

Supplementary materials

Table S1. Primers used for RT-qPCR

Primer name	Sequence (5'-3')
miR-PC-2869-RT	GTCGTATCCAGTGCAGGGTCCGAGGTATTCGCACTGGATACGACC CACTG
miR-PC-2869-F	GCGCGCATTGGTGGTT
miR-PC-2869-R	AGTGCAGGGTCCGAGGTATT
Hs-U6-F	TGGAACGATACAGAGAAGATTAGCA
Hs-U6-R	AACGCTTCACGAATTTGCGT
Ce-U6-F	CTCGCTTCGGCAGCACA
Ce-U6-R	AATGCTTCACGAATTTGCGT

miR-PC-2869-RT is the reverse transcription primer. Hs: *Homo sapiens*. Ce: *Cervus elaphus*.

Table S2. Synthetic sequences used for cloning

DNA Oligos	sequence (5'-3')
mir-PC-3p-2869-F	ccggGTCCTTCCTGAGCCACTTTCTGTGGAGACCTAGTGCATTCCA AAAAGCCGACGCATTGGTGGTTCAGTGGTAGAATTCTCTTTTTg
mir-PC-3p-2869-R	aattcAAAAAGAGAATTCTACCACTGAACCACCAATGCGTCGGCTT TTTGGAAATGCACTAGGTCTCCACAGAAAGTGGCTCAGGAAGGAC
ANKRD6-wt-F	tcgagAACAGGCTCAGTCAGCATCCTCACCCAGAGATGGCAACATC TATTAAGACCAATGCAATACCTTTTCATCTTCgc
ANKRD6-wt-R	ggccgcGAAGATGAAAAGGTATTGCATTGGTCTTAATAGATGTTGCC ATCTCTGGGTGAGGATGCTGACTGAGCCTGTTc
ARID5B-wt-F	tcgagCAGATGGCAAGGGATGCCCTCTTTTTCATAAACTCTCCAA GGTTCAATCAATGCAATGTATAGTGAAACTTgc
ARID5B-wt-R	ggccgcAAGTTTCACTATACATTGCATTGATTGAACCTTGGAGAGTTT TATGAAAAAGAGGGGCATCCCTTGCCATCTGc
ARMCX5-wt-F	tcgagCTCTGTTCTCATAAAGCCTCAAACAGTTTTTTGGAGTTGCAA TATGAAACCAATGCATATTGTAATTATAAATgc

DNA Oligos	sequence (5'-3')
ARMCX5-wt-R	ggccgcATTTATAATTACAATATGCATTGGTTTCATATTGCAACTCCAA AAAACTGTTTGAGGCTTTATGAGAACAGAGc
BMP3-wt-F	tcgagTTATTTTTATGGACTTCTTCCTGTTTTTTTTTTTTTTTTTTTGC ACTGCCAATGCATTTTGTTCAAAAGATgc
BMP3-wt-R	ggccgcATCTTTTGAAACAAAATGCATTGGCAGTGCAAAAAAAAAA AAAAAAAAAACAGGAAGAAGTCCATAAAAAATAAc
CDK8-wt-F	tcgagTGTTGTGGATTTGCTACTTCCATAGTTTACTTGACATGGTTCA GACTGACCAATGCATTTTTTTCAGTGACAGgc
CDK8-wt-R	ggccgcCTGTCACTGAAAAAATGCATTGGTCAGTCTGAACCATGTC AAGTAAACTATGGAAGTAGCAAATCCACAACAc
COL4A1-wt-F	tcgagATACCAAATGGCACTTTTGATGAAATAAAATATCAATATTTTC TGCAATCCAATGCCTGATGTGTGAAGTGAgc
COL4A1-wt-R	ggccgcTCACTTCACACATCAGTGCATTGGATTGCAGAAAATATTGAT ATTTTATTCATCAAAAAGTGCCATTTGGTATc
EEF1A1-wt-F	tcgagCCATTTAAGTTTAGTAGTAAAAGACTGGTTAATGATAACAATG CATCGTAAAACCTTCAGAAGGgc
EEF1A1-wt-R	ggccgcCCTTCTGAAGGTTTTACGATGCATTGTTATCATTAAACCAGTC TTTTACTACTAACTTAAATGGc
GRIK2-wt-F	tcgagTTGACAACATTGTGATAACAGTTGAGTGCACACAGTTTGCTG TTTGAATCCAATGCACAAAATTAAAAAAAATgc
GRIK2-wt-R	ggccgcATTTTTTTTAATTTTGTGCATTGGATTCAAACAGCAAACGT GTGCACTCAACTGTTATCACAATGTTGTCAAc
MBD2-wt-F	tcgagTGTAAGAAAAAAAATGTACCCGAGCACATAGAGCTTTTTAAT AGCACTAACCAATGCCTTTTTAGATGTATTTgc
MBD2-wt-R	ggccgcAAATACATCTAAAAAGGCATTGGTTAGTGCTATTAAAAAGC TCTATGTGCTCGGGTACATTTTTTTTCTTACAc
NPAT-wt-F	tcgagGGGATTTAAAGAATTGCACTAATTCATAGAACTCTTTACATTG TAGTGACCAATGCACATATAATTTAAATCTgc

DNA Oligos	sequence (5'-3')
NPAT-wt-R	ggccgcAGATTTAAATTATATGTGCATTGGTCACTACAATGTAAAGAG TTCTATGAATTAGTGCAATTCTTTAAATCCCc
NTN1-wt-F	tcgagTAAATGTTTAGTTGTGACCATGACGTATTGTTTGGGTCAATGT CCCTTTCCAATGCATACTAATATATTATGGgc
NTN1-wt-R	ggccgcCCATAATATATTAGTATGCATTGGAAAGGGACATTGACCCAA ACAATACGTCATGGTCACAACATAACATTTAc
PURB-wt-F	tcgagCTTCACTGTAAATTTTGTTCATTTTAAACCAATTATGGTAC TTTATCCAATGCACAACCTGATCTCTCAGTgc
PURB-wt-R	ggccgcACTGAGAGATCAGTTGTGCATTGGATAAAGTACCATAATTG GGTTAAAAATGAAAACAAAATTTACAGTGAAGc
RNF12-wt-F	tcgagTTCATTTGTTTAAAAATGTAAAGCTATTTTGTAGAGGCTCAGT ACTTTTCCAATGCACTGTTGTATGAATGCAGc
RNF12-wt-R	ggccgcTGCATTCATACAACAGTGCATTGGAAAAGTACTGAGCCTCT ACAAAATAGCTTTACATTTTAAACAAATGAAC
SLC35A2-wt-F	tcgagATTTTTTGGTTTGTTCATTTTAAAGGAAGTGAATGAACAAATGTC AGGATATCCAATGCCAAATAAAGATGTTGTgc
SLC35A2-wt-R	ggccgcACAACATCTTTATTTGGCATTGGATATCCTGACATTTGTTTCAT TACAGTTCCTTAAAAAACAAACCAAAAAATc
SRGAP1-wt-F	tcgagGACATATGTCATTTTAAAGGACAATAGAAACACTTAGACTTACT TGAAAATCCAATGCTGCACCACTTGTAATGgc
SRGAP1-wt-R	ggccgcCATTACAAGTGGTGCAGCATTGGATTTTCAAGTAAGTCTAA GTGTTTCTATTGTCCTTAAAATGACATATGTCc
TANC2-wt-F	tcgagGGTTTTCTATGACTCAGATGTAAAGGACTTTCTCTGTACAGTA TATTATCCAATGCATGTTTGTCTCTCTCCgc
TANC2-wt-R	ggccgcGGAGAGAGAAACAAACATGCATTGGATAATATACTGTACAGA GAAAGTCCTTTACATCTGAGTCATAGAAAACCCc
TRPS1-wt-F	tcgagGTAGCACATTATGTTTATAATTGCACATGTGCACATAATCTATT ATGATCCAATGCAAATACAGCTCCAAAAAGc

DNA Oligos	sequence (5'-3')
TRPS1-wt-R	ggccgcTTTTTGGAGCTGTATTTGCATTGGATCATAATAGATTATGTGC ACATGTGCAATTATAAACATAATGTGCTACc
UBR5-wt-F	tcgagGTAATTTGCTCATTTGAGTGAGGGCACTTTTTTTGTACATATG ATGGGGCCAATGCACAATACTTTTATCACAgc
UBR5-wt-R	ggccgcTGTGATAAAAGTATTGTGCATTGGCCCCATCATATGTACAAA AAAAGTGCCCTCACTCAAATGAGCAAATTACc
ANKRD6-mut-F	tcgagAACAGGCTCAGTCAGCATCCTCACCCAGAGATGGCAACATC TATTAAGACAACCTTCAATACCTTTTCATCTTCgc
ANKRD6-mut-R	ggccgcGAAGATGAAAAGGTATTGAAGTTGTCTTAATAGATGTTGCC ATCTCTGGGTGAGGATGCTGACTGAGCCTGTTc
ARID5B-mut-F	tcgagCAGATGGCAAGGGATGCCCTCTTTTTCATAAACTCTCCAA GGTTCAATAACTTCAATGTATAGTGAACTTgc
ARID5B-mut-R	ggccgcAAGTTTCACTATACATTGAAGTTATTGAACCTTGGAGAGTTT TATGAAAAAGAGGGGCATCCCTTGCCATCTGc
ARMCX5-mut-F	tcgagCTCTGTTCTCATAAAGCCTCAAACAGTTTTTTTGGAGTTGCAA TATGAAACAACCTTCATATTGTAATTATAAATgc
ARMCX5-mut-R	ggccgcATTTATAATTACAATATGAAGTTGTTTCATATTGCAACTCCAA AAAAGTGTGAGGCTTTATGAGAACAGAGc
BMP3-mut-F	tcgagTTATTTTTATGGACTTCTTCCTGTTTTTTTTTTTTTTTTTTTGC ACTGCAACTTCATTTTGTTCAAAAGATgc
BMP3-mut-R	ggccgcATCTTTTGAAACAAAATGAAGTTGCAGTGCAAAAAAAAAA AAAAAAAAAACAGGAAGAAGTCCATAAAAAATAAc
CDK8-mut-F	tcgagTGTGTGGATTTGCTACTTCCATAGTTTACTTGACATGGTTCA GACTGACAACTTCATTTTTTTCAGTGACAGgc
CDK8-mut-R	ggccgcCTGTCACTGAAAAAATGAAGTTGTCAGTCTGAACCATGTC AAGTAACTATGGAAGTAGCAAATCCACAACAc
COL4A1-mut-F	tcgagATACCAAATGGCACTTTTGATGAAATAAAATATCAATATTTTC TGCAATCAACTTCACTGATGTGTGAAGTGAgc

DNA Oligos	sequence (5'-3')
COL4A1-mut-R	ggccgcTCACTTCACACATCAGTGAAGTTGATTGCAGAAAATATTGA TATTTTATTTTCATCAAAAGTGCCATTTGGTATc
EEF1A1-mut-F	tcgagCCATTTAAGTTTAGTAGTAAAAGACTGGTTAATGATAAATCGT AAAACCTTCAGAAGGAgc
EEF1A1-mut-R	ggccgcCCTTCTGAAGGTTTTACGATTTATCATTAACCAGTCTTTTAC TACTAAACTTAAATGGAc
GRIK2-mut-F	tcgagTTGACAACATTGTGATAACAGTTGAGTGCACACAGTTTGCTG TTTGAATCAACTTCACAAAATTAAAAAAAATgc
GRIK2-mut-R	ggccgcATTTTTTTTAAATTTTGTGAAGTTGATTCAAACAGCAAACGT GTGCACTCAACTGTTATCACAATGTTGTCAAc
MBD2-mut-F	tcgagTGTAAGAAAAAAAATGTACCCGAGCACATAGAGCTTTTAAAT AGCACTAACAACCTCCTTTTTTAGATGTATTTgc
MBD2-mut-R	ggccgcAAATACATCTAAAAAGGAAGTTGTTAGTGCTATTAAAAAGC TCTATGTGCTCGGGTACATTTTTTTTCTTACAc
NPAT-mut-F	tcgagGGGATTTAAAGAATTGCACTAATTCATAGAACTCTTTACATTG TAGTGACAACTTCACATATAATTTAAATCTgc
NPAT-mut-R	ggccgcAGATTTAAATTATATGTGAAGTTGTCACTACAATGTAAAGAG TTCTATGAATTAGTGCAATTCTTTAAATCCCc
NTN1-mut-F	tcgagTAAATGTTTAGTTGTGACCATGACGTATTGTTTGGGTCAATGT CCCTTTCAACTTCATACTAATATATTATGGgc
NTN1-mut-R	ggccgcCCATAATATATTAGTATGAAGTTGAAAGGGACATTGACCCAA ACAATACGTCATGGTCACAACTAAACATTTAc
PURB-mut-F	tcgagCTTCACTGTAAATTTTGTTTTTCATTTTAAACCAATTATGGTAC TTTATCAACTTCACAACTGATCTCTCAGTgc
PURB-mut-R	ggccgcACTGAGAGATCAGTTGTGAAGTTGATAAAGTACCATAATTG GGTTAAAAATGAAAACAAAATTTACAGTGAAGc
RNF12-mut-F	tcgagTTCATTTGTTTAAAAATGTAAAGCTATTTTGTAGAGGCTCAGT ACTTTTCAACTTCACTGTTGTATGAATGCAgc

DNA Oligos	sequence (5'-3')
RNF12-mut-R	ggccgcTGCATTCATACAACAGTGAAGTTGAAAAGTACTGAGCCTCT ACAAAATAGCTTTACATTTTTTAAACAAATGAAc
SLC35A2-mut-F	tcgagATTTTTTGGTTTGTTTTTTAAGGAACTGTAATGAACAAATGTC AGGATATCAACTTCCAAATAAAGATGTTGTgc
SLC35A2-mut-R	ggccgcACAACATCTTTATTTGGAAGTTGATATCCTGACATTTGTTCA TTACAGTTCCTTAAAAAACAACCAAAAAATc
SRGAP1-mut-F	tcgagGACATATGTCATTTTAAGGACAATAGAAACACTTAGACTTACT TGAAAATCAACTTCTGCACCACTTGTAATGgc
SRGAP1-mut-R	ggccgcCATTACAAGTGGTGCAGAAGTTGATTTTCAAGTAAGTCTAA GTGTTTCTATTGTCCTTAAAATGACATATGTCc
TANC2-mut-F	tcgagGGTTTTCTATGACTCAGATGTAAAGGACTTTCTCTGTACAGTA TATTATCAACTTCATGTTTGTCTCTCTCCgc
TANC2-mut-R	ggccgcGGAGAGAGAACAACATGAAGTTGATAATATACTGTACAGA GAAAGTCCTTTACATCTGAGTCATAGAAAACCCc
TRPS1-mut-F	tcgagGTAGCACATTATGTTTATAATTGCACATGTGCACATAATCTATT ATGATCAACTTCAAATACAGCTCCAAAAAgc
TRPS1-mut-R	ggccgcTTTTTGGAGCTGTATTTGAAGTTGATCATAATAGATTATGTG CACATGTGCAATTATAAACATAATGTGCTACc
UBR5-mut-F	tcgagGTAATTTGCTCATTTGAGTGAGGGCACTTTTTTTGTACATATG ATGGGGCAACTTCACAATACTTTTATCACAgc
UBR5-mut-R	ggccgcTGTGATAAAAGTATTGTGAAGTTGCCCCATCATATGTACAAA AAAAGTGCCCTCACTCAAATGAGCAAATTACc

wt: wild type; mut: mutation; F: sense strand; R: antisense strand. Uppercase letters represent the interest sequence. Lowercase letters represent the sequence used for ligation.

Table S3. Sequences of miR-PC-2869 mimics and siRNAs used for RNA interference

oligonucleotide name	Anti-sense strand (5'-3')
miR-PC-2869	CGCAUUGGUGGUUCAGUGG
siCDK8	UUUAGAAGCUCUGUGAAACdTdT
Ce-siEEF1A1	UCUUAUAUAGGUGCUGACUU
Ce-siNTN1	CACGUAGGUCACCUCGAACUU
Hs-siEEF1A1	UUCACUCAAGCUUCAUGGdTdT
Hs-siNTN1	UCACUUCGAACUUCUUGCCdTdT

siCDK8 is effective in both antler cartilage cells and human cells. Ce: *Cervus elaphus*; Hs: *homo sapiens*.



Figure S1. The specific sites recognized by miR-PC-2869 in 12 target genes are conserved between humans and red deer (*Cervus elaphus*). Blue bases represent the sequence complementary to the seed sequence of miR-PC-2869.