The functional circular RNA, ciRS-7 (CDR1as), is biosynthesized using back-splicing promoted by inverted msmmslisn-wide MIRs but not primate-specific *Alu*s

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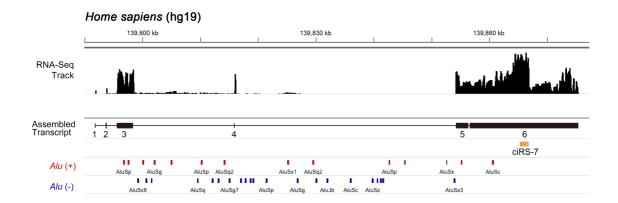


Figure S1. The ciRS-7 exon does not have flanking inverted Alu elements.

Modified screeenshot of human brain RNA-Seq data (GSE59612) mapped on the the human hg19 genome sequence is showing the assembled ciRS-7 precursor transcript. The transcript was assembled by StringTie. The locations of the human *Alu* elements, which were extracted from UCSC Reperat Masker database, are shown by bars (+ is the same strand as the ciRS-7 exon).

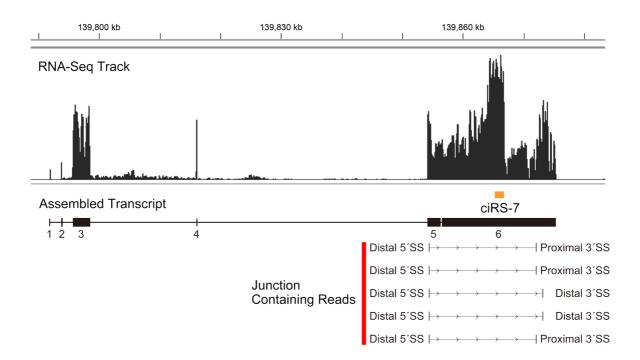


Figure S2. Alternative splicing events skip the ciRS-7 exon.

The assembled ciRS-7 precursor tarnscript (see Fig. S1) is shown together with the identified alternative splicing events. The junction containing reads revealed the active alternative 5' and 3' splice sites within the exons 5 and 6.

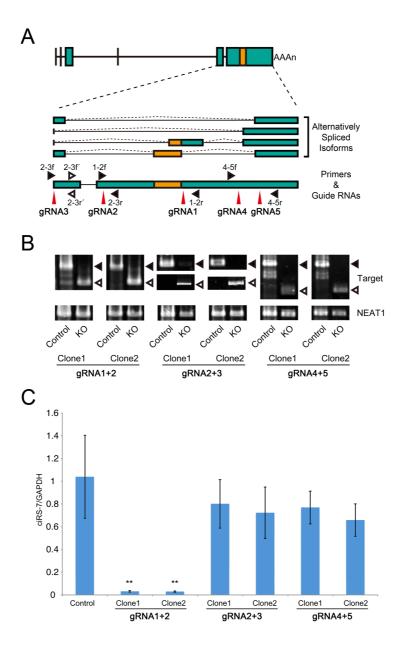
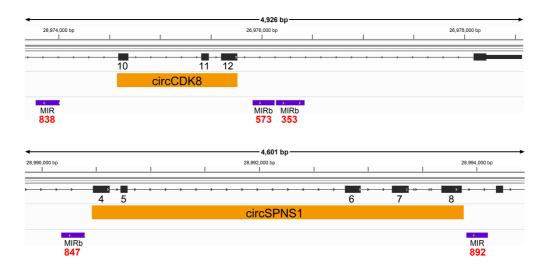


Figure S3. CRISPR/Cas9-mediated ciRS-7 genomic deletion of the flanking alternative splice sites confirms 'Back-splicing pathway' for ciRS-7 biosynthesis.

- (A) Schematic structures of the ciRS-7 precursor and its alternatively spliced isoforms (orange box indicates ciRS-7 exon). The positions of the guide RNAs (gRNA1–gRNA5) targetting the alternative splice sites, and PCR primers for detecting deleted sites (filled triangles) and those for detecting un-deleted sites (open triangles) are also indicated.
- **(B)** The targeted ciRS-7 genomic deletions in HEK-293 cells were verified by genomic PCR. The indicated three pairs of gRNAs were used to delete the alternative splice sites. PCR primers indicated in (A) were used for detecting deleted sites (open triangles) and non-deleted sites (filled triangles). PCR primers for the *NEAT1* gene were used as control.
- **(C)** The effects of the alternative splice site deletions, described in (A), on ciRS-7 production was analyzed by quantitative RT–PCR with ciRS-7 primers and the control GAPDH primers. The ciRS-7 expression levels were normalized to the control expression level of GAPDH (ciRS-7/GAPDH). The results were plotted as ratios to the value of control wild-type cells. Means \pm standard deviation (SD) are given for three independent experiments (**P < 0.01).

A MIR-dependent circRNAs



B MIR-independent circRNAs

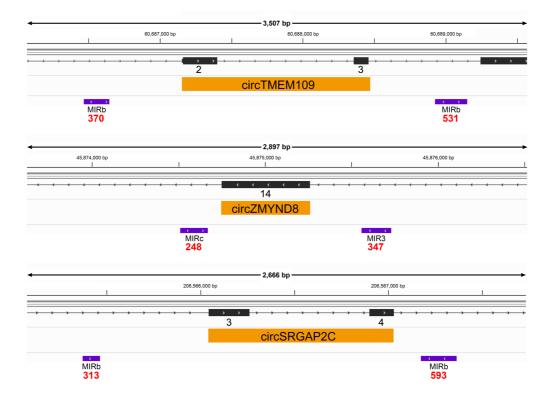


Figure S4. Identified another human circRNAs revealed different MIR-dependency.

The loci of two MIR-dependent circRNAs **(A)** and three MIR-independent circRNAs **(B)** are shown. The positions of the host genes (with red numbered exons), circRNA exons (in orange), and the identified inverted MIR elements (in purple) are indicated. Red numbers indicate Smith-Waterman (SW) alignment scores of these MIR elements. SW alignment scores of MIRs in MIR-dependent human ciRS-7 (see Fig. 2A) are 945 (upstream) and 1077 (downstream).

Supplemental Information

Table S1. List of all the synthetic oligonucleotides unsed in the experiments.

Primer DNAs for plasmids cons		I
ciRS-7-5'/BamHI	5'-AAAGGATCCACCCTGGGTTATTGGGTTGTGGAGAATCA-3'	For pcDNA3-ciRS-7
ciRS-7-3'/Xhol	5'-AAACTCGAGACCTTTGGATCACATCATTCTATCATGATT-3'	
ciRS-7-∆5 MIR/BamHI	5'-AAAGGATCCATTATTATAACATGAATAAGCATTATGCAA-3'	For pcDNA3-ciRS-7∆MIR
ciRS-7-∆3 MIR/Xhol	5'-AAACTCGAGTCTTTGGTCATGTAAGACCAATGATAAAAA-3'	
circCDK8-5'/BamHI	5'-AAAGAATTCAATGCAGTCTCAGTCCAGCAG-3'	For pcDNA3-circCDK8
circCDK8-3'/XhoI	5'-TTTCTCGAGCACTCGGGACCTTATCAGTTT-3'	
circCDK8-∆5 MIR-R	5'-ATCACACAGCTCTGTACTTTGTAAGTTGTG-3'	For pcDNA3-circCDK8∆5'MIR
circCDK8-∆5 MIR -F	5'-TCTGGGACTTGATGAAATGGCTTTTCTTCT-3'	,
circCDK8-∆3 'MIR-R	5'-TGTCAGTACTTTTCCATGCCAGTAACATTT-3'	For pcDNA3-circCDK8Δ3 MIR
circCDK8-∆3 'MIR-F	5'-GCTATTGTTTTGGAACAATGTTTCACAGTG-3'	Tot positive discisted time
circSPNS1-infusion-F	5'-TGACGATAAAGGATCCAGGGGTTGTCTTATTTAGA-3'	For pcDNA3-circSPNS1
circSPNS1-infusion-R	5'-TAGATGCATGCTCGACATCTATTAACTAATTTAATCCT-3'	FOI PEDINAS-CIICSFINST
circSPNS1-∆5'MIR-F	5'-TGACGATAAAGGATCTGGGAGCGGGCTGGTGAG-3'	E DNAO ODNO4 MED
circSPNS1-∆3 MIR-R	5'-TAGATGCATGCTCGAGACCCACGCCATCCCCCT-3'	For pcDNA3-circSPNS1∆MIR
circTMEM109/BamHI	5'-AAAGGATCCGGAGACAATACAGCAGAGTTG-3'	For pcDNA3-circTMEM109
circTMEM109/XhoI	5'-TTTCTCGAGACATTGCAAAGGAATAAGCCG-3'	
circTMEM109-∆5 MIR/BamHI	5'-AAAGGATCCTGAATGTTAGCTTTTTATTAA-3'	
circTMEM109-∆3 MIR/XhoI	5'-TTTCTCGAGTGGTGGCGGAAGTTCTTTTTT-3'	For pcDNA3-circTMEM109 Δ 5,3MIR
circSRGAP2C/BamHI	5'-CCCAGATCTATCCAGAGGAGAGTCGGTGTT-3'	
circSRGAP2C/XhoI	5'-TTTCTCGAGATGTCAGGGGGAGCTGGATAC-3'	For pcDNA3-circSRGAP2C
circSRGAP2C-∆5'MIR/BamHI	5'-CCCAGATCTCAATGTTTATTAAGTGGTAGA-3'	
circSRGAP2C-∆3 MIR/XhoI	5'-TTTCTCGAGGCATTGTAACTCTTTAGTTAA-3'	For pcDNA3-circSRGAP2C∆5,3MIR
circZMYNDR8/BamHI	5'-CGGAATTCGGCCTAGACACAAAGGATCAAG-3'	
circZMYNDR8/XhoI		For pcDNA3-circZMYNDR8
circZMYNDR8/XnoI	5'-TTTCTCGAGTGGAAAAGAAGCTGCTCAGAC-3' 5'-CCCAGATCTCAATGTTTATTAAGTGGTAGA-3'	
		For pcDNA3-circZMYNDR8∆5,3MIR
circZMYNDR8-Δ3 MIR/Xhol Primer DNAs for splicing produ	5'-TTTCTCGAGGGTCACATAACTTTTGATAGT-3'	
	-	T
ciRS-7-F(nested)	5'-TAAGGATGGCCCAGAAGGAG-3'	For PCP detection of
ciRS-7-R(nested)	5'-GGAACAGTTAGGGATCCCTT-3'	For PCR detection of alternatively spliced products from ciRS-7 precursor
ciRS-7-F	5'-TCCGCGCCTTTGAGAGCTTTGGAACGATAT-3'	
ciRS-7-R	5'-CAGAAACAATGGCAATTATAATAGTTAAAC-3'	
circSPNS1-F(nested)	5'-TGCTCTTCCTCTGACAGTCTC-3'	For PCR detection of
circSPNS1-R(nested)	5'-AAGAGGTCGGCAATGAGAGTG-3'	
circSPNS1-F	5'-GCGCGATGGTGGAATAACTG -3'	circSPNS1 cDNA
circSPNS1-R	5'-TTCCTCTTCCTGTCCCTTGC -3'	
circCDK8-F	5'-TGAGAGTTGTTCCTCCTACCAC-3'	For PCR detection of
circCDK8-R	5'-TCCTGCATAGCCTGTTCTGAG-3'	circCDK8 cDNA
circTMEM109-F	5'-TTCTGTGGCCTTCTTTGCTC-3'	For PCR detection of
circTMEM109-R	5'-AACACATGCTTTCCCCATGG-3'	circTMEM109 cDNA
circZMYNDR8-F	5'-AGGAACCCAAAGAACCATCTCC-3'	For PCR detection of
circZMYNDR8-R	5'-TTCTCAGAATCCTCCGAATCGC-3'	circZMYNDR8 cDNA
circSRGAP2C-F	5'-CAACCAATGCATCTGTCTTCAAG-3'	
		For PCR detection of
circSRGAP2C-R	5'-GCTGTCGGCATTGTACATGTG-3'	For PCR detection of circSRGAP2C cDNA
		circSRGAP2C cDNA
circSRGAP2C-R ciRS-7-F ciRS-7-R	5-GCTGTCGGCATTGTACATGTG-3' 5-GCTGTCGGCATTGTACATGTG-3'	
ciRS-7-F ciRS-7-R	5'-ACGTCTCCAGTGTGCTGA-3' 5'-GCTGTCCGCATTGTACATGTG-3'	circSRGAP2C cDNA For PCR detection of cirS-7 cDNA
ciRS-7-F ciRS-7-R GAPDH-F	5'-AGCTCTCCAGTGTGCTGA-3' 5'-GCTGTCGGCATTGTACATGTG-3' 5'-AGCCACATCGCTCAGACAC-3'	circSRGAP2C cDNA For PCR detection of
ciRS-7-F ciRS-7-R GAPDH-F GAPDH-R	5'-ACGTCTCCAGTGTGCTGA-3' 5'-AGCCAATACGACCAAATCC-3' 5'-GCCCAATACGACCAATCC-3'	circSRGAP2C cDNA For PCR detection of ciRS-7 cDNA For PCR detection of
ciRS-7-F ciRS-7-R GAPDH-F GAPDH-R pcDNA3 3'UTR-F	5'-ACGTCTCCAGTGTGCTGA-3' 5'-AGCCCAATACGACCAAATCC-3' 5'-ATGCAATACGACCAAATCC-3' 5'-ATGCATCTAGAGGGCCCTATTC-3'	circSRGAP2C cDNA For PCR detection of cirS-7 cDNA For PCR detection of GAPDH cDNA For PCR detection of circRNA precursor cDNAs from reporter
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cirs-7-F cirs-7-R GAPDH-F GAPDH-R pcDNA3 3"UTR-F pcDNA3 3"UTR-R pcDNA5 FRT/TO 3"UTR-F	5'-ACGTCTCCAGTGTGCTGA-3' 5'-GCTGTCGGCATTGTACATGTG-3' 5'-AGCCACATCGCTCAGACAC-3' 5'-ATGCATCTAGAGGGCCCTATTC-3' 5'-AACAACAGATGGCTGGCAAC-3' 5'-AGCTCTAGAGGGCCCGTTTAAAC-3'	circSRGAP2C cDNA For PCR detection of cirS-7 cDNA For PCR detection of GAPDH cDNA For PCR detection of circRNA precursor cDNAs from reporter pDNA3-plasmids For PCR detection of circRNA precursor cDNAs from reporter pDNA3-plasmids
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cirs-7-F cirs-7-F cirs-7-R GAPDH-F GAPDH-R pcDNA3 3'UTR-F pcDNA3 3'UTR-F pcDNA5 FRT/TO 3'UTR-F pcDNA5 FRT/TO 3'UTR-F gRNA1-2F gRNA1-2F gRNA2-3F gRNA2-3F gRNA2-3F gRNA2-3F gRNA2-3F gRNA2-3F gRNA2-3F gRNA2-5F gRNA4-5F gRNA4-5F gRNA4-5F gRNA4-5F gRNA4-5F gRNA4-5R Antisense 2'-O -Me RNAs for blc GFP-ASO cirs-7-ASO1	5'-ACGTCTCCAGTGTGCTGA-3' 5'-GCTGTCGGCATTGTACATGTG-3' 5'-GCCGCACATCGCTCAGCAC-3' 5'-GCCCCAATACGACCACATCC-3' 5'-AGCCAATACGACCAAATCC-3' 5'-AGCCAACACAGTGGCTGGCAAC-3' 5'-AGTCTAGAGGGCCCCTTTAAAC-3' 5'-TTAGGAAAGGACAGTGGGAGTG-3' 5'-TCTGCTTGTCTGCTCTG G-3' 5'-TCTCAGATGTAGCAAATGC-3' 5'-TCCAGTCACACACACACACACACACACACACACACACACA	circSRGAP2C cDNA For PCR detection of ciRS-7 cDNA For PCR detection of GAPDH cDNA For PCR detection of circRNA precursor cDNAs from reporter pDNA3-plasmids For PCR detection of circRNA precursor cDNAs from reporter pDNA5-plasmids For PCR detection of circRNA precursor cDNAs from reporter pDNA5-plasmids For PCR detection of editing & un-editing by gRNA1+2 For PCR detection of editing & detiting by gRNA2+3 For PCR detection of un-editing by gRNA2+3 For PCR detection of un-editing by gRNA2+3 For PCR detection of didting & un-editing by gRNA2+3 For PCR detection of didting & un-editing by gRNA4+5 cleotides) For off-larget negative control For 3' splice site of ciRS-7 exon
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cirs7-F cirs7-R GAPDH-F GAPDH-R pcDNA3 3'UTR-F pcDNA3 3'UTR-R pcDNA5 FRT/TO 3'UTR-R gRNA1-2F gRNA1-2R gRNA2-3F gRNA2-3F gRNA2-3F gRNA2-3F gRNA2-3F gRNA2-3F gRNA4-5F gRNA4-5F gRNA4-5F Antisense 2'-O -Me RNAs for bic GFP-ASO cirs7-ASO1 cirs7-ASO1	5-ACGITCCCAGTGTGCTGA-3' 5-GCTGTCGGCATTGTACATGTG-3' 5-GCTGTCGGCATTGTACATGTG-3' 5-AGCCACATACGACCAATCC-3' 5-AGCCACATACGACCAATCC-3' 5-ATGCATCTAGAGGGCCCTATTC-3' 5-AGCCAACAGATGGCTGGCAAC-3' 5-AGTCAACAGATGGCTGGCAAC-3' 5-AGTCAGAGGGCCCGTTTAAAC-3' 5-ACTGACTTCTTGTCTGCTCTG G-3' 5-TCCTAGATGGTAGCAAATGC-3' 5-TCCTAGATGGTGTGCTCTCA C-3' 5-AGTCACACACACGCTGGTAATTG G-3' 5-TCCTAGATGTGCTCACACAGAAATC-3' 5-TGCCTTGTCTCTCAACAGAAGCA-3' 5-TGCCTTGTCTCAACAGAAGCA-3' 5-TGCCTTGTCTCAACAGAAGCA-3' 5-TGCCTTGTCAGATGCCAGA-3' 6-TGCATTGTCCTCAATGCCAGA-3' 5-TCCAGCTTGTCAGATGCCAGA-3' 5-TCCAGCTTGTCAGATGCAGA-3' 5-TCCAGCTGTCAGATGCAGA-3' 5-TCCAGCTTGTCAGATGCAGA-3' 5-TCCAGCTGTCAGATGCAGA-3' 5-TCCAGCTGTCAGATGCAGA-3' 5-TCCAGCTGTCAGATGCAGA-3' 5-TCCAGCTGTCAGATGCAGATGCAGATGCAGATGCAGATGCAGATGCAGATGCAGATGCAGATGCAGATG	circSRGAP2C cDNA For PCR detection of ciRS-7 cDNA For PCR detection of GAPDH cDNA For PCR detection of circRNA precursor cDNAs from reporter pDNA3-plasmids For PCR detection of circRNA precursor cDNAs from reporter pDNA5-plasmids For PCR detection of circRNA precursor cDNAs from reporter pDNA5-plasmids For PCR detection of editing & un-editing by gRNA1+2 For PCR detection of editing by gRNA2+3 For PCR detection of editing by gRNA2+3 For PCR detection of editing by gRNA2+3 For PCR detection of editing by gRNA4+5 cleotides) For off-larget negative control For 3' splice site of ciRS-7 exon For 5' splice site of ciRS-7 exon
cirs.7-F cirs.7-R GAPDH-F GAPDH-R pcDNA3 3 'UTR-F pcDNA3 3 'UTR-R pcDNA5 FRT/TO 3 'UTR-R gRNA1-2F gRNA1-2R gRNA2-3F gRNA2-3F gRNA2-3F gRNA2-3F gRNA2-3F gRNA4-5F gRNA	5'-ACGTCTCCAGTGTGCTGA-3' 5'-GCTGTCGGCATTGTACATGTG-3' 5'-GCCCACTACCACCAATACC-3' 5'-AGCCAATACCACCAATACC-3' 5'-ATGCATCTAGAGGGCCCTATTC-3' 5'-AGCCAACAGATGGCTGCAAC-3' 5'-ATGCATCTAGAGGGCCCTATTC-3' 5'-AGTCAACAGATGGCTGCAAC-3' 5'-ATGCACTAGAGGGCCCGTTTAAAC-3' 5'-TAGGAAAGGACAGTGGGAGTG-3' 5'-TCCTAGATGTGTGCTCTCTG-G-3' 5'-TCCTAGATGTGGTAATTG-G-3' 5'-TCCTAGATGTGTGCTCTCA-3' 5'-TCCTAGATGTGCTCAACAGCAGAAATC-3' 5'-TCCTCTGCTCTGATGAAAGTC-3' 5'-TCCTCTGTAGAAAGTC-3' 5'-TCCTCGTCTGTAGAAAGTC-3' 5'-TCCTCGTCTGTAGAAAGTC-3' 5'-TCCTCGTCTGTAGAAAGTC-3' 5'-TCAGCTTGTCAGATGCCAGA-3' cking alternative splice sites (":phosphothiorate backbone, mN: 2'-O-methyl oxyribonus' 5'-mG'mC'mA'mC'mC'mA'mU'mC'mU'mU'mC'mU'mC'mA'mA'mG'mG'mA-3' 5'-mA'mU'mC'mG'mG'mA'mA'mA'mC'mC'mC'mU'mG'mG'mA'mC'mA'mU'mU'mU'mG-3' 5'-MG'mU'mU'mA'mG'mA'mA'mA'mC'mC'mC'mU'mG'mG'mA'mU'mA'mU'mU'mU'mG-3' 5'-MG'mU'mU'mA'mG'mG'mA'mA'mA'mC'mC'mC'mU'mG'mG'mA'mU'mA'mU'mU'mU-3' 5'-MG'mU'mU'mA'mG'mG'mC'mU'mA'mC'mC'mC'mC'mU'mU'mU'mU'mU'mU'mU'mU'mU'mU'mU'mU'mU'	circSRGAP2C cDNA For PCR detection of ciRS-7 cDNA For PCR detection of GAPDH cDNA For PCR detection of circRNA precursor cDNAs from reporter pDNA3-plasmids For PCR detection of circRNA precursor cDNAs from reporter pDNA5-plasmids For PCR detection of circRNA precursor cDNAs from reporter pDNA5-plasmids For PCR detection of editing & un-editing by gRNA1+2 For PCR detection of editing by gRNA2+3 For PCR detection of editing by gRNA2+3 For PCR detection of editing by gRNA2+3 For PCR detection of editing by gRNA4+5 cleotides) For off-larget negative control For 3' splice site of ciRS-7 exon For 5' splice site of ciRS-7 exon For prox. alternative 5' splice site
cirs.7-F cirs.7-R GAPDH-F GAPDH-R GAPDH-R pcDNA3 3'UTR-F pcDNA3 3'UTR-R pcDNA5 FRT/TO 3'UTR-R gRNA1-2F gRNA1-2F gRNA2-3F gRNA2-3F gRNA2-3F gRNA2-3R gRNA2-3F gRNA4-5F gRNA4-5F GRNA4-5F GRNA4-5F GRNA4-5R Antisense 2'-O -Me RNAs for bic GFP-ASO cirs.7-ASO1 cirs.7-ASO2 cirs.7-ASO3 cirs.7-ASO3 cirs.7-ASO4	5'-ACGTCTCCAGTGTGCTGA-3' 5'-GCTGTCGGCATTGTACATGTG-3' 5'-GCCCCAATACCACCACACC-3' 5'-CCCCAATACCACCACACC-3' 5'-AGCCAATACGACCAAATCC-3' 5'-AGCCAACAGATGGCTGGCAAC-3' 5'-AGTCAACAGAGTGGGTGGCAAC-3' 5'-AGTCAACTTGTAGAGGGCCCTTTAAC-3' 5'-TTAGGAAAGGACAGTGGGAGTG-3' 5'-TAGGAAAGGACAGTGGGAGTG-3' 5'-TCCTAGATGTTGCTCTCTG G-3' 5'-TCCTAGATGTGGCTTCTCA C-3' 5'-TCCTAGATGGTGTGCTTCTCA C-3' 5'-TCCTAGATGTTGCTCAACAGCAACACACCACCATCGTC-3' 5'-TTCCTGCTCTGAAAAGTCA-3' 5'-TCGCCTTGTCTCAACATCGTC-3' 5'-TTCCTGCTCTGAGAAAGTCA-3' 5'-TCAGCTTGTCAGAATGCCAGA-3' cking alternative splice sites (':phosphothiorate backbone, mN: 2'-O-methyl oxyribonu 5'-mG'mA'mC'mC'mC'mC'mC'mC'mC'mC'mC'mC'mC'mC'mA'mC'mA'mC'mC'mC'mC'mC'mC'mC'mC'mC'mC'mC'mC'mC'	circSRGAP2C cDNA For PCR detection of ciRS-7 cDNA For PCR detection of GAPDH cDNA For PCR detection of circRNA precursor cDNAs from reporter pDNA3-plasmids For PCR detection of circRNA precursor cDNAs from reporter pDNA5-plasmids For PCR detection of editing & un-editing by gRNA1+2 For PCR detection of editing by gRNA2+3 For PCR detection of editing by gRNA2+5 cleotides) For off-target negative control For 3' splice site of ciRS-7 exon For 5' splice site of ciRS-7 exon For prox. alternative 5' splice site For dist. attemative 3' splice site
cirs.7-F cirs.7-R GAPDH-F GAPDH-F GAPDH-R pcDNA3 3'UTR-F pcDNA3 3'UTR-F pcDNA5 FRT/TO 3'UTR-F pcDNA5 FRT/TO 3'UTR-R gRNA1-2F gRNA1-2R gRNA2-3F gRNA2-3F gRNA2-3F gRNA2-3F gRNA2-3F gRNA4-5F gRNA4-5F gRNA4-5F gRNA4-5R Antisense 2'-O -Me RNAs for blc GFP-ASO cirs.7-ASO1 cirs.7-ASO3 cirs.7-ASO3 cirs.7-ASO4 cirs.7-ASO5	5'-ACGTCTCCAGTGTGCTGA-3' 5'-GCTGTCGGCATTGTACATGTG-3' 5'-AGCCACATCGCTCAGACAC-3' 5'-AGCCACATCGCTCAGACAC-3' 5'-AGCCACATCGCTCAGACAC-3' 5'-ATCACACAGATGGCTGGCAAC-3' 5'-AGCCACATGGCTGGCAAC-3' 5'-AGCCACATGGCTGGCAAC-3' 5'-AGTCTAGAAGGCCCGTTTAAAC-3' 5'-TTAGGAAAGACAGTGGGAGTG-3' 5'-ACTGACTTCTTGTCTGCTCTG G-3' 5'-TCCTAGATGGTGGCTCTCAC-3' 5'-CAGTCACACAGCTGGTAATTG G-3' 5'-TCCTAGATGGTGGCTCTCAC-3' 5'-CAGTCACACAGCTGGTAATTG G-3' 5'-TTCCTGCTCTGATAGAAATC-3' 5'-TCCTCTGTCTGAAAACTC-3' 5'-TCAGCTTGTCCTCAATCGTC-3' 5'-TCAGCTTGTCAGAAATC-3' 5'-TCAGCTTGTCAGAAATCC-3' 5'-TCAGCTTGTCAGAAATCC-3' 5'-TCAGCTTGTCAGAAATCA-3' 5'-TCAGCTTGTCAGAAATCA-3' 5'-TCAGCTTGTCAGAAATCA-3' 5'-TCAGCTTGTCAGAAATCA-3' 5'-TCAGCTTGTCAGAAATCA-3' 5'-TCAGCTTGTCAGAATCCAGA-3' 5'-TCAGCTTGTCAGAAATCA-3' 5'-TCAGCTTGTCAGAAACTCA-3' 5'-TCAGCTTGTCAGAAATCA-3' 5'-TCAGCTTGTCAGAAACTCA-3' 5'-TCAGCTTGTCAGAAATCA-3' 5'-TCAGCTTGTCAGAATCAGAATCA-3' 5'-TCAGCTTGTCAGAAATCAGAATCAGAATCAGAATCAGAATCAGAATCAGAATCAGAATCAGAATCAGAATCAGAATCAGAATCAGAATCAGAATCAGAAATCAGAATCAGAATCAGAAATCAGAAATCAGAATCAGAAATCAGAAATCAGAAATCAGAAATCAGAAATCAGAAATCAGAAATCAGAAATCAGAAATCAGAAATCAGAAATCAGAAATCAGAAATCAGAAATCAGAAATCAGAAATCAGAAATCAGA	circSRGAP2C cDNA For PCR detection of ciRS-7 cDNA For PCR detection of GAPDH cDNA For PCR detection of circRNA precursor cDNAs from reporter pDNA3-plasmids For PCR detection of circRNA precursor cDNAs from reporter pDNA3-plasmids For PCR detection of circRNA precursor cDNAs from reporter pDNA5-plasmids For PCR detection of editing & un-editing by gRNA2+3 For PCR detection of editing by gRNA2+3 For PCR detection of circRNA precursor cDNAs from reporter pDNA5-plasmids For PCR detection of editing with the precursor contains the precursor
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ciRS-7-F ciRS-7-R GAPDH-F GAPDH-F GAPDH-R pcDNA3 3'UTR-F pcDNA3 3'UTR-F pcDNA5 FRT/TO 3'UTR-F pcDNA5 FRT/TO 3'UTR-R gRNA1-2R gRNA1-2R gRNA2-3F gRNA2-3F gRNA2-3F gRNA2-3F gRNA2-3F gRNA2-3F gRNA2-3F gRNA2-5F gRNA4-5F gRNA4-5F gRNA4-5F gRNA4-5F gRNA4-5R Antisense 2'-O -Me RNAs for bic GFP-ASO ciRS-7-ASO1 ciRS-7-ASO3 ciRS-7-ASO4 ciRS-7-ASO5 ciRS-7-ASO6 Guide RNAs for editing alternative gRNA1	5'-ACGTCTCCAGTGTGCTGA-3' 5'-GCTGTCGGCATTGTACATGTG-3' 5'-AGCCACATCGCTCAGACAC-3' 5'-AGCCACATCGCTCAGACAC-3' 5'-AGCCACATCGCTCAGACAC-3' 5'-AGCCACATCGCTGCAAC-3' 5'-AGCCACATGGCTGGCAAC-3' 5'-AGCCACAGTGGCTGGCAAC-3' 5'-AGCTAGAGGGCCGTTTAAAC-3' 5'-TTAGGAAAGGACAGTGGGAGTG-3' 5'-ACTGACTTCTTGTCTGCTCTG G-3' 5'-TCCTAGATGGTAGCAAATGC-3' 5'-TCCTAGATGGTGGTCTCCA C-3' 5'-CAGTCACACAGCTGGTAATTG G-3' 5'-TCCTGAGATGTGCTCTCAAC-3' 5'-TCCTGCATGTCCTCAATCGTC-3' 5'-TCAGCTTGTCCTCAATCGTC-3' 5'-TCAGCTTGTCAGAAAGTCA-3' 5'-TCAGCTTGTCAGAAAGTCA-3' 5'-TCAGCTTGTCAGAATGCAGA-3' 5'-MG'mC'mA'mC'mC'mA'mU'mC'mU'mU'mC'mU'mU'mC'mA'mA'mG'mG'mA-3' 5'-MG'mU'mU'mA'mG'mG'mA'mA'mA'mC'mC'mC'mU'mG'mG'mA'mU'mU'mU'mU'mU'mC-3' 5'-MA'mU'mC'mG'mG'mA'mA'mA'mC'mC'mC'mU'mG'mG'mA'mU'mA'mU'mU'mU'mC-3' 5'-MA'mU'mC'mC'mG'mA'mA'mA'mC'mC'mC'mU'mA'mG'mA'mA'mA'mA'mA'mA'mC'mC'mC'mU'mA'mA'mA'mA'mA'mA'mA'mG'mA'mA'mA'mA'mA'mA'mG'mA'mA'mA'mA'mG'mA'mA'mA'mA'mG'mA'mA'mA'mG'mA'mA'mA'mA'mA'mG'mA'mA'mA'mA'mA'mA'mG'mA'mA'mA'mA'mA'mA'mA'mG'mA'mA'mA'mA'mA'mA'mG'mA'mA'mA'mA'mA'mA'mA'mA'mA'mA'mA'mA'mA'	circSRGAP2C cDNA For PCR detection of ciRS-7 cDNA For PCR detection of GAPDH cDNA For PCR detection of circRNA precursor cDNAs from reporter pDNA3-plasmids For PCR detection of circRNA precursor cDNAs from reporter pDNA3-plasmids For PCR detection of circRNA precursor cDNAs from reporter pDNA5-plasmids For PCR detection of editing & un-editing by gRNA2+3 For PCR detection of editing by gRNA2+3 For PCR detection of circRNA precursor cDNAs from reporter pDNA5-plasmids For PCR detection of editing with the procursor content of editing by gRNA2+3 For PCR detection of circRNA precursor content power conten
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cirs7-F cirs7-F cirs7-R GAPDH-F GAPDH-F GAPDH-R pcDNA3 3'UTR-F pcDNA3 3'UTR-F pcDNA5 FRT/TO 3'UTR-F pcDNA5 FRT/TO 3'UTR-R gRNA1-2F gRNA1-2R gRNA2-3F gRNA3-F gRNA3-F ANG GFP-ASO cirs7-ASO1 cirs7-ASO2 cirs7-ASO3 cirs7-ASO3 cirs7-ASO3 cirs7-ASO5 cirs7-ASO6 Guide RNAs for editing alternative gRNA1 gRNA2	5'-ACGTCTCCAGTGTGCTGA-3' 5'-GCTGTCGGCATTGTACATGTG-3' 5'-AGCCACATCGCTCAGACAC-3' 5'-AGCCACATCGCTCAGACAC-3' 5'-AGCCACATCGCTCAGACAC-3' 5'-AGCCACATCGCTGCAAC-3' 5'-AGCCACATGGCTGGCAAC-3' 5'-AGCCACAGTGGCTGGCAAC-3' 5'-AGTCTAGAAGGCCCTATTAAC-3' 5'-TTAGGAAAGACAGTGGGAGTG-3' 5'-ACTGACTTCTTGTCTGCTCTG G-3' 5'-TCCTAGATGGTGGCTCTCAC-3' 5'-CAGTCACACAGCTGGTAATTG G-3' 5'-TCCTAGATGGTGGCTCTCAC-3' 5'-CAGTCACACAGCTGGTAATTG G-3' 5'-TTCCTGCTCTGAAAAGTCA-3' 5'-TCAGCTTGTCTCAAAAGTCA-3' 5'-TCAGCTTGTCAGAAAGTCA-3' 5'-TCAGCTTGTCAGAAATGCAAC-3' 5'-TCAGCTTGTCAGAAATCCAC-3' 5'-MA'mU'mC'mG'mG'mA'mA'mA'mC'mC'mC'mC'mG'mG'mA'mA'mG'mA'mU'mU'mG-3' 5'-mG'mU'mC'mG'mG'mA'mA'mA'mC'mC'mC'mC'mG'mG'mA'mC'mA'mU'mU'mG-3' 5'-mG'mU'mC'mG'mG'mG'mC'mU'mA'mA'mC'mC'mC'mC'mG'mG'mA'mC'mA'mU'mU'mG-3' 5'-mA'mA'mA'mG'mG'mC'mU'mA'mA'mC'mC'mC'mC'mC'mG'mA'mA'mG'mG'mU'mA'mA'mA-3' 5'-mA'mA'mG'mG'mC'mU'mC'mU'mG'mC'mU'mA'mA'mA'mG'mG'mG'mA'mA'mA'mA'mA'mA'mA'mA'mG'mG'mC'mC'mC'mC'mC'mC'mC'mC'mC'mC'mC'mC'mC'	circSRGAP2C cDNA For PCR detection of ciRS-7 cDNA For PCR detection of GAPDH cDNA For PCR detection of ciRS-7 cDNA For PCR detection of circRNA precursor cDNAs from reporter pDNA3-plasmids For PCR detection of circRNA precursor cDNAs from reporter pDNA5-plasmids For PCR detection of editing & un-editing by gRNA1+2 For PCR detection of editing by gRNA2+3 For PCR detection of editing by gRNA4+5 cleotides) For off-target negative control For 3' splice site of ciRS-7 exon For prox. alternative 5' splice site For dist. alternative 5' splice site For dist. alternative 5' splice site For prox. alternative 3' splice site