

## Appendix A CRISPRi sgRNA sequences

Name	Strand	Sequences (5'–3')
sgRNA1 ( <i>KU70</i> )	F	CACCGGTTACTGCTCACTAGGTGA
	R	AAACTCACCTAGTGAGCAGTAACC
sgRNA2 ( <i>KU70</i> )	F	CACCGCAAGTGGACCTCCAACACC
	R	AAACGGTGTTGGAGGTCCACTTGC
sgRNA3 ( <i>KU70</i> )	F	CACCGACAGATCTCAGAGGAGCCT
	R	AAACAGGCTCCTCTGAGATCTGTC
sgRNA1 ( <i>KU80</i> )	F	CACCGCGGGAAGAACCACTTCCCG
	R	AAACCGGGAAGTGGTTCTTCCCGC
sgRNA2 ( <i>KU80</i> )	F	CACCGGAAGAGACTGCTGAGGCGC
	R	AAACGCGCCTCAGCAGTCTCTTCC
sgRNA3 ( <i>KU80</i> )	F	CACCGCGCTGAAACTCTGTTTCAGC
	R	AAACGCTGAACAGAGTTTCAGCGC
sgRNA1 ( <i>LIG4</i> )	F	CACCGAGCTTCATGATAAATGTTT
	R	AAACAAACATTTATCATGAAGCTC
sgRNA2 ( <i>LIG4</i> )	F	CACCGATTCATTTAGTATTGCAG
	R	AAACCTGCAATACTGAAATGAATC
sgRNA3 ( <i>LIG4</i> )	F	CACCGATGATAGTAAATAGTCGAC
	R	AAACGTCGACTATTTACTATCATC
sgRNA1 ( <i>PNKP</i> )	F	CACCGCCCCGGGACCGCTAAGAGG
	R	AAACCCTCTTAGCGGTCCCGGGGC
sgRNA2 ( <i>PNKP</i> )	F	CACCGCGGGGCTTACGTCATGGGC
	R	AAACGCCCATGACGTAAGCCCCGC
sgRNA3 ( <i>PNKP</i> )	F	CACCGCCCCGCCTCTTAGCGGTCC
	R	AAACGGACCGCTAAGAGGCGGGGC
sgRNA1 ( <i>NHEJ1</i> )	F	CACCGAGTTCTTGCGGCCGCTCAC
	R	AAACGTGAGCGGCCGCAAGAACTC
sgRNA2 ( <i>NHEJ1</i> )	F	CACCGTCCCGCCCACATCAGGACG
	R	AAACCGTCCTGATGTGGGCGGGAC
sgRNA3 ( <i>NHEJ1</i> )	F	CACCGCCCGCCCGCGCAAACCGAG
	R	AAACCTCGGTTTGCGCGGGCGGGC

## Appendix B NgAgoi gDNA sequences

Name	Strand	Sequences (5'–3')
<i>KU70</i>	Fw-gDNA-1	AGCAGTAACCAACATGTCAGGGTG
	Rv-gDNA-2	ATCCTCTTATGGCTCATCTTGACC
	Rv-gDNA-3	CTCAAAGTGAACCCCTATGTCCTC
<i>KU80</i>	Rv-gDNA-1	GCTGCACAAACATGGTTATCACCT
	Fw-gDNA-2	AGAACATCACAGTGCATAGACACC
	Rv-gDNA-3	TATTCATCCAGCCATCTTCACC
<i>LIG4</i>	Fw-gDNA-1	GTAGTGTCTTTACGCCCATACCAG
	Fw-gDNA-2	CCTTGAACAAAAGTGGCTGATCCG
	Rv-gDNA-3	CCCGGATTCTGTACTATGTAACCC
<i>PNKP</i>	Fw-gDNA-1	TCCAGAATTGCAGCCAGACACTCC
	Rv-gDNA-2	AGGTGCTGTGAATACTAGTAGCTT
	Fw-gDNA-3	TCACCAACCAGATGGGCATTGGAC
<i>NHEJ1</i>	Rv-gDNA-1	CTGGGTGATATAAGCCTTAGCCAA
	Fw-gDNA-2	CAAAGCTACATTCTCCTGTGACCG
	Rv-gDNA-3	AAATTCCAATAGAATGGGAGACCG

## Appendix C Real-time PCR primer information

Name	Strand	Sequences (5'–3')	Product size (bp)
<i>KU70</i>	F	GCGATGAAGAAGAAGAAGAGGAG	225
	R	CATAGAACACCACTGCCAAGAG	
<i>KU80</i>	F	GAGGAAGGCACCGTTGAAG	188
	R	GAGAGAGGAATCTGACACTTAGC	
<i>LIG4</i>	F	GCCGCTATCGCAGACATTG	251
	R	GCCATCATCTCACCATCAAGG	
<i>PNKP</i>	F	GGACCGTGGCAGTGAAACAG	221
	R	CTCTTCCTCCTCCTCGTGTGG	
<i>RPA3</i>	F	TCGTAGGGAGGCTGGAGAAG	167
	R	GACACACATAATGGTTGCTTTGC	
<i>Rad51</i>	F	CGTTCAACACAGACCACCAG	187

	R	GCAAGTCGCAGAAGCATCC	
<i>Rad50</i>	F	GTGGTGATGCTAAAGGGAGAC	232
	R	GGAAGTTACGCTGCTGTGAG	
<i>XRCC4</i>	F	AGCATTGGTGTTCAGGAGCAG	184
	R	GGTGTCCAGGCAGTAACAAATAAG	
<i>NHEJ1</i>	F	GCAGTGTTGGTGTGGAAGAC	176
	R	TGGCTCCTCTGGCTGGTTC	
<i>β-actin</i>	F	CCACGAGACCACCTTCAACTC	131
	R	TGATCTCCTTCTGCATCCTGT	

#### Appendix D PCR primer information

Name		Strand	Sequences (5'–3')	Product size (bp)
CRISPRi	<i>KU70-3</i>	F	TGCTTAAGGACCGAGTACCCT	476
		R	AAAGTCTTTCACACACGGAT	
	<i>KU80-2</i>	F	AGTTGGTTCTAAAGTCATCGC	553
		R	TCCTCGCTCCTTAGAACCG	
	<i>LIG4-1</i>	F	AAGACCTTACCGCAAAAGCC	693
		R	CGTCCTCTACTTCTCTGTATTC GT	
	<i>PNKP-1</i>	F	CCTGCAACGTGGAAAGGATTA TCCC	483
		R	TCATGAACTCCCGCCTCAACC C	
	<i>NHEJ1-1</i>	F	CTCTTTTCTGGCTTCCGTCCAC	660
		R	GAACCCTCGCTCCCTTTACCA C	
NgAgoi	<i>KU70-2</i>	F	CGTTTCTGCCATTTGACT	588
		R	AAAGAAGCCATAAAATGAAGC G	
	<i>KU80-2</i>	F	TTGTCACTGTCCATGAGTCCC T	437

		R	TAGAGAGCCTCACCAAACCAG A	
	<i>LIG4-1</i>	F	AACCAAGCTAGACGGCGAAC	574
		R	CAGCTCATCCATCAGTCCGTT G	
	<i>PNKP-2</i>	F	CCCTCTTTCTCTGCAGCTAGG AGT	531
		R	CCTTAACCCGCAGAGCCACAA C	
	<i>NHEJ1-1</i>	F	AGAAATACTAATACCAATACG CTGA	603
		R	CTTGGCAACCTAAAGGCTA	