

Supplementary Table 2. sgRNA spacers and primers used in this study (Off-target sites)

site#	Spacer sequence	PAM	Forward primer	Reverse primer
site 3-OT1	GAACTCAGAGGAGGAgAAGT	AGG	agaaacatgatgtgctgaagtgt	attactggccatgccttccc
site 3-OT2	GAGATCAGAGGAGGAAAgGT	GGG	ggctccctgttctcatggagc	cccagccacatggaactatga
site 3-OT3	GAGATCAGAGGAGGAAAAaT	TGG	ccgtgaagctcatggtgagg	gggccaaatcaaggagtga
site 4-OT1	GGGGCTCAACgTCGaAAGAA	AGG	tggaaacatttcggacccgt	gaggggaaggctcttgttg
site 4-OT2	GGGGCTCAAAATaGGAAGAc	TGG	ggcaggaaaactatgaaagtgtg	catagcagaatacagacggg
site 4-OT3	GGGcCTCAACATtGaAAGAG	TGG	acctccaacaattctccaatctt	ctctttgcacagtaacaatgagatg
site 4-OT4	GaGGCTCAACATCGGctGAG	CGG	ctcgccctcagaactgcttt	attggctagaaggacacggg
site 9-OT1	aaACTCCACCCTCAAAGAGA	TGG	cagcagccccagataaaataaattt	ggattgaagtcacatgcacag
site 9-OT2	TGAgTCCACCCTCAAAaAGA	GGG	ccctttccattgtatattgtggcag	gaaccaagatgcaagctgtg
site 9-OT3	TGcCTCCACCCTCAAAGcAGc	AGG	gaacaggaaggaccccatgc	ggcaggacacagtactacaa
site 9-OT4	aGAaTCCACaCTCAAAGAGA	TGG	ggaagacaatattgtcatagcaca	gcaaaggaaattcaatggagaaagga
site 9-OT5	TGACTCCAtCCcCaAGAGA	TGG	agtggagtgacagaggggat	ctcttgcggtttctccaca
site 16-OT1	GCTAACTTgCTGTGTgACCC	AGG	aagatcatctgggaaaacattcat	aaacagcacaggatattggtgtt
site 16-OT2	cCTAACTTACTGTGTAAgCC	AGG	tgtatctctgagcccttgagc	cttcagtgtactacccctgc
site 16-OT3	GCTAtCTTgCTGTGTcACCC	AGG	gcagacagttagctaaagggc	cagggttattagccaggcc
site 16-OT4	GCTAACaTgCTGTGgAACCC	TGG	aacatcacctctggcaggat	gtagatggagcaaccaagggc
site 16-OT5	GCTAACcTACTGTGTgACCa	GGG	cgggaggaacagtagcaggt	agagcaggatcaacgcctt
site 18-OT1	TTcCTAaAAACCAAAAGcC	AGG	tttctgtccaagagtagctg	aggaaaaacaaggcaggga
site 18-OT2	TTGgTAGAAActAAAgAGAC	TGG	tactggccttgagagaacac	gctgttaggccagaagagca
site 18-OT3	TTcCTAaAAACCAAAgAGAC	AGG	tgcgtcttaacattgcttctt	cagctggagaccatctgta
site 18-OT4	TTGCTAGAAACCAAtAgAGAA	TGG	tgttctgtggccttgctt	tgcaatctgaaccaggaaattctta
site 18-OT5	TTtCTAGAAActAAACAGAA	TGG	tgcatgaactagactgggg	actaacctgtttgtgcctt
site 21-OT1	TCAaGGGCTTaCCTTgTCC	AGG	cccaagtgtgtagtgcctcc	ctgtcacccactccttgaaatg
site 21-OT2	gCAGGGGCTTGtCTgGATCC	TGG	agagtctgtgtagagtctggg	tcaggctccaggcaggctc
site 21-OT3	agAGGGGCTTGCCaTGATCC	AGG	caccttacctctaccgacacc	ctgcagagtagcggggagat
site 21-OT4	cCtGGGGCTTGCCtGATCC	TGG	atagggggagtgaaaggctct	gggctgggtaccactttgt
site 25-OT1	CcAGGAtATACACaTCCACC	AGG	ctttcagcgtgcagatgg	ttaaacagggaactactggg
site 25-OT2	CcAGGAtATACACCcCCACC	AGG	aggctgaacctataccatg	cctactgtccctaaatcag
site 25-OT3	CcAGGAaATACACCcCCACC	AGG	ggggaacctctgaaggctt	gactcttaccactccctctcc
site 25-OT4	CTcGGgGATACACCTCCcCC	TGG	gagataactgggctgtgggt	tcacgaggcagatggactga
site 25-OT5	CTAGGAGATAaAatTCCACC	GGG	gggggttaaaggtttgtctacca	cctggctctagggtatgagac
site 30-OT1	GGTGGgGGAGAgGaGACGCC	GGG	tgctctgggagctttgctta	ccaaggaggagccaagt
site 30-OT2	GGTGGCtGAGATGaGACaCC	TGG	atcatgagagccaccttgctt	ttccagacagctgaactcaca
site 30-OT3	GGTGGCGGAGcTGCGgtGCC	TGG	tggacccatggagaccgag	atcagcctgctaattggcttc
site 30-OT4	GGTGGaGGAGtTcCGACGCC	GGG	ttctgcctgagctgttccat	ctgaggggcaacaccgag
site 31-OT1	GATGGCaGcTAgTCTCCCTT	AGG	tttcatcagagaaatggttacagtc	tctgggctgagagctagtga
site 31-OT2	GATGGCGGAGaCTgTgCCTT	TGG	tgagcactttgaattcttgctt	ccatttgggaaagacctgct
site 31-OT3	GATGGCGGtTcCTCTaCCTT	AGG	caatgaggacaggaaagcagac	gtgatctggaaccctctcc
R-loop 1	gtggtagacagcatgtgtccta	AAGGGT	tgatagggttagaaggaccctt	ttaggggtagctaggttgc
R-loop 2	gtgtcaggtaagtgtcctaaca	GAGAGT	agtgttcagctgctttcttcatt	tcttctccagattcccttcata
R-loop 3	ggtggaggagggtgcatggggt	CAGAAT	ggcctcagggaataaatcat	tgtgagcccatcaggtattcaa
R-loop 4	tttctgcttctccagccctggc	CTGGGT	gggaaacgcccatgcaattagt	ttaggaaaagctgtcctgcg
R-loop 5	cggatgttccaatcagtacgca	GAGAGT	gaacacggataaagacgctgg	gcagaagggaattccatgaggt