAAGGCAAGCCCCGAGAAAGGCAGCTTAATTAAGCGGCCGC TTAGGAGACAGTGGGGTCTTG

Supplementary Table 2

List of sgRNA spacer sequences. All sgRNAs were used for CRISPRa unless otherwise noted.

Name	sgRNA spacer sequence (5'-3')	Cas9 orthologue
CXCR4#1	CGGGUGGUCGGUAGUGAGUC	dSpCas9
CXCR4#2	GACGCGAGGAAGGAGGGCGC	dSpCas9
PROCR#1	AGGGAGGCCGGCCCCUAGU	dSpCas9
PROCR#2	AGGAAGCAGCCCAAGGAGAA	dSpCas9
PROCR#3	GGGCAGGAGGGAGCAUGAA	dSpCas9
CD5#1	CUUCCUGCCCAAGGUACCCA	dSpCas9
CD5#3	ACUUCAAACAUGGGUGACGC	dSpCas9
CD5#4	CAGGGCUGCCAUUCAAACAG	dSpCas9
ITGAX#1	AACUGAUCCGAGGACAGGCU	dSpCas9
ITGAX#2	UCAUCUGAUGAGAGUGACUC	dSpCas9
ITGAX#3	UGGCAGUCAAGGGUGAGCCU	dSpCas9
ITGAX#4	UGGCAGAUGCCAACCCUC	dSpCas9
ITGAX#5	CAGAGUACGCAACUGAUCCG	dSpCas9
ITGAX#6	GGGUGCCUUCUGGCAGUCAA	dSpCas9
ITGAX#7	CCAACCCUCAGGACCCUAA	dSpCas9
ITGAX#8	GGGGCAUCCGGGUCCCUAGG	dSpCas9
ITGAX#9	AGCAGAGGGCUUGCAUCUCC	dSpCas9
ITGAX#10	GCAAGUUCAUUGCUGUGAGG	dSpCas9
CD14#1	GUAACAGGAAGGAUUCUGCA	dSpCas9
CD14#2	UGGCAGUGUCCUGAUGACUC	dSpCas9
CD14#3	UCUCUGGGAUUAAGGUAGG	dSpCas9
CD14#4	CCCCUUGGUGCCAACAGAU	dSpCas9
CD19#1	CCACCGCCUUCUCUCUGGG	dSpCas9
CD19#2	GGAGGCAAGUGUUGUGAGUC	dSpCas9
CD19#3	UUUCCCGUGGUAGUGAGAGC	dSpCas9
CD19#4	UCAACCAUGGGUGUCUGCGG	dSpCas9
CD33#1	UGCCAAGACUAAAAAGGGAG	dSpCas9
CD33#2	CCCUGGUUGGUCCCAAAGG	dSpCas9

CD33#3	GCCGUCGAGGCCAAAAAAGG	dSpCas9
CD33#4	CCCUGCCCUGGCCACCGGCA	dSpCas9
ITGA3#1	CCCGGGCUGGGCUCGCAAGG	dSpCas9
ITGA3#2	UCGGCCGCCUCCUCUUAAG	dSpCas9
ITGA3#3	CUUCUCCCCCAAACACCUGU	dSpCas9
ITGA3#4	UUCUCGGAGAAGCGAGGGGC	dSpCas9
LILRA4#1	AUCAGCACACCGACAGAAAG	dSpCas9
LILRA4#2	UUUCCCAGGGCUUGUCCUGG	dSpCas9
LILRA4#3	CACAAAUGGGGAUUCACAAG	dSpCas9
LILRA4#4	GGCACAGAAAAGGAAGUCCA	dSpCas9
THY1#1	CCGGGGGCUACGCCAAUCAG	dSpCas9
THY1#2	AAGAGAAGGCGGUCCCGCAU	dSpCas9
THY1#3	GCCUGCCAGCCACAGGGUGA	dSpCas9
THY1#4	GGCUGCCGCACCCUGAUCCC	dSpCas9
IL3RA#1	CUGGCUAUACAGGCAGGGUU	dSpCas9
IL3RA#2	GGCGUGAACGCUGGUGUCCA	dSpCas9
IL3RA#3	UGGGAAACAGCACCCAGACA	dSpCas9
IL3RA#4	GUUACGAAGCUGCUGACCCC	dSpCas9
TNFSF10#1	GCAGGUUCAUAGAUGUGGG	dSpCas9
TNFSF10#2	UCUUGUCUCAAGUAGUCGU	dSpCas9
TNFSF10#3	AAGGGUGCAUGGAUCCUGA	dSpCas9
TNFSF10#4	UGGCGAGGACAUUAUCAA	dSpCas9
NGFR#1	GCGGGCGGGCGCGGUUCCGG	dSpCas9
NGFR#2	GAGAAGCGCAGCGGGGUGCG	dSpCas9
NGFR#3	CGGGAACUGGGUACCAGGGC	dSpCas9
NGFR#4	GGACCAGGGCGUCCCCACUG	dSpCas9
CLEC4C#1	CGAAGAAGGAUCUAAGGGCU	dSpCas9
CLEC4C#2	CUCCAAAGAUGUUACUUUCG	dSpCas9
CLEC4C#3	GAAAAACAGUUAUGGUUGC	dSpCas9
CLEC4C#4	GAGUGCAACGGCAGGAGGUC	dSpCas9
GATA1#1	GGGGCACCCAGCCACUCCCUG	dSpCas9
GATA1#2	AUGCUUGUGGGGCACCUCUU	dSpCas9
GATA1#3	GCGAGGUCCAAGAAUCCCCA	dSpCas9
GATA1#4	CCAGGAAGACGCACAUACAC	dSpCas9
PROCR#1 CRISPRi	AGGGAGGCCGGCCCCCUAGU	dSpCas9
PROCR#2 CRISPRi	AGGAAGCAGCCCCAAGGAGAA	dSpCas9
PROCR#3 CRISPRi	GGGCAGGAGGGAGCAUAGAA	dSpCas9
CD5#1 CRISPRi	GGCCAGAAACCAUGCCCAUG	dSpCas9
CD5#2 CRISPRi	CAGCUGGGCACCGCAGGUGA	dSpCas9
CD5#3 CRISPRi	AGCGGUUGCAGAGACCCCAU	dSpCas9
CD5#4 CRISPRi	GGGUGGGACAUGCAGGACAG	dSpCas9
Sa_CXCR4#1	GGCGCGUCCAUCUUGCUAAA	dSaCas9
Sa_CXCR4#2	GCUGUUUGCGGGUGGUCGGUA	dSaCas9
Sa_NGFR#1	GCCGGGAACUGGGUACCAGGG	dSaCas9
Sa_NGFR#2	ACAAGGCAGGGAGAAGCGCAG	dSaCas9
Sa_NGFR#3	GAGGCGGAGGAAGAUGGGUAA	dSaCas9
mCCR7#1	CACGCCUGGGUGGCUGCUGU	dSpCas9
mCCR7#2	CUACAAGGCACUACUACCAG	dSpCas9
mCCR7#3	GGCUGCGCAGGUGUAUGUCG	dSpCas9
mCCR7#4	GGCAAACGACUCAGUGAUUC	dSpCas9

Supplementary Table 3

List of antibodies and live/dead markers used for flow cytometry

Name	Clone #	Supplier name
Anti-Human CXCR4, PE	12G5	Thermo Fisher Scientific or BD
Anti-Human PROCR, APC	RCR-401	BioLegend
Anti-Human CD5, PE	UCHT2	Tonbo Biosciences or Thermo Fisher Scientific
Anti-Human ITGAX, PE-Cyanine5	3.9	Thermo Fisher Scientific
Anti-Human CD19, APC	HIB19	BD
Anti-Human CD14, PE	61D3	Tonbo Biosciences
Anti-Human CD33, PE	WM-53	Thermo Fisher Scientific
Anti-Human ITGA3, PE	C3 II.1	BD
Anti-Human LILRA4, APC	eBio17G10.2	Thermo Fisher Scientific
Anti-Human THY1, PE-Cy5	5E10	Thermo Fisher Scientific
Anti-Human IL3RA, PE	6H6	Thermo Fisher Scientific
Anti-Human CLEC4Ca, PE-Cyanine7	201A	Thermo Fisher Scientific
Anti-human TNFSF10, PE	RIK-2	BioLegend
Anti-Human NGFR, PE-Cy7	C40-1457	BD
Anti-Human NGFR, Alexa Flour 647	C40-1457	BD
Anti-Human CD5, PE-Cyanine7	UCHT2	BioLegend
Anti-Human PTPRC, VF450	HI30	eBiosciences
Anti-Human HLA-A/B/C, APC-Cy7	W6/32	BioLegend

Anti-rabbit IgG-AF647	Cat. #4414	Cell Signaling Technology
Rabbit anti-human GATA1	D52H6	Cell Signaling Technology
Anti-Mouse Ly76, PE-Cy5	TER119	eBiosciences
Anti-Mouse Ptpcr^α, PE-Cy7	A20	Tonbo Bioscience
Anti-mouse CCR7, PE	4B12	Thermo Fisher Scientific
Zombie Green Viability dye	N/A	BioLegend
Zombie Yellow Viability dye	N/A	BioLegend
Zombie Violet Viability dye	N/A	BioLegend
Propidium iodide	N/A	Sigma-Aldrich