

Supplemental Figure S1: Alignment of 454 sequence signatures from E14.5 to miRBase 11.0 precursors. The top line in each case represents the sequence of the miRNA precursor obtained from miRBase. The mature miRNA as it is represented in miRBase is denoted with a (*). All the sequences above the dashed line match the precursor sequence exactly. Sequences that exhibit 3' and 5' end trimming and additions are represented above the dashed line without a *. All sequences below the dashed line represent 'loose' matches that align with the miRNA precursor with 1-3 mismatches.

Page 1

Supplemental Figure S1

.....TGAGGTAGTAGGTTGTtATAGTT.....	7
.....TGAGGTAGTAGGTTGTgTAGT.....	7
.....TGAGGTAAgTAGGTTGTATAGTT.....	7
.....cGAGGTAGTAGGTTGTATAGT.....	7
.....TGAGGTAGgTAGGTTGTATAGTTT.....	7
.....TtAGGTAGTAGGTTGTATAGT.....	7
.....TGAGGTAGTAaGGTTGTATAGTT.....	6
.....TGAGGTAGTAaGTTGTATAGT.....	6
.....TGAGGTAGTAGGTTcGTATAGTT.....	6
.....ATGAGGTAGgAGGTTGTATAGTTT.....	6
.....TGAGGTAGTAGGTTcGTATAGTT.....	6
.....TGAGGTAGaAGGTTGTATAGTT.....	6
.....TGAGGTAG-AGGTTGTATAGTTT.....	6
.....TGAGGTAGTAGGTTGTATAaGTT.....	6
.....TGAGGTAGTgGGTTGTATAGTT.....	6
.....TGAGGTAGTAcGGTTGTATAGT.....	6
.....TGAGGTAGTtAGGTTGTATAGTT.....	5
.....TGAGGTAGTAGGTTGTATAGTaa.....	5
.....TGAGGTAGTAGGcGTATAGTT.....	5
.....TGAGGTAGTAGGTTaTATAGT.....	5
.....TGAGGTAG-AGGTTGTAT-GTT.....	5
.....TGAGGTAGTAG-TTGATAGTT.....	5
.....TGAGGTAGcAGGTTGTATAGTT.....	5
.....TGAGGTAGgAGGTTGTATAGTTT.....	4
.....TaAGGTAGTAGGTTGTATAGTTa.....	4
.....cTGAGGTAcGTAGGTTGTATAGTT.....	4
.....TGAGaTAGTAGGTTGTATAGT.....	4
.....TGAGGTAGTAGGTTGTNT-GTT.....	4
.....TGAGGcAGTAGGTTGTATAGTT.....	4
.....TgtAGGTAGTAGGTTGTATAGT.....	4
.....TaAGGTAGTAGGTTGTATAGT.....	4
.....TGAGGTAGTAGGTTGTAT-GTTT.....	4
.....ATGAGGTAGTAaGGTTGTATAGTT.....	4
.....aATGAGGTAGTAGGTTGTATAGTT.....	4
.....aGAGGTAGTAGGTTGTATAGTTa.....	3
.....TGAGGTAGTAGGTTaTAT-GTT.....	3
.....ATGAGGTAGTAGGTTGTAT-GTT.....	3
.....ATGAGGTAG-AGGTTGTATAGT.....	3
.....TGAGGTAGTAGGTTaGTATAGTTT.....	3
.....TGAGGTAGTAGGTTGTgTAGgT.....	3
.....ATGAGGTAGTAGGTTGTATAGgTT.....	3
.....ATGAGGTAGTAGGTTGTATAGTc.....	3
.....ATGAGGTAGTAaGTTGTATAGTT.....	3
.....ATaGAGGTAGTAGGTTGTATAGT.....	3
.....TGAGGTgGTAGGTTGTATAGTT.....	3
.....TGAaGGTAGTAGGTTGTATAGT.....	3
.....TGAGGTAcGTAGGTTGTATAGT.....	3
.....ATGAGGTAGTAGGTTGTATtAGTT.....	3
.....TGAaGTAGTAGGTTGTATAGT.....	3
.....TGAGGTAGgTAGGTTGTATAGgTT.....	3
.....ATaGAGGTAGTAGGTTGTATAGTT.....	3
.....TGAGGTAGgTAGGTTaGTATAGTT.....	3
.....TGAGGTAGaAGGTTGTATAGT.....	3
.....TGAGGTAGaAGGTTGTATAGTTa.....	3
.....tAGGTAGTAGGTTGTATAGTT.....	3
.....TGAGGTAGTAaGGTTGTATAGT.....	3
.....aGAGGTAGTAGGTTGTATAGT.....	3
.....TGAGGTAGTAGGTTGTAAaTAGTT.....	3
.....TGAGGTAcGTAGGTTGTATAGTT.....	3
.....TGAGGTAGTAGGTTGTAgTGT.....	3
.....TGAGGTAGTAGGTTGTAgTGT.....	3
.....cTGAGGTAGTAGGTTGTATAGTT.....	3
.....TGAGGTAGTAGGT-GTATAGTT.....	3
.....TgtAGGTAGTAGGTTGTATAGTT.....	2
.....tAgTAgGTAGTAGGTTGTATAGT.....	2
.....TGAGGTAGTAGGTTGTAN-GTT.....	2
.....ATcGAGGTAGTAcGGTTGTATAGT.....	2
.....TGAGGTAGTAGGTTGTAttAGgT.....	2
.....TGAGGTAG-AGGTTGTAttAGTT.....	2
.....ATGAGGTAGTAGGTTGTATAaGTT.....	2
.....TttGGTAGTAGGTTGTATAGTT.....	2
.....TGAGGTAGTAGGTTGTATAcGTT.....	2
.....ATaGAGGTAGTAGGT-GTATAGT.....	2

Supplemental Figure S1

.	TGAGGTAGTAaGTTGTATAGTTTT.	2
.	.TGAGGTAGgTAGGTTGTAgTAGTT.	2
.	.TGAGGTAGtAGGgTTGTATAGTT.	2
.	.TGAcGGTAGTAGGTTGTATAGTTTT.	2
.	ATGAGGTAGTAGGT-GTATAGT.	2
.	.TGAG-TAGTAGGTTGTATAGT.	2
.	.TGAGGTAGTAGGTTaGTATAGT.	2
.	.cGAGGTAGTAcGGTTGTATAGTT.	2
.	ATGAGGTAGTAGGTTGTAT-GT.	2
.	.TGAGGTAGTAGGTTtGTATAGTT.	2
.	.TGAGGTAGTAGGTTGTATAaTTa.	2
.	.TGAGGTAGTAG- TTGTATAGTTTT.	2
.	.TGAG-TAGTAGGTTGTATAGTTTT.	2
.	.TGAGGTAGTAGGTTGTATAaGT.	2
.	. tAGGTAGTAGGTTGTATAGTTTT.	2
.	.TGAGGTAGgAGGTTGTATAGTTtaA.	2
.	.TGAGGTAGTAGGTTGTATAaT.	2
.	.TGgGGTAGTAGGTTGTATAGT.	2
.	.TGtAGGTAGTAGGTTGTATAGgT.	2
.	.TGAGGTAA TAGGTTGTATAGT.	2
.	.TGAGGTAGTAGGTTGTATAaGTTTT.	2
.	.TGAGGTAG-AGGTTGTAT-GT.	2
.	ATGAGGTAGTAGGTTGTAgTAGTT.	2
.	.TGAaGTAGgAGGTTGTATAGTTTT.	2
.	.TGAGGTAGTAGGTTGTATAGTTaaA.	2
.	.TGAGGTAGTAcGGTTGTATAGgTT.	2
.	.TGAGGTAGTAGGTTGTa-- GTT.	2
.	.TGAaGGTAGTAGGTTGTATAGTT.	2
.	.TGAGGTgGTAGGTTGTATAGT.	2
.	ATGAGGTAGTAGGTTGTgtAGTT.	2
.	ATGAGGTAGgTAGGTTGTATAGT.	2
.	.TGAGGTAGTAGGTTGTATAgg.	2
.	ATGAGGTAGTAGGTTGTActAGTT.	2
.	.TGAGGTAGTAGGTTGTATAGTct.	2
.	.TGAGGgTAGTAGGTTGTATAGTT.	2
.	.TGAGGTAGTAGGTTGTgtTAGT.	2
.	.TGAGGTAGTAGGTTGTATAGTTg.	2
.	.TGAGGTAGTAcGGTTGTATAGTTTT.	2
.	.TGAGGTAGTAGGTTGTAtgTTTTA.	2
.	.TGAGGTAGTAGGTTtTATAGTT.	2
.	ATGAcGGTAGTAGGTTGTATAGTT.	2
.	.TGAG-TAGTAGGT-GTATAGTT.	2
.	.TGAGGTAGTAGGTTGTAgTAGTTT.	2
.	tAgTAGGTAGTAGGTTGTATAGTT.	2
.	.TGAGGT-GTAGGTTGTATAGT.	2
.	gTGAGGTAGTAGGTTGTATAGTT.	2
.	.TGAGGTAGTAGGTTcGTATAGT.	2
.	.TGtAGGTAGTAGGTTGgTATAGTT.	2
.	.TcAGGTAGTAGGTTGTATAGT.	2
.	.TGAGGTAGTAGGTTGTActAGT.	2
.	.TGAGGTAGgTAGGTTGTATAGTTa.	2
.	.TGAGGTAA TAGGTTGTATTAGT.	2

mmu-let-7a(mmu-let-7a-2)

CTGCATGTTCCAGGTTGAGGTAGTAGGTTGTATAGTTTAGAGTTACATCAAGGGAGATAACTGTACAGCCTCCTAGCTTTCCTTGGGACTTGCAC

*****TGAGGTAGTAGGTTGTATAGTT***** (-41.00)

.....TGAGGTAGTAGGTTGTATAGTT.....	2089*
.....TGAGGTAGTAGGTTGTATAGT.....	591
.....TGAGGTAGTAGGTTGTATAGTTT.....	116
.....TGAGGTAGTAGGTTGTATAG.....	10
.....GAGGTAGTAGGTTGTATAGTT.....	6
.....TGAGGTAGTAGGTTGTATAGTTTA.....	9
.....TGAGGTAGTAGGTTGTANAGTT.....	6
.....TTGAGGTAGTAGGTTGTATAGTT.....	4
.....TGAGGTAGTAGGTTGTNTAGTT.....	3
.....GTAGTAGGTTGTATAGTT.....	1

.....TGAGGTAGTAGGTTGTATAGTTaA.....	15
.....TaGAGGTAGTAGGTTGTATAGTT.....	14
.....TaGAGGTAGTAGGTTGTATAGT.....	7
.....TcGAGGTAGTAGGTTGTATAGT.....	4

Supplemental Figure S1

Supplement 2, Figure S12

.....TGAGGTAggAGGTTGTATAGTTTA.....	4
.....TcGAGGTAGTAGGTTGTATAGTT.....	3
.....TcGAGGTAGTAGGTTGTATAGTTT.....	3
.....TaGAcGGTAGTAGGTTGTAAaTAGTT.....	2
.....TcGAGGTAGTAcGGTTGTATAGTT.....	2

mmu-let-7b(mmu-let-7b)

.....TGAGGTAGTAGGTTGTGTGGTT.....	299*
.....TGAGGTAGTAGGTTGTGTGGT.....	69
.....TGAGGTAGTAGGTTGTGTGGTTT.....	33
.....TGAGGTAGTAGGTTGTGTGG.....	5
.....TGAGGTAGTAGGTTGTNTGGTT.....	4
.....TGAGGTAGTAGGTTGTNTGGT.....	2

.....TGAGGTAGTAGGTTGTaGTGGTT.....	23
.....TGAGGTAGTAGGTTGTGTGGTTa.....	23
.....TGAGGTAGTAGGTTGTGTGGTTaa.....	18
.....aTGAGGTAGTAGGTTGTGTGGTT.....	13
.....TGAGGTAGTAGGTTGTGTaGGTT.....	11
.....TGAGGTAGTAGGTTGTGTGGTTTT.....	10
.....TGAGGTAGTAGGTTGTGTGGTTaT.....	10
.....TGAGGTAGTAGGTTGTaGTGGT.....	9
.....aTGAGGTAGTAGGTTGTGTGGT.....	7
.....TGAGGTAGTAGGTTGTGTTGGTT.....	4
.....TtAGGTAGTAGGTTGTGTGGTT.....	4
.....TaAGGTAGTAGGTTGTGTGGTT.....	3
.....TGAGGTgGTAGGTTGTGTGGTT.....	3
.....TGAGGTAGTAGGTTGTaGTGGTTT.....	3
.....TGAGGTAGTAGGTTGTGTGGTTag.....	3
.....TGAGGTAGTAGGTTGTGTGGTTTaA.....	3
.....TGAGGTAGTAGGTTGTGTGGTTTTa.....	3
.....TGAGGTAGTAGGTTGTGTGGTTTTa.....	2
.....TGAGGTAGTAGGTTGTGTGGTa.....	2
.....aTGAGGTAGTAGGTTGTGTGGTTa.....	2
.....TGAGGTAGTAGGTTGTGgT.....	2
.....TGAGGTAGTAGGTTGTGTGa.....	2
.....cTGAGGTAGTAGGTTGTGTGGTTa.....	2
.....TGAGGTAGTAGtTTGTGTGGTT.....	2
.....TGAGaTAGTAGGTTGTGTGGTT.....	2
.....TGAGGTAGTAGGTTGTGTGtT.....	2
.....TGAGGTAGTAaGTTGTGTGGTT.....	2
.....TGAGGTAGTAGGTTGTGTGt.....	2
.....TGAGGTAGTAGGTTGTGNGGTTTT.....	2
.....TGAGGTAGTAGGTTGTGTGGTc.....	2
.....TGAGGTAGTAGGTTGTGTGGTaaa.....	2
.....TGAaGTAGTAGGTTGTGTGGTT.....	2
.....TGAGGcAGTAGGTTGTGTGGTT.....	2

mmu-let-7c(mmu-let-7c-1)

TGTTGTGCATCCGGGTTGAGGTAGTAGGTTGTATGGTTTAGAGTTACACCTGGGAGTTAACTGTACAACCTTCTAGCTTTCCTTGGAGCACACT
 .(((((((.(((((((.(((.(((.(((((((((((((((((((.(((.((.((.....).).)))))))))))))))))).)).)).).)))))))))))))). (-43.30)

.....CGAGGTAGTAGGTTGTATGGTT.....	617*
.....TGAGGTAGTAGGTTGTATGGT.....	177
.....TGAGGTAGTAGGTTGTATGGTTT.....	47
.....TGAGGTAGTAGGTTGTANGGTT.....	9
.....TAGAGTTACACCCTGGGAGTTAA.....	4
.....TGAGGTAGTAGGTTGTATGG.....	2
.....TGAGGTAGTAGGTTGTNTGGTT.....	4
.....TTGAGGTAGTAGGTTGTATGGTT.....	4
.....GAGGTAGTAGGTTGTATGGTT.....	1
.....TGAGGTAGTAGGTTGTATGGTTTA.....	2
.....TGAGGTAGTAGGTTGTNTGGT.....	2

.....TGAGGTAGTAGGTTGTATGGTTa.....	50
.....aTGAGGTAGTAGGTTGTATGGTT.....	48
.....TGAGGTAGTAGGTTGTATtGGT.....	18
.....TGAGGTAgAGGTTGTATGGTT.....	17

Supplemental Figure S1

Sequence	Count
.....TGAGGTAGTAGGTTGTATGGTa.....	15
.....TaAGGTAGTAGGTTGTATGGTT.....	14
.....TGAGGTAGTAGGTTGTATtGGTT.....	14
.....aTGAGGTAGTAGGTTGTATGGT.....	9
.....TGAGGTAGTAaGTTGTATGGTT.....	8
.....TGAGGTAGTAGGTTGTATGGTTaA.....	8
.....TGAGGTAGgTAGGTTGTATGGTT.....	7
.....TT-AGGTAGTAGGTTGTATGGTT.....	7
.....cGAGGTAGTAGGTTGTATGGTT.....	7
.....TGAaGTAGTAGGTTGTATGGTT.....	6
.....TGAGGTAGTAGtTTGTATGGTT.....	5
.....TGAGGTAGTAGGTTGTATGGTc.....	5
.....TGAGGTAGTAGGTTGTATGaTT.....	5
.....TGAGGTAGTAGaTTGTATGGTT.....	5
.....TGAGGTAGTAGGTTaTATGGTT.....	5
.....TaGAGGTAGTAGGTTGTATGGTT.....	5
.....TGAGGTAGgTAGGTTGTATGGT.....	4
.....TGAGGTAGTAcGGTTGTATGGTT.....	4
.....TGAGGTAGTAGGTTaGTATGGTT.....	4
.....TGAGGTAGTAGGTTGgTATGGTT.....	3
.....TGAGGTAGTAGGTTGTATGGTg.....	3
.....TGAGGTAGTAGGTTGTATGGcT.....	3
.....TGAGGTAG-AGGTTGTATGGTT.....	3
.....TGAGGTAGTAGGTTGTATGGTAc.....	3
.....TGAGGTAGTAGGTTGTAcGGTT.....	3
.....TGAGGTAGTAGGcGTATGGTT.....	3
.....TGAGGTAGTAGGTTGTATGGTTg.....	3
.....TGAGGTAGTAGGTTGTATGGgT.....	3
.....aTGAGGTAGTAGGTTGTATGGTTT.....	3
.....TaGAGGTAGTAGGTTGTATGGT.....	2
.....TGAGGTAGTAGGT-GTATGGT.....	2
.....TGtGGTAGTAGGTTGTATGGTT.....	2
.....TGAGGTAGTAGGTTGTACTtGGT.....	2
.....TGAG-TAGTAGGTTGTATGGTT.....	2
.....cGAGGTAGTAGGTTGTATGGTTa.....	2
.....TGtAGGTTaGTAGGTTGTATGGTT.....	2
.....TGAGGTAGTAGGTTaTATGGTTT.....	2
.....TaGAGGTAGTAGGTTGTAgTGGTT.....	2
.....TGAGGTAGTAGGTCGTATGGTT.....	2
.....TGAGGTAGTAGGTTGTATGGc.....	2
.....TGgGGTAGTAGGTTGTATGGTT.....	2
.....aTGAGGTAGTAGGTTGTATGGTTa.....	2
.....TGAGGTAGTAGGTTGTATGGTTaAa.....	2
.....TGAGGcAGTAGGTTGTATGGTT.....	2
.....TGAGGTAGgAGGTTGTATGGTTa.....	2
.....TGAGGTAGTAaGGTTGTATGGTT.....	2
.....TGAGGTaAGTAGGTTGTATGGTT.....	2
.....TGAGGTAGTAGGTTGTATGGaa.....	2
.....TGAGGTAGTAGGTTGTATcGGTT.....	2
.....TGAGGTAGTAGGTTGTATGGa.....	2
.....TGAGaTAGTAGGTTGTATGGT.....	2
.....TGAGGTAGgAGGTTGTATGGT.....	2
.....TGAGGTAGTAGGTTGTATGGTaa.....	2
.....TGAGGTAGTAGaTTGTATGGT.....	2
.....cGAGGTAGTAGGTTGTATGGT.....	2

mmu-let-7c(mmu-let-7c-2)

ACGGCCCTTTGGGGTGAGGTAGTAGGTTGTATGGTTTTGGGCTCTGCCCGCTCTGCGGTAAC TATACAATCTACTGTCTTTCCTGAAGTGGCCGC

*****TGAGGTAGTAGGTTGTATGGTT*****

.....TGAGGTAAGTACGTTTGTATCGTT.....	617*
.....TGAGGTAGTAGGTTTGATGGTT.....	177
.....TGAGGTAGTAGGTTTGATGGT.....	47
.....TGAGGTAGTAGGTTTGATGGTTT.....	9
.....TGAGGTAGTAGGTTGTANGGTT.....	8
.....TGAGGTAGTAGGTTGTATGGTTTT.....	2
.....TGAGGTAGTAGGTTGTATGG.....	4
.....TGAGGTAGTAGGTTGTNTGGTT.....	1
.....GAGGTAGTAGGTTTGATGGTT.....	2
.....TGAGGTAGTAGGTTGTNTGGT.....	
-----TGAGGTAGTAGGTTTGATGGTTaT.....	2

*****AGAGGTAGTAGGTTGCATAGTT*****
AGAGGTAGTAGGTTGCATAGTT.....

.....AGAGGTAGTAGGTTGCATAGT.....

.....AAGAGGTAGTAGGTTGCATAGTT.....

.....AGAGGTAGTAGGTTGCATAGTTT.....

.....GAGGTAGTAGGTTGCATAGTT.....

.....AAGAGGTAGTAGGTTGCATAGT.....

.....GAGGTAGTAGGTTGCATAGT.....

.....AAGAGGTAGTAGGTTGCATAGTTT.....

.....AGAGGTAGTAGGTTGCATAGTTT.....

.....CTATACGACCTGCTGCCTTTCT.....

.....

.....tGAGGTAGTAGGTTGCATAGTT.....

.....tGAGGTAGTAGGTTGCATAGT.....

.....AGAGGTAGTAGGTTGCATtAGT.....

.....AGAGGTAGTAGGTTGtCATAGTT.....

.....AGAGGTAGTAGGTTGCATAGTTaa.....

.....cGAGGTAGTAGGTTGCATAGTT.....

.....AGAGGTAGTAGGTTGCATAGTa.....

.....AA-AGGTAGTAGGTTGCATAGTT.....

.....AGAGGTAGTAGGTTGCATAGcT.....

.....AGAGGTAGTAG-TTGCATAGTT.....

.....AGAGGTAAAGTAGGTTCATAGTT.....

Supplemental Figure S1

Sequence	Count
.....TGAGGTAGGAGGTTGTATAGTaa.....	7
.....TGAGGTAGGAGGTTGTATAGcT.....	7
.....TGAGGTAGGAGGTCGTATAGTT.....	6
.....aTGAGGTAGGAGGTTGTATAGTTG.....	6
.....TGAGGTAaGAGGTTGTATAGTT.....	6
.....TGAGGTAGGAGGTTGTATAGTT-AG.....	6
.....TGAGGTAGGAGGTTGTATAaTT.....	6
.....TGAGGTAGGAGGTTaTATAGTT.....	5
.....TGAGGTAGGAGGTTGTATAaGTT.....	5
.....TGAGaTAGGAGGTTGTATAGTT.....	5
.....TtAGGTAGGAGGTTGTATAGTTa.....	5
.....TGAGGTAGGAGGTTGTATAGgTT.....	4
.....TGAGGTAGGAGGTTGTATAGa.....	4
.....aTGAGGTAGGAGGTTGTATAGTTa.....	4
.....TtAGGTAGGAGGTTGTATAGT.....	4
.....cGAGGTAGGAGGTTGTATAGT.....	4
.....TaAGGTAGGAGGTTGTATAGT.....	4
.....TGAGGTAGGAGGTTGTATAGTTc.....	4
.....TGAGGTAGGAaGTTGTATAGTT.....	4
.....TGAGGTAGGAGGTTtGTATAGTT.....	4
.....taGAGGTAGGAGGTTGTATAGT.....	4
.....TGgGTAAGGAGGTTGTATAGT.....	3
.....TGAaGTAGGAGGTTGTATAGTT.....	3
.....TGtGGTAGGAGGTTGTATAGTT.....	3
.....TGAGGTgGGAGGTTGTATAGTT.....	3
.....TGtAGGTAGGAGGTTGTATAGTT.....	3
.....TGAGGTAGGAG- TTGTATAGT.....	3
.....TGAGGTAGGAGGTTGTATAaT.....	3
.....TttGGTAGGAGGTTGTATAGT.....	3
.....TGAGGTAGGAGGTTGTAcAGTT.....	3
.....TGAGGTAGGAGGTTGTATAGTg.....	2
.....TGgGGTAGGAGGTTGTATAGTT.....	2
.....TGgaGTAGGAGGTTGTATAGTT.....	2
.....TGAGGTAGGAGGTTGcATAGTT.....	2
.....TGAGGTAGGAGGTTGTAgTAGT.....	2
.....TGAGGTAGGAGGTTGTATAGgT.....	2
.....TGAGGTAGGAGGTCGTATAGT.....	2
.....TGAGGTAGGAGGTTGTATAaTTaA.....	2
.....TGAGGTAGGAGGTTGTATAGg.....	2
.....TGAGGTAGGAGGTTGTATAGTTtG.....	2
.....TGAGGTAGGgGGTTGTATAGTT.....	2
.....TGAGGTAGGAGGTTGTATAGTTaAa.....	2
.....TGAGGTAaGAGGTTGTATAGTTa.....	2
.....TGAGGTAGGAGGTTGttATAGTT.....	2
.....TGAGGTAGGAGGTTGTAttAG.....	2
.....TGAGGTAGGAGaTTGTATAGTT.....	2
.....TGAGGTAGGAGGTTaTATAGTT-AG.....	2
.....tcGAGGTAGGAGGTTGTATAGTT.....	2
.....TGAGGTAGGAGGTTGTAT- GTT.....	2
.....TGAGtTAGGAGGTTGTATAGTT.....	2
.....TGAaGTAGGAGGTTGTATAGT.....	2
.....TGAGGTAGGAGGTTGTATAaTTa.....	2
.....TGAG- TAGGAGGTTGTATAGT.....	2
.....TGAGGT- GGAGGTTGTATAGTT.....	2
.....aGAGGTAGGAGGTTGTATAGTT.....	2
.....TGAGGTAGGAGGTTGTATAGTaaA.....	2
.....GAGGTAGGAGGTTGTATAGTTa.....	2
.....TGAGGTAGGAGGTTGTATAGT- GA.....	2
.....TGAGGTAGGAGGTTGTATAGTTgTA.....	2
.....TGAGGTAGGAGGTTGTATAcGT.....	2
.....TGAGGTAGGAGGTTGTATAaGT.....	2
.....TGAGGTgGGAGGTTGTATAGT.....	2
.....TGAGGTAGGAGGTTGTATAGTaT.....	2

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mmu-let-7f(mmu-let-7f-1)
ATCAGAGTAGAGGTAGATGTATAGTTGTGGGGTAGTGATTTACCTGTTTAGGAGATAACTATACAATCTATTGCCTTCCTGAG
.(((.(.(((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****TGAGGTAGTAGATTGTATAGTT***** (-44.40)
.....TGAGGTAGTAGATTGTATAGTT..... 97*
.....TGAGGTAGTAGATTGTATAGT..... 25
-----
.....TGAGGTAGTAGATTGTATAGTTa..... 8

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Supplemental Figure S1

.....TtAGGTagTAGATTGTATAGTT.....	3
.....TGAGGTagTAGATTGTATAGTa.....	3
.....TGAGGTagTAaATTGTATAGTT.....	3
.....TGAGGTagTAGATTGTATTAGTT.....	3
.....cGAGGTagTAGATTGTATAGTT.....	2
.....AGTGAGGTagTAGgTTGTATAGTT.....	2
.....TaAGGTagTAGATTGTATAGTT.....	2
.....TGAGaTAGTAGATTGTATAGTTa.....	2
.....TGAGGTagTAGATTGTATAGTc.....	2
.....TtAGGTagTAGATTGTATAGT.....	2

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mmu-let-7i(mmu-let-7i)
CTGGCTGAGGTAGTAGTTTGTGCTGTTGGTCGGGTTGTGACATTGCCCGCTGTGGAGATAACTGCGCAAGCTACTGCCTTGCTAG
(((...((( (((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****TGAGGTAGTAGTTTGTGCTGTT***** (-42.10)
....TGAGGTAGTAGTTTGTGCTGTT..... 35*
....TGAGGTAGTAGTTTGTGCTGT..... 12
-----
....TGAGGTAGTAGTTTGTGCTGTTa..... 21
....TGAGGTAGTAGTTTGTGCTGTTt..... 6
....aTGAGGTAGTAGTTTGTGCTGTT..... 3

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mmu-mir-1(mmu-mir-1-1)
GCTTGGGACACATACTTCTTTATATGCCCATATGAACCTGCTAAGCTATGGAATGTAAAGAAGTATGTATTTTCAGGC
(((((((.(((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****TGGGAATGTAAAGAAGTATGTAT***** (-32.84)
.....TGGGAATGTAAAGAAGTATGTAT..... 10*
.....TGGGAATGTAAAGAAGTATGTAT..... 2

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mmu-mir-1(mmu-mir-1-2)
TCAGAGCACATACTTCTTTATGTACCCATATGAACATTCAGTGCTATGGAATGTAAAGAAGTATGTATTTTG

Supplemental Figure S1

.....AGCAGCATTGTACAGGGCTATG.....	5
.....AGCAGCATTGTACAGGGCTATGAA.....	4
.....AAGCAGCATTGTACAGGGCTATGA.....	3
.....GCAGCATTGTACAGGGCTATGA.....	2
.....ATTGTACAGGGCTAT.....	1
.....TTGTACAGGGCTATGA.....	1
.....AGCAGCATTGTACAGGGCTATGAt.....	18
.....AGCAGCATTGTACAGGGCTATGtA.....	6
.....AGCAGCATTGTACAGGGCTATGt.....	4
.....AGCAGCATTaTACAGGGCTATGA.....	3
.....AGCAGCATTGTACAGGGtCTATGA.....	3
.....AGCAGCATTGTACAGGGCTATGAg.....	3
.....AtCAGCATTGTACAGGGCTATGA.....	2
.....aATTGTACAGGGCTATGA.....	2
.....tTTGTACAGGGCTATGA.....	2
.....AGCAGCATTGTACAGGGCTATGAAt.....	2
.....tGCAGCATTGTACAGGGCTATGA.....	2
.....AA-CAGCATTGTACAGGGCTATGA.....	2
.....AAGCAGCATTGTACAGGGCTATGAt.....	2

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mmu-mir-103(mmu-mir-103-2)
GTC TTCGTGCTTTCAGCTTC TTTACAGTGCCTGTAGCATT CAGGTCAAGCAGCATTGTACAGGGCTATGAAAGAACCAAGAA
.((((((((( (((((((((( (((((((((( (((((((((( (((((((((( (((((((((( (((((((((( (((((((((( ((((((((((
*****AGCAGCATTGTACAGGGCTATGA*****
.....AGCAGCATTGTACAGGGCTATGA.....76*
.....AGCAGCATTGTACAGGGCTAT.....4
.....ATTGTACAGGGCTATGA.....6
.....AGCAGCATTGTACAGGGCTATG.....5
.....AGCAGCATTGTACAGGGCTATGAA.....4
.....AAGCAGCATTGTACAGGGCTATGA.....3
.....GCAGCATTGTACAGGGCTATGA.....2
.....ATTGTACAGGGCTAT.....1
.....TTGTACAGGGCTATGA.....1
```

```
mmu-mir-106a(mmu-mir-106a)
ATGTCAAAGTGCTAACAGTGCAGGTAGCTTTTGGTCTTCTACTGCAGTGCCAGCACTTCTTACAT
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
****CAAAGTGCTAACAGTGCAGGTAG***** (-22.70)
-----
...CAAAGTGCTtACAGTGCAGGTAGtTT..... 2
```

Supplemental Figure S1

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.....CCGCACTGTGGGTACTTGCTGt..... 2
.....CCGCACTGTGGGTACTTGCTGCa..... 2
.....TAAAGTGCTGACAGTGCAGA-AG..... 2
.....CCGCACTGTGGGTACTTGCTt..... 2

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mmu-mir-107(mmu-mir-107)

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TTCTCTGTGCTTTCAGCTTCTTTACAGTGTTCCTTGTGGCATGGAGTTCAAGCAGCATTGTACAGGGCTATCAAAGCACAGAGAGC
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****AGCAGCATTGTACAGGGCTATCA***** (-41.10)
.....AGCAGCATTGTACAGGGCTAT..... 4
.....AGCAGCATTGTACAGGGCTATCA..... 9*
.....AGCAGCATTGTACAGGGCTATC..... 6
.....ATTGTACAGGGCTAT..... 1
.....ATTGTACAGGGCTATCA..... 2
-----
.....aATTGTACAGGGCTATCA..... 2

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mmu-mir-10a(mmu-mir-10a)

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GACCTGTCTGTCTTCTGTATATACCCTGTAGATCCGAATTTGTGTAAGGAATTTGTGGTCACAAATTCGTATCTAGGGGAATATGTAGTTGACATAAACACTCC
GCTCA
....((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
..... (-32.39)
*****TACCCTGTAGATCCGAATTTGTG*****
*****
.....TACCCTGTAGATCCGAATTTGT.....
..... 108
.....TACCCTGTAGATCCGAATTTGTG.....
..... 20*
.....ACCCTGTAGATCCGAATTTGTG.....
..... 11
.....ACCCTGTAGATCCGAATTTGT.....
..... 10
.....TACCCTGTAGATCCGAATTTGTGT.....
..... 9
.....CAAATTCGTATCTAGGGGAAT.....
..... 8
.....ACCCTGTAGATCCGAATTTGTGT.....
..... 6
.....TACCCTGTAGATCCGAATTTG.....
..... 6
.....CTGTAGATCCGAATTTGT.....
..... 4
.....ACCCTGTAGATCCGAATTTG.....
..... 2
.....ACCCTGTAGATCCGAATTTGTGTA.....
..... 2
.....ATCCGAATTTGTG.....
..... 2
.....CCCTGTAGATCCGAATTTGTG.....
..... 2
-----
.....ACCCTGTAGATCCGAATTTGTGa.....
..... 22
.....TACCCTGTAGATCCGAATTTGTGa.....

```


Supplemental Figure S1

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))...)))))... (-49.80)
*****TCAGCTGAGGTCCCTCTGTC***

*****
-----
.....CCGTGGGgAGGTCTCTGCTGG.....

..... 2
-----
mmu-mir-1191(mmu-mir-1191)
TGGAAACCAGCCTGGTCTACATAGCAACATCTAAGCCAGCCAGGGCTACATAGTGAGAACCTGCCTCAAAAGCAAACAGCAGTCTTACTATGTAGCCCTAGATGG
CCTAGAACTCCCTAT
((((((.....))))).((((.....(((((((((.....(((((((((.....((((((.....))))))))))))))))))))).)))
).)))).....)) (-47.16)
*****CAGTCTTACTATGTAGCCCTA*****

*****
-----
mmu-mir-1192(mmu-mir-1192)
CCTTCCAACAGTAAAAACAAACAAACAGACCAAATTTGTCATTGTTGTTTCGATTGCTCTTTTGTGTTGTTGCTTTTGTGTTTGTAGACAGGGTCTGG
CTGTATAGCTCATG
(((((((((((.....(((((((((((.....(((((((((((.....(((((((((((.....))))))))))))))))))))).))))).))))).))....((
((.....))).... (-31.90)
*****AAACAAACAAACAGACCAAATT*****

*****
-----
mmu-mir-1193(mmu-mir-1193)
CTGAAGGGACAATGATGCCACTGTTCTCGGGTAGCTGTGTGGATGGTAGACCGGTGACGTACACTTCATTATGCTGTAGGTCACCCGTTTACTATCCACCA
ACACCCAGACCATCTG
.....((((.....)))..(((.....((((.....((((.....((((.....((((.....((((.....))))))))))))))))).))))).))))).))....((
.))))).... (-45.30)
*****TAGGTCACCCGTTTACTATC*****

*****
.....TAGGTCACCCGTTTACTATC....

..... 6*
.....TAGGTCACCCGTTTACTATCC....

..... 3
-----
mmu-mir-1194(mmu-mir-1194)
ACACCTTCTGCTGGAGACAATATAAGGACATTGGAAGAAGGGAGTCTAGCTCTTGCTCCTTTGCCTGCTTGCTGCGTGAGAATGAGTAAGTCTAGATCCTTGGA
CTTCATTACAGCTG
...((((.....)))..((((.....((((.....((((.....((((.....((((.....))))))))))))))))).))....
)))).... (-41.40)
*****GAATGAGTAAGTCTAGATCCT*****

*****
-----
mmu-mir-1195(mmu-mir-1195)
TAGAGGCAGGCAGATCTCTGTGAGTTTCAGGCCAGCCTGCTCAACAGAATGAGTTCTAGGGCAGCCAGGAACACACAGAGAAACCCTGTCTCAAGAAGGTAAAAA
GTAAAAAAAAAAAAAAAA

```

.....TTCGAGGCCAGCCTGggC.....

TTTTTTTTTTTAAA

ATATCACATCTCGCC

* * * * *

ATCCTGTCTCAGTCTC

CCGCGCGCCCTGGA

```

.....TGGAGTGTGACAATGGTGTTTG.....160*
.....TGGAGTGTGACAATGGTGTTTGT.....83
.....TGGAGTGTGACAATGGTGTTT.....21
.....TGGAGTGTGACAATGGTGTT.....6

```

Supplemental Figure S1

```

.....TGGAGTGTGACAATGGTGTGTTGa..... 21
.....aTGGAGTGTGACAATGGTGTGTTG..... 10
.....aTGGAGTGTGACAATGGTGTGTTGT..... 7
.....TGGAGTGTGACAATGGTGTGTTg..... 6
.....TGGAGTGTGACAATGGTGTGTTTa..... 5
.....TtGAGTGTGACAATGGTGTGTTGT..... 5
.....TGGAGTGTGACAATGGTGTGTTGTa..... 4
.....TGGAGTGTGACAATGGTGTGTTGTt..... 4
.....TGGAGTGTGACAATGGTGTGTTTaG..... 3
.....cGGAGTGTGACAATGGTGTGTTGa..... 3
.....TaGAGTGTGACAATGGTGTGTTTG..... 2
.....TGGAGTGTGACAATGGcGTTTGT..... 2
.....TaGAGTGTGACAATGGTGTGTTGT..... 2

```

```

-----
mmu-mir-124(mmu-mir-124-1)
AGGCCTCTCTCCGTGTTACAGCGGACCTTGATTTAAATGTCCATACAATTAAGGCACGCGGTGAATGCCAAGAATGGGGCTG
(((((((.....)))))))). (-35.92)
*****TAAGGCACGCGGTGAATGCC*****
.....TAAGGCACGCGGTGAATGCCAA..... 3
.....TAAGGCACGCGGTGAATGCCA..... 1
-----

```

```

-----
mmu-mir-124(mmu-mir-124-2)
ATCAAGATCAGAGACTCTGCTCTCCGTGTTACAGCGGACCTTGATTTAATGTCCATACAATTAAGGCACGCGGTGAATGCCAAGAGCGGAGCCTACGGCTGCACT
TGAA
(((((((.....)))))))). (-45.70)
*****TAAGGCACGCGGTGAATGCC*****
****
.....TAAGGCACGCGGTGAATGCCAA.....
..... 3
.....TAAGGCACGCGGTGAATGCCA.....
..... 1
-----

```

```

-----
mmu-mir-124(mmu-mir-124-3)
CTCTGCGTGTTCACAGCGGACCTTGATTTAATGTCTATACAATTAAGGCACGCGGTGAATGCCAAGAG
(((((((.....)))))))). (-25.80)
*****TAAGGCACGCGGTGAATGCC*****
.....TAAGGCACGCGGTGAATGCCAA... 3
.....TAAGGCACGCGGTGAATGCCA... 1
-----
.....TAAGGCACGCGGTGAATGCCAat... 6
.....TAAGGCACGCGGTGAATGCCAAa... 2
-----

```

```

-----
mmu-mir-125a-3p(mmu-mir-125a)
CTGGGTCCCTGAGACCCTTTAACCTGTGAGGACGTCCAGGGTCACAGGTGAGGTTCTTGGGAGCCTGG
(((((.....)))))) (-34.70)
*****ACAGGTGAGGTTCTTGGGAGCC***
.....TCCCTGAGACCCTTTAACCTGTGA..... 86
.....TCCCTGAGACCCTTTAACCTGT..... 83
.....TCCCTGAGACCCTTTAACCTGTG..... 79
.....ACAGGTGAGGTTCTTGGGAGCC... 24*
.....CAGGTGAGGTTCTTGGGAGCC... 8
.....CCCTTTAACCTGTGA..... 5
.....TCCCTGAGACCCTTTAACCTG..... 5
.....ACAGGTGAGGTTCTTGGGAGC... 3
.....ACCCTTTAACCTGTGA..... 2
.....TCCCTGAGACCC..... 1
.....ACAGGTGAGGTTCTTGGGAGCCT... 2
.....CCCTTTAACCTGTG..... 2
.....ACAGGTGAGGTTCTTGGGAG... 1
.....CCCTGAGACCCTTTAACCTGT..... 1
.....CCCTGAGACCCTTTAACCTGTGA..... 1

```

Supplemental Figure S1

.....CTGAGACCCTTTAACCTGT..... 1
.....CTGAGACCCTTTAACCTGTGA..... 1

mmu-mir-125a-5p(mmu-mir-125a)

TCCCTGAGACCCCTTTAACCTGTGA		
TCCCTGAGACCCCTTTAACCTGTGA		86*
TCCCTGAGACCCCTTTAACCTGTG		83
TCCCTGAGACCCCTTTAACCTGTG		79
	ACAGGTGAGGTTCTTGGGAGCC	24
	CAGGTGAGGTTCTTGGGAGCC	8
CCCTTTAACCTGTGA		5
TCCCTGAGACCCCTTTAACCTG		5
	ACAGGTGAGGTTCTTGGGAGC	3
ACCCTTTAACCTGTGA		2
TCCCTGAGACCC		1
	ACAGGTGAGGTTCTTGGGAGCCT	2
CCCTTTAACCTGTG		2
	ACAGGTGAGGTTCTTGGGAG	1
CCCTGAGACCCCTTTAACCTGT		1
CCCTGAGACCCCTTTAACCTGTGA		1
CTGAGACCCCTTTAACCTGT		1
CTGAGACCCCTTTAACCTGTGA		1

...TCCCTGAGACCCTTTAACCTGTgt...	61
...TCCCTGAGACCCTTTAACCTGTa...	20
...aTCCCTGAGACCCTTTAACCTGTG...	15
...TCCCTGAGACCCTT-AAC-TGTGA...	14
...aTCCCTGAGACCCTTTAACCTGTGA...	10
...TCCCTGAGACCCTTTAACCTGTgt...	9
...TCCCTGAGACCCTT-AAC-TGTG...	9
...TCCCTGAGACCCTT-AACCTtGTGA...	9
...aACAGGTGAGGTTCTTGGGAGCC...	9
...TCCCTGAGACCCTTTAACCTGTaA...	7
...aTCCCTGAGACCCTTTAACCTGT...	7
...TCCCTGAGACCCTTTAACCTGTGAt...	7
...TCCCTGAGACCCTTTAACCTGTt...	6
...TCCCTGAGACCCTTTAACCTGTGTa...	6
...TCCCTGAGACCCTTTAACCTGTGAa...	5
...TCCCTGAGACCCTT-AACCTGTGA...	5
...TCCCTGAGACCCTT-AACCTGTG...	5
...aTCCCTGAGACCCTTTAACCTG...	4
...ACAGGTGAGGTTCTTGGGAGCa...	3
...TtCCTGAGACCCTTTAACCTGT...	2
...ACAGGTGAGGTTCTTGGGAGCCa...	2
...aCTTTAAACCTGTGA...	2
...tcCCCTGAGACCCTTTAACCTGT...	2
...tcCCCTGAGACCCTTTAACCTGTGA...	2
...CCCTTTAAACCTGTgt...	2
...TCctTGAGACCCTTTAACCTGTG...	2
...aTCCCTGAGACCCTTTAACCTGTgt...	2
...TCCCTGAGACCCtTAACCTGT...	2
...TtCCTGAGACCCTTTAACCTGTGA...	2
...TCCCTGAGACCCTTTAACCTaGT...	2
...tcCCCTGAGACCCcTTTAACCTGT...	2
...TCCCTGAGACCCTTTAACCTGTgtt...	2
...CAGGTGAGGTTCTTGGGAGtCC...	2
...TCCCTGAGACCCTTTAACCTGc...	2

mmu-mir-125b-3p(mmu-mir-125b-1)

.....	TCCTGAGACCCCTAACTTGTGA.....	ACGGGTAGGCTCTTGGGAGCT.....	333
.....	TCCTGAGACCCCTAACTTGTG.....		74
.....	CCCTAACTTGTGA.....		15
.....	CCCTGAGACCCCTAACTTGTGA.....		8
.....	.....	ACGGGTTAGGCTCTTGGGAGCT.....	11*
.....	TCCTGAGACCCCTAACTTGT.....		7

Supplemental Figure S1

Supplemental Figure S2

TCCCTGAGACCCTAACTTGTGAT	8
..ACCCTAACTTGTGA	3
..GACCCTAACTTGTGA	2
..TCCCTGAGACCC	1
..CTAACTTGTGA	1
..CCCTAACTTGTG	1
..CCCTGAGACCCTAACTTGTGAT	1
..CTGAGACCCTAACTTGTGA	1
..AGACCCTAACTTGTGA	0
..CCCTGAGACCCTAACTTGTG	0
..CGGGTTAGGCTCTTGGGAGCT	1
..CTGAGACCCTAACTTGTG	0
..GACCCTAACTTGTG	0
..GTCCCTGAGACCCTAACTTGTGA	0

```
mmu-mir-125b-5p(mmu-mir-125b-1)
TGC GCTCC CCTCAGTCC CCGAGACCCTAACTTGTGATGTTTACCGTTTAAATCCACGGGTTAGGCTCTTGGGAGCTG
.....(((.((.(((.(((((((((((.(((((.)))))).)))))))).)))).)))).)) ( -30..70)
*****TCCCTGAGACCCTAACTTGTGA*****
.....TCCCTGAGACCCTAACTTGTGA..... 333*
.....TCCCTGAGACCCTAACTTGTG..... 74
.....CCCTAACTTGTGA..... 15
.....CCCTGAGACCCTAACTTGTGA..... 8
.....ACGGGTTAGGCTCTTGGGAGCT..... 11
.....TCCCTGAGACCCTAACTTGT..... 7
.....TCCCTGAGACCCTAACTTGTGAT..... 8
.....ACCCTAACTTGTGA..... 3
.....GACCCTAACTTGTGA..... 2
.....TCCCTGAGACCC..... 1
.....CTAACTTGTGA..... 1
.....CCCTAACTTGTG..... 1
.....CCCTGAGACCCTAACTTGTGAT..... 1
.....CTGAGACCCTAACTTGTGA..... 1
.....AGACCCTAACTTGTGA..... 0
.....CCCTGAGACCCTAACTTGTG..... 0
.....CGGGTTAGGCTCTTGGGAGCT..... 1
.....CTGAGACCCTAACTTGTG..... 0
.....GACCCTAACTTGTG..... 0
.....GTCCCTGAGACCCTAACTTGTGA..... 0
-----
.....ACGGGTTAGGCTCTTGGGAGt... 7
.....CACGGGTTAGGCTCTTGGGAGt... 6
.....ACGGGTTAGGCTCTTGGGAGCt... 5
.....taCCCTGAGACCCTAACTTGTGAT..... 3
.....ACGGGTTAGGCTCTTGGGAGCTtt 3
.....ACGGGTTAGGCTCTTGGGAGCTttt 2
.....TCCCTGAGACCCTAACTTGTGgt..... 2
.....TCCCTGAGACCCTAACTTGTGgt..... 2
```

```
mmu-mir-125b-5p(mmu-mir-125b-2)
GCCTAGTCCCTGAGACCCTAACTTGTA GGTATTTTAGTAACATCACAAAGTCAGGTTCTTGGGACCTAGGCC
(((((((...(((((.....)))))))).)))..)))..))) (-36..30)
***** TCCTCGAGACCCTAACTTGTGA *****
.... TCCTCGAGACCCTAACTTGTGA ..... 333*
.... TCCTCGAGACCCTAACTTGTG ..... 74
.... . CCCTAACTTGTGA ..... 15
.... . CCCTGAGACCCTAACTTGTGA ..... 8
.... TCCTCGAGACCCTAACTTGT .. 7
.... . ACCCTAACTTGTGA ..... 3
.... . GACCCTAACTTGTGA ..... 2
.... TCCCTGAGACCC ..... 1
.... . CTA ACTTGTGA ..... 1
.... TCCTCGAGACCCTAACTTGTGAG .... 4
.... . CCCTAACTTGTG ..... 1
.... CTGAGACCCTAACTTGTGA ..... 1
.... . ACAAGTCAGGTTCTTGGGACC ..... 2
.... AGACCCTAACTTGTGA ..... 0
.... CCTGAGACCCTAACTTGTG ..... 0
.... CTGAGACCCTAACTTGTG ..... 0
.... GACCCTAACTTGTG ..... 0
```

Supplemental Figure S1

[illegible]

Supplemental Figure S1

.....CGTACCGTGAGTAATAATGCa.....	3
.....tATTATTACTTTTGGTACGCGt.....	3
.....TCaTACCGTGAGTAATAATGCG.....	3
.....CGTACCGTGAGTAATAATGCG.....	3
.....ttTACCGTGAGTAATAATGCG.....	3
.....CGTACCGTGAAATAATAATGCG.....	3
.....cCGTACCGTGAGTAATAATGCG.....	3
.....CATTATTACTTTTGGTACGCGta.....	3
.....CGTACCGTGAGTAATAAaTGCG.....	3
.....aTCGTACCGTGAGTAaAATGCG.....	3
.....aCGTACCGTGAGTAATAATGCGt.....	3
.....CATTATTACTTTTGGTACGCGtT.....	3
.....TCaTACCGTGAGTAATAATGCGa.....	2
.....TCGTACCGTGAGTAATAATGtC.....	2
.....ACATTATTACTTTT-GGTACGCG.....	2
.....tcCGTACCGTGAGTAATAATGCG.....	2
.....TCGgTACCGTGAGTAATAATGCG.....	2
.....CATTATTACTTTTGGTACGCGaC.....	2
.....CcTACCGTGAGTAATAATGCG.....	2
.....CGTACCGTGAGTAaGTAATGCG.....	2
.....CGTACCGTGAGTAaGTAATGCG.....	2
.....TTTTGGTACGtCG.....	2
.....CATTATTACTTTTGTACGCG.....	2
.....TCGTACCGTGAGTAATAATGga.....	2
.....CGTACCGTcGAGTAATAATGCG.....	2
.....TCGTACCGTGAGTAATAATaCG.....	2
.....CTCGTACCGTGAGTAATAATGCa.....	2
.....CATTATTACTTTTaGTACGCG.....	2
.....TCGTgCCGTGAGTAATAATGCG.....	2
.....aTCGTACCGTGAGTAATAATGCGa.....	2
.....CATTATTACTTTT-GGTACGCa.....	2
.....TttaACCGcGAGTAATAATGCG.....	2
.....TCGTACCGTGAGTAATAATGtaCG.....	2
.....CATTATTACTTTTGGTACGaCG.....	2
.....TCGTACCGTGAGTA-TAATGCG.....	2
.....aACATTATTACTTTTGGTACGCG.....	2
.....taCGTACCGTGAGTAATAATGtCG.....	2
.....TCGTACCGTGAGTAATAATGtG.....	2
.....TCGTACCGTGAGTAATAATGt.....	2
.....CATTATTtACTTTTGGTACGCG.....	2
.....tATTATTACTTTTGGTACGcta.....	2
.....TCGTACCGTGtAGTAATAATGCG.....	2
.....TCGTACCGTGAGTAATAgTGCG.....	2
.....CGTACCGTGAGTAATAATaCG.....	2
.....CGTACCGTGAGTAATAATGaCG.....	2
.....TTTTGGTACGCGa.....	2
.....taCGTACCGTGAGTAATAATGC.....	2
.....CATTAT-ACTTT-GGTACGCG.....	2
.....aTCGTaACCGTGAGTAATAATGCG.....	2
.....CGTACCGcGAGTAATAATGCG.....	2
.....CGTACCGTGAGTAATA-TGCG.....	2
.....CGTaTCGTGAGTAATAATGCG.....	2
.....TttaACCGTGAGTAATAATGCG.....	2
.....CTCGTACCGTGAGTAATAATGtCG.....	2
.....CGTACCGTGAGTAATAATGCGta.....	2
.....TCGTAtCGTGAGTAATAATGCG.....	2
.....aTCGTACCGTGAGTAATAATGtCG.....	2
.....CATTATTACTTTTGGTACGCa.....	2

mmu-mir-127(mmu-mir-127)

CCAGCCTGCTGAAGCTCAGAGGCTCTGATTGAGAAAGATCATCGGATCCGCTGAGCTTGGCTGGTCGG

(((((.....(((((((((((.....))..... (-34..90)

*****TCGGATCCGCTGAGCTTGGCT*****	
.....TCGGATCCGCTGAGCTTGGCT.....	213*
.....TCGGATCCGCTGAGCTTGG.....	35
.....TCGGATCCGCTGAGCTTGGC.....	35
.....ATCGGATCCGCTGAGCTTGGCT.....	11
.....CTGAAGCTCAGAGGCTCTGATT.....	9
.....CTGAAGCTCAGAGGCTCTGAT.....	7
.....TCGGATCCGCTGAGCTTGGCTG.....	4
.....CGGATCCGCTGAGCTTGGCT.....	3
.....ATCGGATCCGCTGAGCTTGGC.....	2

Supplemental Figure S1

.....GTCTGAGCTTGGCT.....	2
.....TCTGAGCTTGGCT.....	2

.....TCGGATCCGCTCTGAGCTTGGCTt.....	53
.....TCGGATCCGCTCTGAGCTTGGCTaa.....	41
.....TCGGATCCGCTCTGAGCTTGGCTat.....	39
.....TCGGATCCGCTCTGAGCTTGGt.....	34
.....TCGGATCCGCTCTGAGCTTGGCTaaa.....	26
.....TCGGATCCGCTCTGAGCTTGGCTtt.....	25
.....TCGGATCCGCTCTGAGCTTGGCTa.....	24
.....TCGGATCCGCTCTGAGCTTGGtCT.....	13
.....ATCGGATCCGCTCTGAGCTTGGt.....	12
.....TCGGATCCGCTCTGAGCTTGGCTtaa.....	11
.....TCGGATCCGCTCTGAGCTTGGCTaaT.....	10
.....TCGGATCCGCTCTGAGCTTGGCa.....	9
.....TCGGATCCGCTCTGAGCTTGGa.....	8
.....TCGGATCCGCTCTGAGCTTGGCTtaT.....	7
.....TCGGATCCGCTCTGAGCTTGGCTta.....	7
.....TCGGATCCGCTCTGAGCTTGGCaT.....	7
.....TCGGATCCGCTCTGAGCTTGGCaa.....	6
.....TtGGATCCGCTCTGAGCTTGGCT.....	6
.....TCGGATCCGCTCTGAGCTTGGCaat.....	5
.....TtGGATCCGCTCTGAGCTTGGCTt.....	5
.....TCGGATCCGCTCTGAGCTTaGCT.....	5
.....TCGGATCCGCTCTGAGCTTGGCTatT.....	5
.....TCGGATCCGCTCTGAGCTTGGCTttT.....	5
.....ATCGGATCCGCTCTGAGCTTGGCTt.....	5
.....TCGGATCCGCTCTGAGCTTGGaCT.....	5
.....TCGGATCCGCTCTGAGCTTGa.....	4
.....TCGGATCCGCTCTGAGtCTTGGCT.....	3
.....TCGGATCCGCTCTGAGCTTGGCTaGa.....	3
.....TCGGATCCGCTCTGAGCTTGGaa.....	3
.....TCGGATCCGCTCTGAGCTTGGtTt.....	3
.....ATCGGATCCGCTCTGAGCTTGGCTat.....	3
.....TCGGATCCGCTCTGAGCTTGGtC.....	3
.....TCGGATCCGCTCTGAGCTTGGCg.....	3
.....TCGGATCCGCTCTGAGCTTGGCTata.....	3
.....TCGGATCCGCTCTGAGCTTGGCTataa.....	3
.....TCGGATCCGCTCTGAGCTTGGta.....	3
.....TCGGATCCGCTCTGAGCTTGGtT.....	3
.....TCGGATCCGCTCTGAGCTTGGCTaG.....	2
.....TCGGATCCGCTCTGAGCTTGGCTtaaT.....	2
.....TCGGATCCGCTCTGAGCTTGGat.....	2
.....TCGGATCCGCTCTGAGCTTGGCTtta.....	2
.....TgGGATCCGCTCTGAGCTTGGCTaa.....	2
.....TCGGATCCGCTCTGAGCTTGGtaa.....	2
.....aATCGGATCCGCTCTGAGCTTGGa.....	2
.....TCGGATCCGCTCTGAGCTTGGCTaac.....	2
.....TCGGATCCGCTCTGAGCTTGGtaT.....	2
.....TCGGATCCGCTCTGAGCTTGGcc.....	2
.....TCGGATCCGCTCTGAGCTTGGc.....	2
.....TCGGATCCGCTCTGAGCTTGGCTaaaT.....	2
.....TCGGATCCGCTCTGtAGCTTGGCT.....	2
.....TCGGATCCGCTCTGAGCTTtGgT.....	2
.....CTGAAGCTCAGAGGGCTCTGaa.....	2
.....ATCGGATCCGCTCTGAGCTTGGCTaa.....	2
.....tTGAAGCTCAGAGGGCTCTGAT.....	2
.....ATCGGATCCGCTCTGAGCTTGGCTtaa.....	2

mmu-mir-128(mmu-mir-128-1)

GTGGATTGCGGGCCGTAGCACTGTCTGAGAGGTTTACATTTCTCACAGTGAACCGGTCTCTTTTCAGC

(((((.....(((((((.....(((((((.....(((((((.....))))))))))))))))))))))..))))))))))..)))))))))) (-29.70)

*****TCACAGTGAACCGGTCTCTTT*****	
.....TCACAGTGAACCGGTCTCTTT.....	31*
.....TCACAGTGAACCGGTCTCTTT.....	13
.....TCACAGTGAACCGGTCTCTT.....	4
.....TCACAGTGAACCGGTCTCTTTT.....	3

.....TCACAGTGAACCGGTCTCTTTa.....	6
.....TCACAGTGAACCGGTCTCTTTaT.....	3
.....TCACAGTGAACCGGTCTaCTTT.....	3
.....aTCACAGTGAACCGGTCTCTT.....	2

.....TCACAGTGAACCGGTCTCTTTTaa..... 2
TCACAGTGAACCGGTCTCTTTa..... 2

```

mmu-mir-129-3p(mmu-mir-129-2)
TGCCTTTTCGCGAATCTTTTTGCGGTCTGGGCTTGCTGTACATAACTCAATAGCCGGAAGCCCTTACCCCAAAAAGCATTGCGGGAGGGCG
.((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****AAGCCCTTACCCCAAAAAGCAT*****
.....CTTTTTGCGGTCTGGGCTTGC..... 3

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mmu-mir-129-5p(mmu-mir-129-2)
TGCCCTTTGCGGAATCTTTTTCGGGTCTGGGCTGTGACATAACTCAATAGCCGGAAGCCCTTACCCCAAAAAGCATTGCGGAGGGCG
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
)))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))) (-48.20)
*****CTTTTTCGGGTCTGGGCTTGC*****
.....CTTTTTCGGGTCTGGGCTTGC..... 3*
-----
.....aAGCCCTTACCCCAAAAAGCAT..... 2

```

.....	.CAGTGAATGTTAAAAGGGCAc..	66
.....	..CAGTGAATGTTAAAAGGGCAa..	46
.....	..CAGTGAATGTTAAAAGGGCAtt.	36
.....	..CAGTGAATGTTAAA- GGGCAT..	30
.....	..CAGTGAATGTTAAAAGGGCtAT.	19
.....	..CAGTGAATGTTAAAAGGGCATa.	18
.....	..tAGTGAATGTTAAAAGGGCAT..	17
.....	..CAGTGAATGTTAAAAGGGCAcT.	17
.....	..CAGTGAATGTTAAAaAGGGCAT.	16
.....	..aCAGTGAATGTTAAAAGGGCAT..	13
.....	..CAGTGAATGTTAAAAGGGCAtta.	11
.....	..CNGTGAATGTTAAAAGGGCAa..	7
.....	..CAGTGAATGTTAAA- GG- CAT..	7
.....	..CAGTGAATGTTAAAAGGGCATaa.	7
.....	..ctAGTGAATGTTAAAAGGGCAT..	7
.....	..CAGTGAATGTTAAA- GGGCA..	7
.....	..CNGTGAATGTTAAAAGGGCAc..	7
.....	..CAGTGAATGTTAAAAGGGCtaC.	6
.....	..CAGTGAATGTTAAAAGGGCAca.	5
.....	..CAGTGAATGTTAAAAGGGCgT..	5
.....	..CAGTGAATGTTAAAAGGGCta..	5
.....	..CAGTGAATGTTAAAAGGGtCAT.	4
.....	..CAGTGAATGTTAAA- GGGcTAT.	4

. CgGTGCAATGTTAAAAGGGCAT . . 4
CAGTGAATGTTAAAAGGGCATtaa 4
CNGTGAATGTTAAAAGGGCATa. 4
CNGTGAATGTTAAAAGGGCATt. 4
CNGTGAATGTTAAAaGGGCAT. 3
 aCAGTGAATGTTAAAaGGGCAT. 3
tAGTGAATGTTAAAAGGGA. . 3
CAGTGAATGTTAAAaGGGCac. 3
tAGTGAATGTTAAA- GGGCAT. . 3
 aCAGTGAATGTTAAAAGGGCA. . 3
CAGTGAATGTTAAAAGG- CAT. . 3
 aCAGTGAATGTTAAAAGGgTCAT. 3
CAGTGAATaTAAAAGGGCAT. . 2
CAGTGAATGTTAAA- GGCAa. . 2
CAGTGAATGTTAAA- GGctAT. . 2
CAGTGAATGTTAAAAGGctAT. . 2
CAGTGAATGTTAAA- GGcaA. . 2
 aCAGTGAATGTTAAAAGGGCAa. . 2
CAGTaCAATGTTAAAAGGGCAT. 2
CAGTGAATGTTAAAaGGCAT. . 2
CAGTGAATGTTAAAAGGGCTaA. 2
 ctAGTGAATGTTAAAAGGGCA. . 2
 aCAGTGAATGTTAAAaGGGCac. 2
CAGTGAATGTTAAA- GGCTA. . 2
CAGTGAATGTTAAAAGGGCAaTt 2
CAGTGAATGTTAAAAGGGCA. . 2
CAGTGAATGTTAAAAGGGaCtAT 2
CAGTGAATGTTAAAAGG- CA. . 2
 AcgAGTGAATGTTAAA- GGGA. . 2
CAGTGAATGTTAAAAGGGCAT. . 2
tGTGAATGTTAAAAGGGCAT. . 2
CAGTGAATGTTAAAAGGGCTATT 2
tAGTGAATGTTAAAAGGGCAa. . 2
CAGTGCA- TGTTAAA- GGGCAT. . 2

	CAGTGAATGATGAAAGGGCAT	92 *
	CAGTGAATGATGAAAGGGCAT	
	CAGTGAATGATGAAAGGGCA	11
..ACTCTTCCCTGTTGCACTACT		7
	CNGTGAATGATGAAAGGGCAT	7
	CNGTGAATGATGAAAGGGCA	4
..ACTCTTCCCTGTTGCACTAC		3

.....tAGTGCAATGATGAAAGGGCAT.....	10
.....CAGTGCAATGATGAAAGGGCAtt.....	9
.....CAGTGCAATGATGAAAGGGCAa.....	7
.....aCAGTGCAATGATGAAAGGGGCAT.....	4
.....CNGTGCAATGATGAAAGGGCAa.....	4
.....CAGTGCAATGATGAAAGGGGCac.....	4
.....CAGTGCAATGATGAAAGGGGCATaa.....	4
.....CAGTGCAATGATGAAAaGGGCAT.....	3
.....CAGTGCAATGATGAAAGGGCtAT.....	3
.....CAGTGCAATGATGAAAaGGCAtt.....	2
.....CAGTGCAATGATGAAAGGGGCATa.....	2
.....CNGTGCAATGATGAAAGGGGCAtt.....	2
.....CAGTGCAATGATGAAAGGGGcgT.....	2
.....CAGTGCAATGATGAAAGGGGCTa.....	2

GGGCAACCGTGGCTTTCGATTGTTACTGTGGGAACCGGAGGTAACAGTCTACAGCCATGGTCGCCC
(((.....(((((((.....(((((((.....((((.....)))))))).....))))))))))))) (-37..30)
*****TAACAGTCTACAGCCATGGTCGCCC

.....TAACAGTCTACAGCCATGGTCGa... 2

GCTAAAGCTGGTAAAATGGAACCAAATCGCCTCTTCAATGGATTTGGTCCCCTTCAACCAGCTGTAGC

Supplemental Figure S1
 ((((((.....(((.....))))))))) (-27.80)
 *****TTTGGTCCCTTCAACCAGCTG*****

*****TTTGGTCCCCTTCAACCAGCTG*****

* * * * *

.....	TGTGACTGGTTGACCAGAGGGGt.....	39
.....	TGTGACTGGTTGACCAGAGGGt.....	12
.....	TGTGACTGGTTGACCAGAGGGa.....	10
.....	TGTGACTGGTTGACCAGtAGGGG.....	5
.....	TtTGACTGGTTGACCAGAGGGG.....	5
.....	TGTGACTGGTTGACCAGAGGGGttaa.....	5
.....	TGTGACTGGTTGACCAGAGGGaat.....	4
.....	TttTGACTGGTTGACCAGAGGGGt.....	3
.....	TGTGACTGGTTGACCAGAGGGGg.....	3
.....	TGTGACTGGTTGACCAGAGGGGtt.....	3
.....	TGTGACTGGTTGACCAGAGGGGaat.....	3
.....	TGTGACTGGTTGACCAGAGGGGaaa.....	3
.....	aTGTGACTGGTTGACCAGAGGGG.....	3
.....	TGTGACTGGTTGACCAGAGGGGaa.....	3
.....	aTGTGACTGGTTGACCAGAGGGGt.....	2
.....	TGTGACTGGTTGACCAGAGGGGat.....	2
.....	aTGTGACTGGTTGACCAGAGGG.....	2
.....	TGTGACTGGTTGACCAGtAGGGGt.....	2
.....	TGTGACTGGTTGACCAGAGGGtt.....	2
.....	TGTGACTGGTTGACCA-AGGGG.....	2
.....	TGTGACTGaTTGACCAGAGGGG.....	2
.....	CTGTGGGCCACCTAGTCACctAA.....	2
.....	TGTGACTGGTTGACCAGAGGaGt.....	2

.....TATGGCTTTTATTCTATGTGA..... 1*

:(((.....((((((.....(((.(((((((((((((((((.(((((((((((((((((.))..)))))))))))))))))))))))))))))).)))...)))))....))

Supplemental Figure S1

(-34.80)

*****TATGGCTTTTATTCTATGTGA*****
TATGGCTTTTATTCTATGTGA..... 1*

mmu-mir-135b(mmu-mir-135b)

CGCTCTGCTGTGGCCATATGGCTTTTCATTCCATATGTGATTGCTGCTCCGAACATCATGTAGGGCTAAAGCCATGGGCTACAGTGAGGGGCAAGCTCC
 .((((((((((((((((((((((((((((((((((...((((((((((((...(...)...)))))))))...)))))))))...))))).))))....

(-49.70)

*****TATGGCTTTTCATTTCCTATGTGA*****
TATGGCTTTTCATTTCCTATGTGA..... 2*

mmu-mir-136(mmu-mir-136)

GAGGACTCCATTGTGTTTGATGATGGATTCTTAAGCTCCATCATCGTCTCAAATGAGTCTTC
(((((((.(((((((...((((((((((((.....))))))))))...))))))))))))) (-28.40)

[illegible]

...aACTCCATTGTGTTTGATGATGGA...	52
...ACTCCATTGTGTTTGATGATGGTA...	42
...ACTCCATTGTGTTT-GATGATGGA...	35
...ACTCCATTGTGTTTGATGATGAa...	21
...ACTCCATT-GTTT-GATGATGGA...	14
...ACTCCATTGTGTTTGATGATGGAa...	12
...ACTCCATT-GTTTGATGATGGA...	7
...ACTCCATTGTGTTTGATGtATGGA...	7
...ACTCCATTGTGTTTGATGATGa...	7
...ACTCCaATTGTGTTTGATGATGGA...	6
...ACTCCAcTTGTTTGATGATGGA...	6
...cCTCCATTGTGTTTGATGATGGA...	6
...CTCCATTGTGTTTGATGATGGTA...	6
...AtTCATTGTGTTTGATGATGGA...	5
...ACTCCATTGTGTTTtGATGATGGA...	5
..aACTCCATTGTGTTTGATGATGG...	5
...gCTCCATTGTGTTTGATGATGGA...	5
...ACTCCATTGTGTTTcGATGATGGA...	5
..aACTCCATTGTGTTTGATGATGGAa...	4
...tCTCCATTGTGTTTGATGATGGA...	4
...ACTaCATTGTGTTTGATGATGGA...	4
..aACTCCATTGTGTTTtGATGATGGA...	4
...ACTCCATTGTGTTT-GATGATGG...	4
..aACTCCATTGTGTTT-GATGATGGA...	4
...ACTCCATTcGTTTGATGATGGA...	4
...ACTCCATTGTGTTcTGATGATGGA...	3
..aACTCCATTGTGTTTGATGATGGA...	3
...ACTCCATTGTGTTT-GATGATGGTA...	3
...ACTCCATTGTGTTTcGATGATGGA...	3
...ACTCCATTtGTTTGATGATGGA...	3
...ACTCCATTaTTTTGATGATGGA...	3
...ACTCCATTGTGTTTGATGATGGg...	3
...ACTCCATTGTGTTTGATGATaGA...	3
...CTaCCATTGTGTTTGATGATGGTA...	2
...ACTCCATTGTGTTTGATGATGtAa...	2
...ACTCCATTGTGTTTGATGATGGt...	2
...ACTCCATT-GTTT-GATGATGG...	2
...ACTCCaATTGTGTTTGATGATGGTA...	2
...ACTCCATTaTTTTGATGATGG...	2
...CTCCATT-GTTT-GATGATGGA...	2

Supplemental Figure S1

... aACTCCcATTTtGTTTTGATGATGGA.....	2
... .ACTCCATTTGcTTTGATGATGGA.....	2
... .ACTCCaATTTGTTTTGATGATGGA.....	2
... .ACTCCATTTGTTT -GATtGATGGA.....	2
... .ACTCCATTTGTTTTaATGATGGA.....	2
... aACTCCATTTGTTTTGATGATGGtA.....	2
... .ACTCcGTTTTGTTTTGATGATGGA.....	2
... .ACTCCATTTaGTTTTGATGATGGA.....	2
... .CTCCATTTGTTTTGATGATGGAA.....	2
... .ACTCCATTTGTTTTGATGAtGG.....	2
... .CTCCATTTGTTT -GATGATGGAT.....	2
... .CTCCATTTGTTT -GATGATGGA.....	2
... .ACTCCATTTGTTTTGATGATGGtAa.....	2
... .ACTCCATTTGTTTTGATGATGcA.....	2
... aACTCCATtGTTTTGATGATGGA.....	2
... .ACTCCATTTGTTTTGATaGATGGA.....	2
... .ACTCCATTTGTTTTGATaATGGA.....	2

```
mmu-mir-137(mmu-mir-137)
CTTCGGGTGACGGGTATTTCTTGGGTGGATAATACGGATTACGTTGTTATTGCTTAAGAATACGCGTAGTCGAGG
(((((...(((.(.....))))))))).....)))))).....))))))..))....)))))) (-32..40)
*****TTATTGCTTAAGAATACGCGTAG*****
.....TTATTGCTTAAGAATACGCGTAG.....6*
.....TTAAGAATACGCGTAG.....4
.....CTTAAGAATACGCGTAG.....2
```

```
mmu-mir-138(mmu-mir-138-1)
CTCTAGCATGGTGTGTGGGACAGCTGGTGTGTGAATCAGGCCGTTGCCAATCAGAGAACGGCTACTTCACAACACCAAGGCCACACTGCACTGCAAG
.....(((.(.(((.((((.(.((((((((((((.(.((((((.(.((((((.(.((((((.(.((((((.(.((((((.(.((((((.(.((((((.(.((((((.(.
(-45.60)
*****AGCTGGTGTGTGAATCAGGCCG*****
.....AGCTGGTGTGTGAATCAGGCCG.....
```

```
mmu-mir-138(mmu-mir-138-2)
CAGCTGGTGTGTGTAATCAGGCCGACGAGCAGCGCATCTCTTACCCGGCTATTTACGACACCAGGGTTG
...(((((((((((((((...(((((.(((.(.....))))))...))))))...))))))... (-30..40)
*AGCTGGTGTGTGTAATCAGGCCG*****
..AGCTGGTGTGTGTAATCAGGCCG..... 2*
```

```
mmu-mir-139-3p(mmu-mir-139)
GTGATTCTACAGTGCACGTGTCTCCAGTGTGGCTCGGAGGCTGGAGACGCGGCCCTGTTGGAGTAAC
...(((((((((((.(.(((((((((((((((.)))))))))..)))).))))).)).. (-34.90)
*****TGGAGACGCGGCCCTGTTGGAG*****
.....TCTACAGTGCACGTGTCTCCAGT..... 11
.....TGGAGACGCGGCCCTGTTGGAGT.... 5
.....TCTACAGTGCACGTGTCTCCAG..... 2
.....TGGAGACGCGGCCCTGTTGG..... 1
```

```
mmu-mir-139-5p(mmu-mir-139)
GTGATTCTACAGTGCACGTGTCTCCAGTGTGGCTCGGAGGCTGGAGACGCGGCCCTGTTGGAGTAAC
...(((((((((((.(.(((((((((((((((.)))))))))..)))).))))).)).. (-34.90)
*****TCTACAGTGCACGTGTCTCCAG*****
.....TCTACAGTGCACGTGTCTCCAGT..... 11
.....TGAGACGCGGCCCTGTTGGAGT.... 5
.....TCTACAGTGCACGTGTCTCCAG..... 2*
.....TGAGACGCGGCCCTGTTGG..... 1
-----
.....TCTACAGTGCACGTGTCTCa..... 4
.....aTCTACAGTGCACGTGTCTCCAGT..... 2
.....TGAGACGCGGCCCTGTTGGAg..... 2
```

mmu-mir-140(mmu-mir-140)

```
mmu-mir-142-3p(mmu-mir-142)
ACCCATAAAGTAGAAGCACTACTAACAGCACTGGAGGGTGTAGTGTTTCCTACTTTATGGATG
..(((((((((((.((((((((((...((....)..)))))))))))).))))))))))... (-27..50)
```

```
mmu-mir-142-5p(mmu-mir-142)
ACCCATAAAGTAGAAGCACTACTAACAGCACTGGAGGGTGTAGTGTTTCCTACTTTATGGATG
..(((((((((((.((((((((((...((....)..)))))(((((((.)))))))))... (-27,50)
```

Page 28

..CATAAAGTAGAAAGCACTACT..	..TGTAAGTGTTCCTACTTTATGGA..	3
..CATAAAGTAGAAAGCACTACT..	..TTCCTACTTTATGGA..	2*
ACCCATAAAGTAGAAAGCACT..		1
..CCCATAAAGTAGAAAGCACTA..		1
..CATAAAGTAGAAAGCACTACTA..	..TTTCCTACTTTATGGA..	1
	..GTAGTGTTCCTACTTTATGG..	1
	..TTCCTACTTTATGG..	1
	..TGTAAGTGTTCCTACTTTATGGTA..	3
	..tTAGTGTTCCTACTTTATGGA..	2
	..TGTAAGTGTTCCTACTTTATGGT..	2
	..TGTAAGTGTTCCTACTTTATGa..	2
	..GTAGTGTTCCTACTTTATGGTA..	2
..CATAAAGTAGAAAGCACTACTAt..		2
	..TtTAGTGTTCCTACTTTATGGA..	2
tCCATAAAGTAGAAAGCACTAa..		2

```

CCTGAGGTGCAGTGCATCTCTGGTCAGTTGGGAGTCTGAGATGAAGCACTGTAGCTCAGG
(((((((f((((((((((f(((((((f(((((. . . . .))) .)) .)))) .)))) .)))) .)))) (-36..60)
*****TGAGATGAAGCACTGTAGCTC***
. TGAGATGAAGCACTGTAGCTC . . . . . 408*
. TGAGATGAAGCACTGTAGCT . . . . . 176
. TGAGATGAAGCACTGTAGCTCA . . . . . 28
. TGAGATGAAGCACTGTAGC . . . . . 26
. CTGAGATGAAGCACTGTAGCTC . . . . . 7

```

.....	TGAGATGAAGCACTGTAGCTCt...	60
.....	aTGAGATGAAGCACTGTAGCTC...	28
.....	TGAGATGAAGCACTGTAGCTt...	9
.....	TGAGATGAAGCACTGTAGtCT...	8
.....	aTGAGATGAAGCACTGTAGCT...	7
.....	TGAGATGAAGCACTGTAGCTa...	5
.....	TtAGATGAAGCACTGTAGCTC...	5
.....	TGAGATaGAAGCACTGTAGCTC...	4
.....	TGAGATGAAGCACTGTAGCTct...	4
.....	TGAGATGAAGCACTGTAGCTcT...	4
.....	TGAGATGAAGCACTGTAGCTaC...	4
.....	TGAGATGAAGCACTGTAG-TC...	4
.....	TGAGATGAAGCACTGTAGCTCat...	3
.....	TGAGATGAaAGCACTGTAGCTC...	3
.....	TGAGATGAAGCACTGTAGCTtC...	3
.....	aTGAGATGAAGCACTGTAGC...	3
.....	TGAGATGAAGCACTGTAGtCTC...	3
.....	TGAGATGAAGCACTGTAGtT...	2
.....	TGAGATGAAGCACTtGTAGCT...	2
.....	TaAGATGAAGCACTGTAGCTC...	2
.....	TGAGATGAAGCACTGTAGCTCa...	2
.....	TtAGATGAAGCACTGTAGCT...	2
.....	TGAGATGAAGCtACTGTAGCTC...	2
.....	TGAGATGAAGCACTaTAGCTC...	2
.....	TGAGATGAAGCACTGTAGCa...	2
.....	TGAGATGAAGCACTGcAGCTC...	2
.....	TGAGATGAAGCACTGTAACT...	2
.....	TGAGATaGAAGCACTGTAGCTcT...	2
.....	TGAGATGAAGCACTGTAGctaCT...	2
.....	TGAGATGAAGCACTGTAGCcC...	2
.....	aTGAGATGAAGCACTGTAGCTcT...	2
.....	TGAGATGAAGCACTGTAGCTCd...	2

GGCTGGGATATCATCATATACTGTAAGTTTGTGATGAGACACTACAGTATAGATGATGTACTAGTC
(((((((.((((((((.((((((((.((((((((.(.....)))))).))))))))))))))))))))) (-27.90)
*****TACAGTATAGATGATGTACT*****
.....TACAGTATAGATGATGTACTA.... 19
.....TACAGTATAGATGATGTACT.... 12*
.....TACAGTATAGATGATGTACT.... 2

.....TACAGTATAGATGATGTACTt.... 3

Supplemental Figure S1

Supplemental Figure S1

.....TCAGTGCATGACAGAACTTGGGt.....	3
.....TCAGTGCATGACAGAACTTGGa.....	3
.....TCAGTGCATGactAGAACTTGG.....	2

```

mmu-mir-153(mmu-mir-153)
CGGTGTCATTTTTGTGACGTTGCAGCTAGTAATATGAGCCAGTTGCATAGTCACAAAAGTGATCATTG
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****TTGCATAGTCACAAAAGTGATC****
TTGCATAGTCACAAAAGTGATCAT... 5

```

```
mmu-mir-154(mmu-mir-154)
GAAGATAGGTTATCGGTGTTGCCITTCGCTTATTTCGTACGAATCATACACGGTTGACCTATTTTT
(((((((((((((((((((((.....)))))))))..))))))..))))))..))))))..))))))
*****TAGGTTATCGGTGTTGCCITTCG*****
```

..TAGGTTATCCGTGTTGCCTTCG	..AATCATACACGGTTGACCTATT	117
..TAGGTTATCCGTGTTGCCTTCG	..AATCATACACGGTTGACCTAT	36*
..ATAGGTTATCCGTGTTGCCTTCG	..ATCATACACGGTTGACCTATT	20
..TAGGTTATCCGTGTTGCCTTCG	..ATCATACACGGTTGACCTATT	15
..ATAGGTTATCCGTGTTGCCTTCG	..AATCATACACGGTTGACCTATT	8
..TAGGTTATCCGTGTTGCCTTCG	..ATCATACACGGTTGACCTAT	3
..ATAGGTTATCCGTGTTGCCTTCG		2
..TAGGTTATCCGTGTTGCCTTCG		2

```

.....aATCATACACGGTTGACCTATT... 16
.....AATCATACACGGTTGACCTAaT... 4
.....tATCATACACGGTTGACCTATT... 3
.....AATCATACACGGTTGACCTAa... 3
...TAGGTTATCCGTGTTGCCTTCGa... 3
...TAGGTTATCCGTGTTGCCTTa... 2
...AATCATACACGGTTGACCTATTa... 2
...TAGGTTATCCGTGTTGCCTTCa... 2

```

```
mmu-mir-155(mmu-mir-155)
CTGTTTAATGCTAATTGTGATAGGGGTTTTGGCCCTGACTGACTCCTACCTGTTAGCATTAAACAG
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
**TTAATGCTAATTGTGATAGGGGT*****(-27.30)
...TTAATGCTAATTGTGATAGGGGT.....4*
...TTAATGCTAATTGTGATAGGGGTT.....3
```

```

mmu-mir-15a(mmu-mir-15a)
CCCTTGGAGTAAAGTAGCAGCACATAATGGTTTGTGGATGTTGAAAGGTGCAGGCCATACTGTGCTGCCTCAAAATACAAGGA
.(((((((.....{.((((((((((((((((.....{.....})))))))))))).)))))))). (-31..22)
*****TAGCAGCACATAATGGTTTGTG*****
.....TAGCAGCACATAATGGTTTGTG..... 57*
.....TAGCAGCACATAATGGTTTGT..... 18
-----
.....TAGCAGCACATAATGGTTTGTt..... 4
.....tGAGCACATAATGGTTTGTG..... 4
.....TAGCAGCACATAATGGTTTGta..... 4
.....aTAGCAGCACATAATGGTTTGTG..... 3
.....TAGCAGCACATAATGGTTTGTtG..... 3
.....TAGCAGCACATAATGGTTTGTt..... 2
.....TAGCAGCACATAATGGTTTGTGa..... 2

```

Supplemental Figure S1

... tGCAGCACATCATGGTTTAC . . .	7
... TAGCAGCACATCATGGTTTAA . . .	6
... TgGCAGCACATCATGGTTTACA . . .	3
... TAGCAGCACATCATGGTT-AC . . .	3
... aTgGCAGCACATCATGGTTTACA . . .	2
... TAGCAGCACATCATGGTTTACAa . . .	2
... aTAGCAGCACATCATGGTTTACA . . .	2
... TAGaCAGCACATCATGGTTTAC . . .	2
... TAGCAGCACATCATGGTTTAtA . . .	2
... aTAGCAGCACATCATGGTTTAC . . .	2

```

mmu-mir-16(mmu-mir-16-1)
ATGTCAGCGGTGCGCTAGCAGCACGTAATATTGGCGTTAAGATTCTGAAATTACCTCCAGTATTGACTGTGCTGCTGAAGTAAGGTTGGCAA
.(((((((.(((.(((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****TAGCAGCACGTAATATTGGCG*****
.....TAGCAGCACGTAATATTGGCG.....334*
.....TAGCAGCACGTAATATTGGCGT.....71
.....TAGCAGCACGTAATATTGGC.....17
.....TAGCAGCACGTAATATTGGCGTT.....4
.....AGCAGCACGTAATATTGGCG.....1

```

.....tGCAGCACGTAAATATTGGCG.....	79
.....TAGCAGCACGTAAATATTGGtCG.....	38
.....TAGCAGCACGTAAATATTGGCa.....	28
.....TAGCAGCACGTAAATATTGGCGa.....	24
.....aTAGCAGCACGTAAATATTGGCG.....	17
.....tGCAGCACGTAAATATTGGCGT.....	15
.....TAGCAGCACGTAAATATTGaCG.....	8
.....TgGCAGCACGTAAATATTGGCG.....	8
.....TcGCAGCACGTAAATATTGGCG.....	7
.....CAGCAGCACGTAAATATTGGCG.....	7
.....TAGCAGCACGTAA-TATTGGCG.....	6
.....tGCAGCACGTAAATATTGGC.....	5
.....aTAGCAGCACGTAAATATTGGCGT.....	5
.....TAGaCAGCACGTAAATATTGGCG.....	4
.....tGCAGCACGTAAATATTGGCa.....	4
.....TAGCAGCACGTAAATATTGGtCGT.....	4
.....TT-GCAGCACGTAAATATTGGCG.....	4
.....TAGCAaCAGGTAAATATTGGCG.....	4
.....TAGCAGCACGTAA-TATTGGCGT.....	3
.....aTAGCAGCACGTAAATATTGGC.....	3
.....TAGCAGCACGTAAATATTGGtG.....	3
.....TAGCAGCACGTAAATATTGGCGg.....	3
.....TAGCAGCACGTAAATATTGGCGaT.....	3
.....TAGCAGCACGTAAATATTGGaCG.....	3
.....tGCAGCACGTAAATATTGGCGa.....	3
.....TAGCAGCACaTAAATATTGGCG.....	3
.....TAGCAGCACGTAAATATTtGGCG.....	3
.....aAGCAGCACGTAAATATTGGCG.....	3
.....TcGCAGCACGTAAATATTGGCGT.....	2
.....TAGCgGCAGGTAAATATTGGCG.....	2
.....tGCAGCACaTAAATATTGGCG.....	2
.....TAGCAGCACGTAgATATTGGCGT.....	2
.....TgGCAGCACGTAAATATTGGCGT.....	2
.....TAGCAGCACGTAAATATTGGtCaCGT.....	2
.....aaTAGCAGCACGTAAATATTGGCG.....	2
.....TAGCAGCACGTAAATATTaGGT.....	2
.....TaAAGCACGTAAATATTGGCG.....	2
.....TAGCAGCACGTAAATATTcGGCG.....	2
.....TAGCAGCACGTAAATATTG-CG.....	2
.....aAtCAGCACGTAAATATTGGCG.....	2
.....TAGCAGCACGTAAATATTGGtCa.....	2
.....TAGaCAGCACGTAA-TATTGGCG.....	2
.....TAGCAGCACGTAAATATTGGtCa.....	2
.....TAGCAaCAGGTAAATATTGGC.....	2
.....TggaCAGCACGTAAATATTGGCG.....	2
.....TaAGCAGCACGTAAATATTGGCGT.....	2

*****TAGCAGCACGTAATATTGGCG*****	
.....TAGCAGCACGTAATATTGGCG.....	334*
.....TAGCAGCACGTAATATTGGCGT.....	71
.....TAGCAGCACGTAATATTGGC.....	17
.....AGCAGCACGTAATATTGGCG.....	1

.....TAGCAGCACGTAATATTGGCGaA.....	2
.....TAGCAGCACGTAATATTGGC-TA.....	2

*****CAAAGTGCTTACAGTGCAGGTAG*****	
.....CAAAGTGCTTACAGTGCAGGTAG.....	220*
.....ACTGCAGTGAGGGCACTTGTAG.....	71
.....CAAAGTGCTTACAGTGCAGGTAGT.....	56
.....ACTGCAGTGAGGGCACTTGTAGC.....	50
.....CAAAGTGCTTACAGTGCAGGTA.....	10
.....CTGCAGTGAGGGCACTTGTAG.....	6
.....TTACAGTGCAGGTAG.....	6
.....CAAAGTGCTTACAGTGCAGGT.....	5
.....CTTACAGTGCAGGTAG.....	5
.....CTTACAGTGCAGGTAGT.....	3
.....AAAGTGCTTACAGTGCAGGTAG.....	2
.....CAAAGTGCTTANAGTGCAGGTAG.....	2
.....CTGCAGTGAGGGCACTTGTAGC.....	2
.....NAAAGTGCTTANAGTGCAGGTAG.....	2
.....TCAAAGTGCTTACAGTGCAGGTAG.....	2

CAAAGTGCTTACAGTGCAGGTAA	23
CAAAGTGCTTACAGTGCAGGTAGa	23
aACTGCAGTGAGGGGCACCTTGTA	9
ACTGCAGTGAGGGGCACCTTGTAgt	8
ACTGCAGTGAGGGGCACCTGTAA	7
CAAAGTGCTTACAGTGCAGGTAt	7
aCAAAGTGCTTACAGTGCAGGTAG	6
CAAGTGCTTACAGTGCAGGTAG	5
aACTGCAGTGAGGGGCACCTGTAGC	4
tAAAGTGCTTACAGTGCAGGTAG	4
CAAAGTGCTTACAGTGCAGGTAGTAa	4
CAAAGTGCTTACAGTGCTAGGTAG	3
aCAAAGTGCTTACAGTGCAGGTAGT	3
ACTGCAGTGAGaGCACCTTGTA	3
ACTGCAGTGAGGGGCACCTTGTAgt	3
aACTGCAGTGAGGGGCACCTGTAGt	3
CAAAGTGCTTACAGTGCAGGTtAG	3
ACTGCAGTGAGGGGCACCTGTtAG	3
CAAAGTGCTTACAGTGCAGGTAAg	2
ACTGCAGTGAGGGGCACCTTGTA	2
aACTGCAGTGAGGGGCACCTGTAA	2
CAAAGTGCTTACAGTGCAGGTAAa	2
CAAAGTGCTTACAGTGCAGGaAa	2
CgAAGTGCTTACAGTGCAGGTAG	2
CAAAGTGCTTACAGTGCAaGTAG	2
CAAAGTGCTTActAGTGCAGGTAG	2
tAAAGTGCTTACAGTGCAGGTAGT	2
tAAAGTGCTTACAGTGCAGGTAGa	2
tAAAGTGCTTACAGTGCAGGTA	2
CAAAGTaGCTTACAGTGCAGGTAG	2
CAAAGTGCTTACAGTGCAGGTAA	2
AtTGCAGTGAGGGGCACCTGTAG	2
CAAAGTGCTTACAGTGCTAGGTAGa	2

*****AACATTCAACGCTGTCGGTGAGT*****	
.....AACATTCAACGCTGTCGGTGAGT.....	49*
.....AACATTCAACGCTGTCGGTGAGTTT.....	25
.....AACATTCAACGCTGTCGGTGAGTT.....	18
.....AACATTCAACGCTGTCGGTGAG.....	15

Page 36

[illegible]

Supplemental Figure S1

.....TTTGGCAATGGTAGAACTCACACCGa..... 2
TTTGGCAATGGTAGAACTCACTAC..... 2

 mmu-mir-183(mmu-mir-183)
 CTGTGTATGGCACTGGTAGAATTCAGTGTGAACAGTCTCAGTCAGTGAATTACCGAAGGGCCATAAACAG
 ((((((.....)))))).....) (-26.90)
 *****TATGGCACTGGTAGAATTCAGT*****
TATGGCACTGGTAGAATTCAGT..... 51*
ATGGCACTGGTAGAATTCAGT..... 11
TATGGCACTGGTAGAATTCAGTG..... 9
TNTGGCACTGGTAGAATTCAGT..... 7
ATGGCACTGGTAGAATTCAGTG..... 6
ATGGCACTGGTAGAATTCAGTGT..... 4
TATGGCACTGGTAGAATTCAC..... 4
TGAATTACCGAAGGGCCATAAA..... 4
TATGGCACTGGTAGAATTCAGTGT..... 2

TtTGGCACTGGTAGAATTCAGT..... 3
aTATGGCACTGGTAGAATTCAGT..... 3
ctTGGCACTGGTAGAATTCAGT..... 2
ATGGCACTGGTAGAATTCAGTga..... 2
TATGGCACTGGTAGAATTCAGTt..... 2

mmu-mir-184(mmu-mir-184)
 CCTTTCCTTATCACTTTTCCAGCCAGCTTTGTGACTCTAAGTGTTGGACGGAGAAGTGAAGGGTAGG
 ((((((.....)))))).....) (-28.90)
 *****TGGACGGAGAAGTGAAGGGT***
TGGACGGAGAAGTGAAGGGT..... 5*

 mmu-mir-185(mmu-mir-185)
 AGGGATTGGAGAGAAAGGCAGTTCCTGATGGTCCCCTCCCAGGGCTGGCTTTCCTCTGGTCCCT
 ((((((.....)))))).....) (-38.00)
 *****TGGAGAGAAAGGCAGTTCCTGA*****
TGGAGAGAAAGGCAGTTCCTGA..... 30*
TGGAGAGAAAGGCAGTTCCTGAT..... 3

TGGAGAGAAAGGCAGTTCCTGAa..... 7
TGGAGAGAAAGGCAGTTCCTGAaa..... 5
aTGGAGAGAAAGGCAGTTCCTGA..... 3
TGGAGcGAAAGGCAGTTCCTGAaTaa..... 2
TGGAGAGAA-GGCAGTTCCTGAT..... 2
TGGAGAGAAAGGCAGTTCca..... 2

mmu-mir-186(mmu-mir-186)
 ACTTCCAAAGAATTCCTTTTGGGCTTCTCATTTTATTTAAGCCCTAAGGTGAATTTTGGGAAGT
 ((((((.....)))))).....) (-33.44)
 *****CAAAGAATTCCTTTTGGGCT*****
CAAAGAATTCCTTTTGGGCT..... 10
CAAAGAATTCCTTTTGGGCT..... 7*
GCCCTAAGGTGAATTTTGGG..... 2

 mmu-mir-187(mmu-mir-187)
 TCAGGCTACAACACAGGACCCGGGCGCTGCTTGACCCCTCGTGTCTGTGTGTCAGCCGG
 ...(((.....))).....) (-28.90)
 *****TCGTGTCTGTGTGTCAGCCGG
CTGTGTGTCAGCCGG. 2
TCGTGTCTGTGTGTCAGCCGG. 2*

 mmu-mir-188-3p(mmu-mir-188)
 TCTCACATCCCTTGCATGGTGGAGGGTGAGCTCTCTGAAAACCCCTCCACATGCAGGGTTTGCAGGA
 ((((((.....)))))).....) (-30.30)
 *****CTCCACATGCAGGGTTTGCAGGA***
CATCCCTTGCATGGTGGAGGGT..... 2
CTCCACATGCAGGGTTTGCAGGA..... 2*

Supplemental Figure S1

```

-----
mmu-mir-188-5p(mmu-mir-188)
TCTCACATCCCTTGCATGGTGGAGGGTGAGCTCTCTGAAAACCCCTCCACATGCAGGGTTTGCAGGA
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****CATCCCTTGCATGGTGGAGGG*****
.....CATCCCTTGCATGGTGGAGGGT..... 2
.....CTCCACATGCAGGGTTTGA.... 2
-----
.....CATCCCTTGCATGGTGGAGGGaa..... 3
.....CATCCCTTGCATGGTGGAGGGTt..... 2
.....CATCCCTTGCATGGTGGAGGGTa..... 2
.....CATCCCTTGCATGGTGGAGGGa-AG..... 2
-----
mmu-mir-18a(mmu-mir-18a)
TGCGTGCTTTTTGTTCTAAGGTGCATCTAGTGCAGATAGTGAAGTAGACTAGCATCTACTGCCCTAAGTGCTCCTTCTGGCATAAGAAGTTATGTC
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****TAAGGTGCATCTAGTGCAGATAG*****
.....TAAGGTGCATCTAGTGCAGATAG..... 100*
.....TAAGGTGCATCTAGTGCAGAT..... 45
.....TAAGGTGCATCTAGTGCAGATA..... 37
.....TAAGGTGCATCTAGTGCAGA..... 16
.....TAAGGTGCATCTAGTGCAGATAGT..... 10
.....ACTGCCCTAAGTGCTCCTTCTGG..... 3
.....ATCTAGTGCAGATAG..... 2
-----
.....TAAGGTGCATCTAGTGCAGATAa..... 12
.....TAAGGTGCATCTAGTGCAGATAg..... 11
.....TAAGGTGCATCTAGTGCAGATt..... 6
.....TAAGGTGCATCTAGTGCAGATg..... 4
.....aTAAGGTGCATCTAGTGCAGATAG..... 3
.....tTAAGGTGCATCTAGTGCAGAT..... 3
.....TatGGTGCATCTAGTGCAGATAG..... 2
.....tAGGTGCATCTAGTGCAGATA..... 2
.....TAAGGTGaCATCTAGTGCAGATAG..... 2
.....TAAGGTGCATCTAGTGCAGAA..... 2
.....TAAGGTaGCATCTAGTGCAGAT..... 2
.....TAAGGTGCATCTAGcGCAGATA..... 2
.....TAAGGTGCATCTAGTgCAGATAGT..... 2
.....TAAGGTGCATCTAGTGCAGATat..... 2
-----
mmu-mir-18b(mmu-mir-18b)
TCTCTTGTTGTTAAGGTGCATCTAGTGTGTTAGTGAAGCAGCTTACAATCTACTGCCCTAAATGCCCTTCTCGCACAGGCTA
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****TAAGGTGCATCTAGTGTGTTAG*****
-----
mmu-mir-190(mmu-mir-190)
CTGTGTGATATGTTTGATATATTAGGTTGTTATTTAATCCAATATATCAAGCATATTCCTACAG
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****TGATATGTTTGATATATTAGGT*****
.....TGATATGTTTGATATATTAGGT..... 6
.....TGATATGTTTGATATATTAGGT..... 4*
.....TGATATGTTTGATATATTAGG..... 2
.....TTTGATATATTAGGT..... 2
-----
mmu-mir-190b(mmu-mir-190b)
TGCTTCTGTGTGATATGTTTGATATTGGGTTGTTAAATTATGAACCAACTGAATGTCAAGCATACTCTCACAGCAGTAAG
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****TGATATGTTTGATATTGGGTT*****
-----
mmu-mir-191(mmu-mir-191)
AGCGGGCAACGGAATCCCAAAGCAGCTGTTGTCTCCAGAGCATTCCAGCTGCACCTTGGATTTTCCTCCCTGCT
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****CAACGGAATCCCAAAGCAGCTG*****

```

Supplemental Figure S1

Sequence	Count
CAACGGAATCCCAAAAGCAGCT	118
CAACGGAATCCCAAAAGCAGCTG	109*
CAACGGAATCCCAAAAGCAGCTGT	57
CAACGGAATCCCAAAAGCAGC	39
CAACGGAATCCCAAAAGCAG	12
ATCCCAAAAGCAGCTG	11
AACGGAATCCCAAAAGCAGCTG	4
ATCCCAAAAGCAGCTGT	3
AACGGAATCCCAAAAGCAGCT	2
CAACGGAATCCCAAAAGCAGCTGTT	2
TCCCAAAAGCAGCTG	2

CAACGGAATCCCAAAAGCAGCTa	18
CAACGGAATCCCAAA- GCAGCTG	13
tAACGGAATCCCAAAAGCAGCT	9
CAACGGAATCCCAAAAGCAGCTGa	9
CAACGGAATCCCAAA- GCAGCT	9
CAACGGAATCCCAAAAGCAGCTaT	8
aCAACGGAATCCCAAAAGCAGCT	6
CAACGGAATCCCAAAAGCAGCTt	5
CAACGGAATCCCAAAAGCAGCTaa	5
CAACGGAATCCCAAAAGCAGtCT	5
cACGGAATCCCAAAAGCAGCTG	5
CAACGGAATCCCAAAAGCAGCTaG	4
CAACGGAATCCCAAA- GCAGCTGT	4
CAACGGAATCCCAAA- GCAGC	4
CAACaGAATCCCAAAAGCAGCT	4
CAACGGAATCCCAAAAGCAGCTtG	4
cACGGAATCCCAAAAGCAGCTGT	3
ATCCCAAAAGCAGCTaT	3
gAACGGAATCCCAAAAGCAGCT	3
CAACGGAATCC- AAA- GCAGCTG	3
aCAACGGAATCCCAAAAGCAGC	3
CAACGGAATCCCAAAAGCAGCa	3
CAACGGgATCCCAAAAGCAG	2
aCAACGGAATCCCAAAAGCAGCTG	2
ctAACGGAATCCCAAAAGCAGCT	2
CAACGGAATCCCAAA- GCAGtCT	2
caAACGGAATCCCAAAAGCAGCTG	2
acaAACGGAATCCCAAAAGCAGCTG	2
CAACGGAATCCCAAAAGCAGCTtT	2
aCAACGGAATCCCAAAAGCAGCTGT	2
aCAACGGAATCCCAAAAGCAGCTt	2
cACGGAATCCCAAAAGCAGCT	2
CAACGGAATCCCAAA- GCAG	2
ATCCCAAA- GCAGCTG	2
CAACGGAATCCCAAAAGCAGtT	2
ATCCCAAAAGCAGCTa	2
CAACGGAATCCCAAAAGCAGa	2
CAACGGA- TCCCAAAAGCAGCTG	2

mmu-mir-192(mmu-mir-192)

mmu-mir-193(mmu-mir-193)

GAGAGCTGGGTCTTTGCGGGCAAGATGAGAGTGTCAGTTCAACTGGCCTACAAAGTCCCAGTCTCT
(((...(((...(((...(((...(((...))))))...))))))...))) (-32.00)
*****AACTGGCCTACAAAGTCCCAGT*****
AAGTGGCCTACAAAGTCCCAGT 30*
AAGTGGCCTACAAAGTCCCAGT 9
.....TGGGTCTTTGCGGGCAAGATGA..... 7
.....AAGTGGCCTACAAAGTCCCAGT..... 2

.....AAGTGGCCTACAAAGTCCCAGTaa... 7
.....AAGTGGCCTACAAAGTCCCAGTaa... 7

Supplemental Figure S1

```
.....AACTGGCCTACAAAGTCCCAGTaaT.. 3
.....aAACTGGCCTACAAAGTCCCAGT..... 3
```

```
mmu-mir-194(mmu-mir-194-1)
ATCGGGTGTAACAGCAACTCCATGTGGACTGTGCTCGGATTCCAAGTGGAGCTGCTGTTACTTCTGAT
(((((((.....(((((.....)))))))).))))))))) (-34..10)
*****TGTAACAGCAACTCCATGTGGA*****
      .TGTAACAGCAACTCCATGTGGA. .... 6*
      .TGTAACAGCAACTCCATGTGG. .... 1
-----
      .TGTAACAGCAACTCCATGTGaG. .... 2
      .TGTAACAGCAACTCCATGTGa. .... 2
      .TGTAACAGCAACTCCATGTGGat. .... 2
      .TtAACAGCAACTCCATGTGGA. .... 2
```

```
mmu-mir-197(mmu-mir-197)
GGGCGTGTGCCGGGTAGAGAGGGCAGTGGGAGGTAAGAGCTCTTCACCTTCACCACCTTCTCCACCCAGCATGGCCGGCA
..(((((((.(.(((.(.((((((.(.(((((.(((....)))))).)))...))))).))))).))))).)).... (-44.10)
*****
```

Supplemental Figure S1

```

mmu-mir-199a-3p(mmu-mir-199a-1)
GCCATCCCAGTGTTTCAGACTACCTGTTTCAGGAGGCTGGGACATGTACAGTAGTCTGCACATTGGTTAGGC
((((...((((((...((((((...((((((...)))...)))...)))...)))...)))...)))...))
*****ACAGTAGTCTGCACATTGGTTA***
....CCCAGTGTTTCAGACTACCTGTTTC.....68
.....ACAGTAGTCTGCACATTGGTTA...50*
.....ACAGTAGTCTGCACATTGGTT...21
.....CTGCACATTGGTTA...19
....CCCAGTGTTTCAGACTACCTGTT.....17
.....CAGTAGTCTGCACATTGGTTA...11
....CCCAGTGTTTCAGACTACCTGTTCA.....7
.....ACAGTAGTCTGCACATTGGT...4
....CCCAGTGTTTCAGACTACCTGT.....5
.....TACAGTAGTCTGCACATTGGTT...3
.....ACNGTAGTCTGCACATTGGTTA...24
.....CAGTAGTCTGCACATTGGTT...3
.....ACNGTAGTCTGCACATTGGTT...16
.....TACAGTAGTCTGCACATTGGTTA...1
.....CAGTAGTCTGCACATTGGT...0
.....CNGTAGTCTGCACATTGGTTA...6
.....GTTTCAGACTACCTGTTTC.....0
.....CAGTAGTCTGCACATTGGTTAG...0
.....TACAGTAGTCTGCACATTGGT...0
.....ACAGTAGTCTGCACATTGGTTAG...0
.....ACNGTAGTCTGCACATTGGT...2
.....TCTGCACATTGGTTA...0
.....TTCAGACTACCTGTTTC.....0

```

```
mmu-mir-199a-3p(mmu-mir-199a-2)
TGG AAGCTTCAGGAGATCCTGCTCCGTCGCCCCAGTGTT CAGACTACCTGTT CAGGACAATGCCGTTGTACAGTAGTCTGCACATTGGTTAGACTGGGCAAGGGC
CAGCA
.....(((((((.....(((((((.....(((((((.....(((((((.....(((((((.....(((((((.....(((((((.....(((((((.....
))))). (-43.40)
*****ACAGTAGTCTGCACATTGGTTA*****
*****
.....CCCAGTGTT CAGACTACCTGTT C.....
..... 68 .....ACAGTAGTCTGCACATTGGTTA.....
..... 50* .....ACAGTAGTCTGCACATTGGTT.....
..... 21 .....CTGCACATTGGTTA.....
..... 19 .....CCCAGTGTT CAGACTACCTGTT.....
..... 17 .....CAGTAGTCTGCACATTGGTTA.....
..... 11 .....CCCAGTGTT CAGACTACCTGTTCA.....
..... 7 .....ACAGTAGTCTGCACATTGGT.....
..... 4 .....CCCAGTGTT CAGACTACCTGT.....
..... 5 .....TACAGTAGTCTGCACATTGGTT.....
..... 3 .....ACNGTAGTCTGCACATTGGTTA.....
```

Supplemental Figure S1

```

..... 24
.....CAGTAGTCTGCACATTGGTT.....

..... 3
.....ACNGTAGTCTGCACATTGGTT.....

..... 16
.....TACAGTAGTCTGCACATTGGTTA.....

..... 1
.....CAGTAGTCTGCACATTGGT.....

..... 0
.....CNGTAGTCTGCACATTGGTTA.....

..... 6
.....GTTTCAGACTACCTGTTTC.....

..... 0
.....CAGTAGTCTGCACATTGGTTAG.....

..... 0
.....TACAGTAGTCTGCACATTGGT.....

..... 0
.....ACAGTAGTCTGCACATTGGTTAG.....

..... 0
.....ACNGTAGTCTGCACATTGGT.....

..... 2
.....TCTGCACATTGGTTA.....

..... 0
.....TTCAGACTACCTGTTTC.....

..... 0
-----
-----
mmu-mir-199a-3p(mmu-mir-199b)
CCAGAGGATACCTCCACTCCGTCTACCCAGTGTCTAGACTACCTGTTTCAGGACTCCCAAATTGTACAGTAGTCTGCACATTGGTTAGGCTGGGCTGGGTTAGACC
CTCGG
...((((.....((((.....((((.....((((.....((((.....((((.....((((.....((((.....((((.....((((.....((((.....((((.....
)))).. (-42.90)
*****ACAGTAGTCTGCACATTGGTTA*****

*****
.....ACAGTAGTCTGCACATTGGTTA.....

..... 50*
.....ACAGTAGTCTGCACATTGGTT.....

..... 21
.....CTGCACATTGGTTA.....

..... 19
.....CAGTAGTCTGCACATTGGTTA.....

..... 11
.....CCCAGTGTCTTAGACTACCTGTTTC.....

..... 18
.....ACAGTAGTCTGCACATTGGT.....

..... 4
.....TACAGTAGTCTGCACATTGGTT.....

..... 3
.....ACNGTAGTCTGCACATTGGTTA.....

```

Supplemental Figure S1

```
. . . . . 24 . . . . . CAGTAGTCTGCACATTGGTT . . . . .  
. . . . . 3 . . . . . ACNGTAGTCTGCACATTGGTT . . . . .  
. . . . . 16 . . . . . TACAGTAGTCTGCACATTGGTTA . . . . .  
. . . . . 1 . . . . . CCCAGTGTTTAGACTACCTGTT . . . . .  
. . . . . 4 . . . . . CAGTAGTCTGCACATTGGT . . . . .  
. . . . . 0 . . . . . CNGTAGTCTGCACATTGGTTA . . . . .  
. . . . . 6 . . . . . CAGTAGTCTGCACATTGGTTAG . . . . .  
. . . . . 0 . . . . . TACAGTAGTCTGCACATTGGT . . . . .  
. . . . . 0 . . . . . ACAGTAGTCTGCACATTGGTTAG . . . . .  
. . . . . 0 . . . . . ACNGTAGTCTGCACATTGGT . . . . .  
. . . . . 2 . . . . . TCTGCACATTGGTTA . . . . .  
. . . . . 0  
-----  
. . . . . CCCAGTGTTTAGACTACCTGTTct . . . . .  
. . . . . 5 . . . . . tCCAGTGTTTAGACTACCTGTT . . . . .  
. . . . . 2  
  
-----  
mmu-mir-199a-5p(mmu-mir-199a-1)  
GCCATCCCAGTGTTCAGACTACCTGTTcAGGAGGCTGGGACATGTACAGTAGTCTGCACATTGGTTAGGC  
(((...(((((((((.....)))))))))....))))))..))))))..))) (-28..21)  
*****CCCAGTGTTcAGACTACCTGTTc*****  
.... CCCAGTGTTcAGACTACCTGTTc ..... 68*  
..... ACAGTAGTCTGCACATTGGTTA ... 50  
..... ACAGTAGTCTGCACATTGGTT .... 21  
..... CTGCACATTGGTTA ... 19  
.... CCCAGTGTTcAGACTACCTGTT ..... 17  
..... CAGTAGTCTGCACATTGGTTA ... 11  
.... CCCAGTGTTcAGACTACCTGTTCA ..... 7  
..... ACAGTAGTCTGCACATTGGT ..... 4  
.... CCCAGTGTTcAGACTACCTGT ..... 5  
..... TACAGTAGTCTGCACATTGGTT .... 3  
..... ACNGTAGTCTGCACATTGGTTA ... 24  
..... CAGTAGTCTGCACATTGGTT .... 3  
..... ACNGTAGTCTGCACATTGGTT .... 16  
.... 1 TACAGTAGTCTGCACATTGGTTA ... 1  
..... CAGTAGTCTGCACATTGGT ..... 0  
..... CNGTAGTCTGCACATTGGTTA ... 6  
..... GTTCAGACTACCTGTTc ..... 0  
..... CAGTAGTCTGCACATTGGTTAG ... 0  
..... TACAGTAGTCTGCACATTGGT ..... 0  
..... ACAGTAGTCTGCACATTGGTTAG ... 0  
..... ACNGTAGTCTGCACATTGGT ..... 2  
..... TCTGCACATTGGTTA ... 0  
..... TTCAGACTACCTGTTc ..... 0  
-----  
..... ACAGTAGTCTGCACATTGGTTAa ... 110
```

Supplemental Figure S1

.....CTGCACATTGGTTAa...	59
.....ACAGTAGTCTGCACATTGGTTAt...	40
.....CCCAGTGTTCAGACTACCTGTTct...	27
.....CAGTAGTCTGCACATTGGTTAa...	26
.....CCCAGTGTTCAGACTACCTGTTa...	22
.....CTGCACATTGGTTAt...	18
.....tCCAGTGTTCAGACTACCTGTTc...	16
.....ACAGTAGTCTGCACATTGGTTt...	14
.....tTGCACATTGGTTA...	12
.....aACAGTAGTCTGCACATTGGTTA...	11
.....CCCAGTGTTCAGACTACCTGTTt...	8
.....ACAGTAGTCTGCACATTGGTa...	8
.....ACNGTAGTCTGCACATTGGTTAa...	7
.....aCTGCACATTGGTTA...	6
.....aACAGTAGTCTGCACATTGGTTAa...	6
.....CCCAGTGTTCAGACTACCTGTTaC...	6
.....aCCCAGTGTTCAGACTACCTGTTc...	6
.....ACNGTAGTCTGCACATTGGTTAt...	6
.....ACAGTAGTCTGCACATTGGTTtA...	6
.....tCAGTAGTCTGCACATTGGTT...	5
.....tAGTAGTCTGCACATTGGTTA...	5
.....CCCAGTGTTCgGACTACCTGTTc...	5
.....CCCAGTGTTCAGACTACCTGTC...	5
.....CAGTAGTCTGCACATTGGTTAt...	5
.....ACAGTAGTCTGCACATTGGTTAat...	4
.....TACAGTAGTCTGCACATTGGTTAt...	4
.....CCCAGTGTTCAGACTACCTGTTtC...	4
.....CTGCACATTGGTTAat...	4
.....tCCAGTGTTCAGACTACCTGTT...	4
.....tCCAGTGTTCAGACTACCTGTTCA...	4
.....aCTGCACATTGGTT...	4
.....TACAGTAGTCTGCACATTGGTTAa...	4
.....aCCCAGTGTTCAGACTACCTGTT...	3
.....ACAGTAGTCTGCACATTGaTTAt...	3
.....ACNGTAGTCTGCACATTGGTaA...	3
.....ACAGTAGTCTGCgCATTGGTTA...	3
.....ACAGTAGTCTGCACATTtGGTTA...	3
.....CTGCACATTGGTTtA...	3
.....ACAGTAGTCTGCACATTGGTTAc...	3
.....aACAGTAGTCTGCACATTGGTT...	3
.....ACAGTAGTCTaGCACATTGGTTA...	3
.....ACAGTAGTCTGCACATTGGTaA...	3
.....ctAGTAGTCTGCACATTGGTTA...	2
.....CCCAGTGTTCAGACTACCTaGTT...	2
.....ACAGTAGTCTGCACtATTGGTT...	2
.....aCTGCACATTGGTTAa...	2
.....tTGCACATTGGTTAa...	2
.....CtCAGTGTTCAGACTACCTGTTCA...	2
.....CAGTAGTCTGCACATTGGTa...	2
.....CCCAGTGTTCAGACTACCTGTTcg...	2
.....ACAGTAGTCTGCACATTGGTTg...	2
.....CCCAGTGTTCAGACTACCTaGTTc...	2
.....tTGCACATTGGTT...	2
.....CCCAGcGTTTCAGACTACCTGTT...	2
.....aCCCAGTGTTCAGACTACCTGTTCA...	2
.....ACAaTAGTCTGCACATTGGTTA...	2
.....CCCAGTGTTCtAGACTACCTGTTc...	2
.....gCAGTAGTCTGCACATTGGTTA...	2
.....ACAGTAGTCTaGCACATTGGTTAa...	2
.....CCCAGTaTTTCAGACTACCTGTTc...	2
.....CCCAGTGTTCAGACTACCTGTTcTA...	2
.....CCCAGTGTTCAGACTACCTGTTCAa...	2
.....CTGCACATTGGTTAc...	2
.....CTGCACATTGGTTAt...	2
.....ACAGTAGTCcGCACATTGGTTA...	2
.....ACgTAGTCTGCACATTGGTTA...	2
.....tTGCACATTGGTTAt...	2
.....ACAaGTAGTCTGCACATTGGTTA...	2
.....tCAGTAGTCTGCACATTGGTTAa...	2
.....ACNGTAGTCTGCACATTGGTTt...	2
.....ACAGTAGTCTGCACATTGaTTA...	2
.....CCCAGcGTTCAGACTACCTGTTc...	2
.....ACAGTAGTCTGCAaCATTGGTTA...	2

Supplemental Figure S1

```

.....CCCAGTGcTCAGACTACCTGTTCA..... 2
.....ACAGTAGTCTGcTACATTGGTTA... 2

-----
mmu-mir-199a-5p(mmu-mir-199a-2)
TGGAAAGCTTCAGGAGATCCTGCTCCGTCGCCCCAGTGTTTCAGACTACCTGTTTCAGGACAATGCCGTTGTACAGTAGTCTGCACATTGGTTAGACTGGGCAAGGGC
CAGCA
.....(((((((((.....((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
))))). (-43.40)
*****CCCAGTGTTTCAGACTACCTGTTTC*****
*****
.....CCCAGTGTTTCAGACTACCTGTTTC.....

..... 68*
.....ACAGTAGTCTGCACATTGGTTA.....

..... 50
.....ACAGTAGTCTGCACATTGGTT.....

..... 21
.....CTGCACATTGGTTA.....

..... 19
.....CCCAGTGTTTCAGACTACCTGTT.....

..... 17
.....CAGTAGTCTGCACATTGGTTA.....

..... 11
.....CCCAGTGTTTCAGACTACCTGTTCA.....

..... 7
.....ACAGTAGTCTGCACATTGGT.....

..... 4
.....CCCAGTGTTTCAGACTACCTGT.....

..... 5
.....TACAGTAGTCTGCACATTGGTT.....

..... 3
.....ACNGTAGTCTGCACATTGGTTA.....

..... 24
.....CAGTAGTCTGCACATTGGTT.....

..... 3
.....ACNGTAGTCTGCACATTGGTT.....

..... 16
.....TACAGTAGTCTGCACATTGGTTA.....

..... 1
.....CAGTAGTCTGCACATTGGT.....

..... 0
.....CNGTAGTCTGCACATTGGTTA.....

..... 6
.....GTTTCAGACTACCTGTTTC.....

..... 0
.....CAGTAGTCTGCACATTGGTTAG.....

..... 0
.....TACAGTAGTCTGCACATTGGT.....

..... 0
.....ACAGTAGTCTGCACATTGGTTAG.....

```

..... 0ACNGTAGTCTGCACATTGGT.....

..... 2TCTGCACATTGGTTA.....

..... 0TTCAGACTACCTGTTC.....

..... 0ACAGTAGTCTGCACATTGGTTAaA.....

..... 12CAGTAGTCTGCACATTGGTTAaA.....

..... 6CTGCACATTGGTTAaA.....

..... 4CCCaAGTGTTcAGACTACCTGTTC.....

..... 3TACAGTAGTCTGCACATTGGTTAaA.....

..... 2

.....CCCAGTGTTTCAGACTACCTGTTTC.....	ACAGTAGTCTGCACATTGGTTA.....	68
.....	ACAGTAGTCTGCACATTGGTTA.....	50*
.....	ACAGTAGTCTGCACATTGGTT.....	21
.....	CTGCACATTGGTTA.....	19
.....CCCAGTGTTTCAGACTACCTGTT.....	CAGTAGTCTGCACATTGGTTA.....	17
.....	.....	11
.....CCCAGTGTTTCAGACTACCTGTTCA.....	ACAGTAGTCTGCACATTGGT.....	7
.....	.....	4
.....CCCAGTGTTTCAGACTACCTGT.....	TACAGTAGTCTGCACATTGGTT.....	5
.....	ACNGTAGTCTGCACATTGGTTA.....	3
.....	CAGTAGTCTGCACATTGGTT.....	24
.....	ACNGTAGTCTGCACATTGGTT.....	3
.....	TACAGTAGTCTGCACATTGGTTA.....	16
.....	CAGTAGTCTGCACATTGGT.....	1
.....	CNGTAGTCTGCACATTGGTTA.....	0
.....	.....	6
.....GTTTCAGACTACCTGTTTC.....	CAGTAGTCTGCACATTGGTTAG.....	0
.....	TACAGTAGTCTGCACATTGGT.....	0
.....	ACAGTAGTCTGCACATTGGTTAG.....	0
.....	ACNGTAGTCTGCACATTGGT.....	0
.....	TCTGCACATTGGTTA.....	2
.....	.....	0
.....TTCAGACTACCTGTTTC.....	.....	0

```
*****
.....CCCAGTGTTTCAGACTACCTGTTCT.....
..... 68 .....ACAGTAGTCTGCACATTGGTTA.....
```

Supplemental Figure S1

```

..... 50* .....ACAGTAGTCTGCACATTGGTT.....
..... 21 .....CTGCACATTGGTTA.....
..... 19 .....CCCAGTGTTTCAGACTACCTGTT.....
..... 17 .....CAGTAGTCTGCACATTGGTTA.....
..... 11 .....CCCAGTGTTTCAGACTACCTGTTCA.....
..... 7 .....ACAGTAGTCTGCACATTGGT.....
..... 4 .....CCCAGTGTTTCAGACTACCTGT.....
..... 5 .....TACAGTAGTCTGCACATTGGTT.....
..... 3 .....ACNGTAGTCTGCACATTGGTTA.....
..... 24 .....CAGTAGTCTGCACATTGGTT.....
..... 3 .....ACNGTAGTCTGCACATTGGTT.....
..... 16 .....TACAGTAGTCTGCACATTGGTTA.....
..... 1 .....CAGTAGTCTGCACATTGGT.....
..... 0 .....CNGTAGTCTGCACATTGGTTA.....
..... 6 .....GTTTCAGACTACCTGTTTC.....
..... 0 .....CAGTAGTCTGCACATTGGTTAG.....
..... 0 .....TACAGTAGTCTGCACATTGGT.....
..... 0 .....ACAGTAGTCTGCACATTGGTTAG.....
..... 0 .....ACNGTAGTCTGCACATTGGT.....
..... 2 .....TCTGCACATTGGTTA.....
..... 0 .....TTCAGACTACCTGTTTC.....
..... 0 .....
-----
mmu-mir-199b(mmu-mir-199b)
CCAGAGGATACCTCCACTCCGTCTACCCAGTGTTTAGACTACCTGTTTCAGGACTCCCAAATTGTACAGTAGTCTGCACATTGGTTAGGCTGGGCTGGGTTAGACC
CTCGG
...((((.....((((.....((((.....((((.....((((.....((((.....((((.....((((.....((((.....((((.....((((.....((((.....

```

))).. (-42.90)

* * * * *

.....ACAGTAGTCTGCACATTGGTTA.....

..... 50*

.....ACAGTAGTCTGCACATTGGTT.....

..... 21

.....CTGCACATTGGTTA.....

19

.....19.....CAGTAGTCTGCACATTGGTTA.....

11

..... 11
..... CCCAGTGTITTAGACTACCTGTTG.....

..... 18

.....ACAGTAGTCTGCACATTGGT.....

4

TACAGTAGTCTGCACATTGGTT

.....3

.....ACNGTAGTCTGCACATTGGTTA.....

..... 24

.....CAGTAGTCTGCACATTGGTT.....

..... 3

.....ACNGTAGTCTGCACATTGGTT.....

..... 16

.....TACAGTAGTCTGCACATTGGTTA.....

.....1

.....CCCAGTGTTTAGACTACCTGTT.....

..... 4

.....CAGTAGTCTGCACATTGGT.....

..... 0

.....CNGTAGTCTGCACATTGGTTA.....

..... 6

.....CAGTAGTCTGCACATTGGTTAG.....

$$\begin{matrix} & & & & & & 0 \\ & & & & & & \cdot \\ \cdot & \cdot & \cdot & \cdot & \cdot & \cdot & \end{matrix}$$

.....TACAGTAGTCTGCACATTGGT.....

.....0

.....ACAGTAGTCTGCACATTGGTTAG.....

.....0

.....ACNGTAGTCTGCACATTGGT.....

..... 2

.....TCTGCACATTGGTTA.....

.....0

GCAGCCCTCTGTTAGTTTTGCATAGTTGCACTACAAGAAGAATGTAGTTGTGCAAATCTATGCAAACTGATGGTGGCCTGC

*****TGTGCAAAATCTATGCAAAACTGA*****

.....TGTGCAAAATCTATGCAAAACCTGA..... 55*

.....TGTGCAAATCTATGCAAAACCTG.....5

CTGGGATCATGCAGTACGTTTC	9
CTATGCCAAACTGA	4

.....TAGTTTTGCATAGTTGCACTAC.....4

.....TGTGCAAATCTATGCAAACT..... 2

Supplemental Figure S1

```

.....TGTGCAAATCTATGCAAA-CTGA..... 4
.....TT-TGCAAATCTATGCAAACTGA..... 3
.....aTGTGCAAATCTATGCAAACTGA..... 3

-----
mmu-mir-19b(mmu-mir-19b-1)
CACTGGTCTATGGTTAGTTTGCAGGTTTGCATCCAGCTGTATAATATTCTGCTGTGCAAATCCATGCAAACTGACTGTGGTGGT
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****TGTGCAAATCCATGCAAACTGA*****
.....TGTGCAAATCCATGCAAACTGA..... 65*
.....TGTGCAAATCCATGCAAACTG..... 13
.....TGTGCAAATCCATGCAAACT..... 7
.....CCATGCAAACTG..... 1

-----
mmu-mir-19b(mmu-mir-19b-2)
ACTTACGATTAGTTTGCAGATTTCAGGTCATATGTGAATATATGGCTGTGCAAATCCATGCAAACTGATTGTGGGA
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****TGTGCAAATCCATGCAAACTGA*****
.....TGTGCAAATCCATGCAAACTGA..... 65*
.....TGTGCAAATCCATGCAAACTG..... 13
.....TGTGCAAATCCATGCAAACT..... 7
.....CCATGCAAACTG..... 1

-----
.....TGTGCAAATCCATGCAAA-CTGA..... 9
.....TGTGCAAATCCtATGCAAACTGA..... 6
.....aTGTGCAAATCCATGCAAACTGA..... 5
.....TGTGCAAATCCATGCAAAaCTGA..... 4
.....TGTGCAA-TCCATGCAAA-CTGA..... 4
.....TGTGCAAATCCATGCAAACTGtA..... 4
.....TtTGCAAATCCATGCAAACTGA..... 3
.....TtTGCAAATCCATGCAAACTG..... 3
.....TGTGCAAATCCATGCAAACTGt..... 2
.....aTGTGCAAATCCATGCAAACTG..... 2
.....TGTGCAAATCCATGCAAACTaA..... 2
.....TGTGCAAATCCATGCAAACTa..... 2
.....TGTGCAAATCCATGtCAAACTGA..... 2

-----
mmu-mir-200a(mmu-mir-200a)
CTGGGCTCTGTGGGCATCTTACCGGACAGTGCTGGATTCTTGGCTTGACTCTAACACTGTCTGGTAACGATGTTCAAAGGTGACCCAC
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****TAACACTGTCTGGTAACGATGT*****
.....TAACACTGTCTGGTAACGATGTT..... 63
.....TAACACTGTCTGGTAACGATGT..... 50*
.....CTGGTAACGATGTT..... 4
.....TAACACTGTCTGGTAACGATG..... 2

-----
.....TAACACTGTCTGGTAACGATGTTa..... 5
.....TAACACTGTCTGGTAACGATtGT..... 3
.....CTGGTAACGATGTTa..... 3
.....TAACACTGTCTGGTAACGATaGT..... 2
.....aTAACACTGTCTGGTAACGATGTT..... 2
.....tACACTGTCTGGTAACGATGT..... 2
.....tTGGTAACGATGTT..... 2
.....TAACACTaTCTGGTAACGATGTT..... 2
.....AACACTGTCTGGTAACGATGTTa..... 2
.....TgACACTGTCTGGTAACGATGT..... 2

-----
mmu-mir-200b(mmu-mir-200b)
GCCGTGGCCATCTTACTGGGCAGCATTGGATAGTGTCTGATCTCTAATACTGCCTGGTAATGATGACGGC
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****TAATACTGCCTGGTAATGATGA*****
.....TAATACTGCCTGGTAATGATGAC..... 172
.....TAATACTGCCTGGTAATGATGA..... 137*
.....CTGGTAATGATGA..... 30
.....CATCTTACTGGGCAGCATTGGA..... 18
.....CTGGTAATGATGAC..... 17
.....TAATACTGCCTGGTAATGATG..... 17
.....CATCTTACTGGGCAGCATTGG..... 9

```

```
mmu-mir-200c(mmu-mir-200c)
CCCTCGTCTTACCAGCAGTGTTTGGGTGCTGGTTGGGAGTCTCTAATACTGCCGGGTAATGATGGAGG
((..(((.....((((....(.((.....)))))).)))...)))(-31.69)
*****TAATACTGCCGGGTAATGATGGA**
```

Page 50

Supplemental Figure S1

```

.....TcATACTGCCGGGTAATGATGG... 2
.....TAATACTGCCGGGTAATaATGGA... 2
.....TAATACTGCCGGaTAATGATGGA... 2
.....aaTAATACTGCCGGGTAATGATGGA... 2
.....aCTAATACTGCCGGGTAATGATGG... 2
.....TAaACTGCCGGGTAATGATGG... 2
.....TgATACTGCCGGGTAATGATGGA... 2
.....TAATACTGCCcGGGTAATGATGG... 2
.....atATACTGCCGGGTAATGATGGA... 2
.....aTAATACTGCCGGGTAATGATGGtA... 2
.....tATACTGCCGGGTAATGATGGaA... 2
.....taATACTGCCGGGTAATGATGGA... 2
.....aTAATACTGCCGGGTAATGATGGaA... 2
.....tATACTGCCGG-TAATGATGGA... 2
.....TAATACTGCCGGGTAATGtATGGaA... 2

```

mmu-mir-201(mmu-mir-201)

```

TACCTTACTCAGTAAGGCATTGTTCTTCTATATTAATAAATGAACAGTGCCTTTCTGTGTAGGGTA
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****TACTCAGTAAGGCATTGTTCTT*****

```

mmu-mir-202-3p(mmu-mir-202)

```

GTTCTTTTTCTTCTATGCATATACTTCTTTGTGGATCTGGTCTAAAGAGGTATAGCGCATGGGAAGATGGAGC
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****AGAGGTATAGCGCATGGGAAGA*****

```

mmu-mir-202-5p(mmu-mir-202)

```

GTTCTTTTTCTTCTATGCATATACTTCTTTGTGGATCTGGTCTAAAGAGGTATAGCGCATGGGAAGATGGAGC
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****TTCCTATGCATATACTTCTT*****

```

mmu-mir-203(mmu-mir-203)

```

GCCTGGTCCAGTGGTCTTGACATTCAACAGTTCTGTAGCACAAATTGTGAAATGTTTAGGACCACTAGACCCGGC
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****GTGAAATGTTTAGGACCACTAG*****
.....GTGAAATGTTTAGGACCACTAG..... 5*
.....TGAAATGTTTAGGACCACTAG..... 3
.....TGAAATGTTTAGGACCACTAGA..... 2
.....TGAAATGTTTAGGACCACTAGt..... 2

```

mmu-mir-204(mmu-mir-204)

```

TGGACTTCCCTTTGTGCATCCTATGCCTGAGAATATATGAAGGAGGCTGGGAAGGCAAGGGACGTTCA
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****TTCCTTTGTGCATCCTATGCCT*****

```

mmu-mir-205(mmu-mir-205)

```

CTCTTGTCTTCATTCCACCGGAGTCTGTCTTATGCCAACCAGATTTCACTGGAGTGAAGCTCAGGAG
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****TCCTTCATTCCACCGGAGTCTG*****
.....TCCTTCATTCCACCGGAGTCT..... 4
.....TCCTTCATTCCACCGGAGTCTG..... 4*
.....TCCTTCATTCCACCGGAGTCTGT..... 3

```

mmu-mir-206(mmu-mir-206)

```

CCAGGCCACATGCTTCTTTATATCCTCATAGATATCTCAGCACTATGGAATGTAAGGAAGTGTGTGTTTTGG
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****TGGAAATGTAAGGAAGTGTGTGG*****
.....TGGAAATGTAAGGAAGTGTGTGG..... 27*

```

Supplemental Figure S1

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-----
mmu-mir-207(mmu-mir-207)
AAGGCAGGGGTGAGGGGCTGCGGGAGGAGCCGGGCGGAGGCTGCGGCTTGCCTTCTCCTGGCTCTCCTCCCTCTCTTT
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****GCTTCTCCTGGCTCTCCTCCCTC*****
-----

mmu-mir-208a(mmu-mir-208a)
TTCCTTTGACGGGTGAGCTTTTGGCCCGGTTATACCTGACACTCACGTATAAGACGAGCAAAAAGCTTGTGGTCAGAGGAG
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****ATAAGACGAGCAAAAAGCTTGT*****
-----

mmu-mir-208b(mmu-mir-208b)
CCTCTCAGGGAAGCTTTTGTCTGCGTTATGTTTCTCATCCGAATATAAGACGAACAAAAGTTTGTCTGAGGGCTG
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****ATAAGACGAACAAAAGTTTGT*****
-----

mmu-mir-20a(mmu-mir-20a)
GTGTGATGTGACAGCTTCTGTAGCACTAAAGTGCTTATAGTGCAGGTAGTGTGTAGCCATCTACTGCATTACGAGCACTTAAAGTACTGCCAGCTGTAGAACTCC
AG
.((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
). (-41.00)
*****TAAAGTGCTTATAGTGCAGGTAG*****
**
... TAAAGTGCTTATAGTGCAGGTAG...
... 234*
... TTATAGTGCAGGTAG...
... 39
... TAAAGTGCTTATAGTGCAGGTAGT...
... 34
... ACTGCATTACGAGCACTTAAAG...
... 5
... CTTATAGTGCAGGTAG...
... 5
... ACTGCATTACGAGCACTTAAAGT...
... 3
... CTTATAGTGCAGGTAGT...
... 3
... GCTTATAGTGCAGGTAG...
... 3
... CTAAAGTGCTTATAGTGCAGGTAG...
... 2
... NAAAGTGCTTANAGTGCAGGTAG...
... 2
... TAAAGTGCTTATAGTGCAGGTAA...
... 28
... TAAAGTGCTTATAGTGCAGGTAGa...
... 16
... TTATAGTGCAGGTAGa...
... 5
... TAAAGTGCTTATAGTGctAGGTAG...

```

Supplemental Figure S1

... 5
... TAAAGTGCTTATAGTGCAGGTat ...
... 4
... CTAAAGTGCTTAcTAGTGCAGGTAG ...
... 3
... aTAAAGTGCTTATAGTGCAGGTAG ...
... 3
... TAAAGTGCTTATAGTGCAGGTAAA ...
... 3
... TTATAGTGCAGGTAA ...
... 3
... TAAAGTGCTTATAGTGCAGGTtAG ...
... 3
... tAAGTGCTTATAGTGCAGGTAG ...
... 2
... TAAAGTGaCTTATAGTGCAGGTtAG ...
... 2
... CTTATAGTGCAGGTtAG ...
... 2
... TAAAGTGCTTATAaTGCAGGTAG ...
... 2
... TAAAGTGCTTATAGTGCAaGTAG ...
... 2
... TAAAGTaGCTTATAGTGCAGGTAG ...
... 2
... TAAAGTGCTTATAGTGCAGGTAAg ...
... 2
... CTTATAGTGCAGGTAGa ...
... 2
... taAAAGTGCTTATAGTGCAGGTAGa ...
... 2
... TgAAGTGCTTATAGTGCAGGTAG ...
... 2
... CTTATAGTGCAGGTAA ...
... 2
... TAAAGTGCTTATAGTGCAGGTtAa ...
... 2

[illegible]

```
mmu-mir-21(mmu-mir-21)
TGTACCACCTTGTCGGATAGCTTATCAGACTGATGTTGACTGTTGAATCTCATGGCAACAGCAGTCGATGGGCTGTCTGACATTTTGGTATC
(((((((...((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****TAGCTTATCAGACTGATGTTGA*****(-46.20)
.....TAGCTTATCAGACTGATGTTGAC.....103
.....TAGCTTATCAGACTGATGTTGA.....102*
.....ATAGCTTATCAGACTGATGTTGA.....4
.....TAGCTTATCAGACTGATGTTG.....4
```


A
(((((((.....(((((.....(.....))))))..))))))..))))..))))..)))
. (-57.20)
*****TTCCCTTTGTCATCCTTTGCCT*****

```

*
-----
-----
mmu-mir-212(mmu-mir-212)
GGGCAGCGCGCCGGCACCTTGGCTCTAGACTGCTTACTGCCCGGGCCGCCTTCAGTAACAGTCTCCAGTCACGGCCACCGACGCCTGGCCC
(((((((.(.(((.(.(.((((((.(((((((.(((((((..((...))..))))))))))..))))..))))..))))..)))) ( -41.30)
*****TAAACAGTCTCCAGTCACGGCCA*****

```

```
mmu-mir-214(mmu-mir-214)
GGCCTGGCTGGACAGAGTTGTCATGTGCTGCCTGTCTACACTGTGCTGCAGAACATCCGCTCACCTGTACAGCAGGCACAGACAGGCAGTCACATGACAACCC
AGCCT
.....(((((((.....(((((((((((.(((((((((((.(((((((((((.(((((((((((.(((((((((((.(((((((((((.(((((((((((.
))))). (-67.62)
*****ACAGCAGGCACAGACAGGCAGT*****
```

```

*****
.....ACAGCAGGCACAGACAGGCAGT.....
..... 191*.....ACAGCAGGCACAGACAGGCAG.....
..... 138.....TACAGCAGGCACAGACAGGCAGT.....
..... 91.....TACAGCAGGCACAGACAGGCAG.....
..... 90.....TACAGCAGGCACAGACAGG.....
..... 36.....CAGCAGGCACAGACAGGCAGT.....
..... 14.....ACNGCAGGCACAGACAGGCAGT.....
..... 13.....TACAGCAGGCACAGACAGGC.....
..... 11.....CACAGACAGGCAGT.....
..... 10.....ACNGCAGGCACAGACAGGCAG.....
..... 9.....CAGCAGGCACAGACAGGCAG.....
..... 7.....TACAGCAGGCACAGACAGGCA.....
..... 7.....TGCCTGTCTACACTTGCTGTGC.....
..... 7.....CACAGACAGGCAG.....
..... 3.....ACAGCAGGCACAGACAGGCA.....
..... 2.....GCCTGTCTACACTTGCTGTGCA.....

```

Supplemental Figure S1

```

..... 2 .....GTACAGCAGGCACAGACAGGCAG.....
..... 2 .....ACAGCAGGCACAGACAGGCAGTaA.....
..... 66 .....ACAGCAGGCACAGACAGGCAGa.....
..... 61 .....ACAGCAGGCACAGACAGGCAGTa.....
..... 58 .....TACAGCAGGCACAGACAGGCAGa.....
..... 43 .....ACAGCAGGCACAGACAGGCAGTaAa.....
..... 42 .....ACAGCAGGCACAGACAGGCaA.....
..... 31 .....ACAGCAGGCACAGACAGGCAGTat.....
..... 29 .....TACAGCAGGCACAGACAGGCaA.....
..... 19 .....aACAGCAGGCACAGACAGGCAGT.....
..... 17 .....ACAGCAGGCACAGACAGGCaAa.....
..... 17 .....TACAGCAGGCACAGACAGGCAGTa.....
..... 14 .....ACAGCAGGCACAGACAGGCAGaa.....
..... 13 .....ACAGCAGGCACAGACAGGCAGaaA.....
..... 13 .....aACAGCAGGCACAGACAGGCAG.....
..... 12 .....TACAGCAGGCACAGACAGGCaAa.....
..... 11 .....ACAGCAGGCACAGACAGGCAGTt.....
..... 11 .....CAGCAGGCACAGACAGGCAGTaA.....
..... 10 .....ACAGCAGGCACAGACAGGCAGTtA.....
..... 10 .....ACAGCAGGCACAGACAGGCAGTaAt.....
..... 9 .....ACAGCAGGCACAGACAGGaAa.....
..... 8 .....ACAGCAGGCACAGACAGGctAGT.....
..... 8 .....TACAGCAGGCACAGACAGGctAG.....
..... 8 .....aTACAGCAGGCACAGACAGGCAGT.....

```

Supplemental Figure S1

..... 8ACAGCAGGCACAGACAGGctAG.....
..... 8ACAGCAGGCACAGACAGGCAaT.....
..... 8ACAGCAGGCACAGACAGGCAGTtAa.....
..... 7ACAGCAGGCACAGACAGGCAGTtAt.....
..... 7TACAGCAGGCACAGACAGGCAGaa.....
..... 6TACAGCAGGCACAGACAGGctAGT.....
..... 6ACAGCAGGCACAGACAGGCAGc.....
..... 6TACAGCAGGCACAGACTAGG.....
..... 6TACAGCAGGCACAGACAGGCAaT.....
..... 6tCAGCAGGCACAGACAGGCAGT.....
..... 6TACAGCAGGCACAGACAGGCAGTaA.....
..... 6ACAGCAGGCACAGACAGGCAaaa.....
..... 5ACAGCAGGCACAGACAGGCAGaat.....
..... 5ACNGCAGGCACAGACAGGCAaa.....
..... 5ACAGCAGGCACAGACAGGCAGTag.....
..... 5ACAGCAGGCACAGACAGGCAt.....
..... 5TACAGCAGGCACAGACAGGCAGTt.....
..... 5aACAGCAGGCACAGACAGGCAGTaA.....
..... 4ACAGCAGGCACAGACAGGCAaG.....
..... 4TACAGCAGGCACAGACAGGCAGaaA.....
..... 4ACAGCAGGCACAGACAGGCAGT - AgA.....
..... 4TACAGCAGGCACAGACAGa.....
..... 4ACAGCAGGCACAGACAGGCAGaT.....
..... 4CAGaCAGGCACAGACAGGCAGT.....

Supplemental Figure S1

..... 4
.....ACAGCAGGCACAGACAGGCAGTtt.....

..... 4
.....ACAGCAGGCACAGACAGGCAGTatt.....

..... 3
.....TGCCTGTCTACACTTGCTGTGa.....

..... 3
.....TACAGCAGGCACAGACAGGaAa.....

..... 3
.....TACAGCAGGCACAGACAGGCaaaa.....

..... 3
.....ACAGCAGGCACAGACAGGCAGTgA.....

..... 3
.....CAGCAGGCACAGACAGGCAGa.....

..... 3
.....ACAGCAGGCACAGACAGGCAGTaA-AT.....

..... 3
.....ACNGCAGGCACAGACAGGCAGTaA.....

..... 3
.....aACAGCAGGCACAGACAGGCAGa.....

..... 3
.....aTACAGCAGGCACAGACAGGCAGa.....

..... 3
.....TACAGCAGGCACtAGACAGGCAGT.....

..... 3
.....CAGCAGGCACAGACAGGCtAGT.....

..... 3
.....ACAGCAGGCACAGACAGGCAGTagt.....

..... 3
.....CACAGACAGGCAGa.....

..... 3
.....aACNGCAGGCACAGACAGGCAG.....

..... 3
.....TACAGCAGGCACAGACAGGCaaaaA.....

..... 3
.....aACAGCAGGCACAGACAGGCAGaa.....

..... 2
.....ACAGCAGGCACAGACAGGCtAaa.....

..... 2
.....CNGCAGGCACAGACAGGCAaG.....

..... 2
.....ACAGCAGGCACAGACAGaCAGT.....

..... 2
.....ACAGCAaGCACAGACAGGgAaG.....

..... 2
.....CAGCAGGCACAGACAGGtCAGT.....

..... 2
.....TACAGCAGGCACAGACAGGCAGaat.....

..... 2

Supplemental Figure S1

.....TACAGCAGGCACAGACAGGa.....
 2
ACAGCAGGCACAGACAGGCAGTaAC.....
 2
aACAGCAGGCACAGACAGGCAaT.....
 2
tCAGCAGGCACAGACAGGCAa.....
 2
TACAGCAGGCACAGACAGGaA.....
 2
ACAGCAGGCACAGACgAGGCAGT.....
 2
ACAGCAGGCACAGACAGGCAaGTa.....
 2
ACAGaCAGGCACAGACAGGctAGT.....
 2
ACAGCAGGCACAGACAGGCAGTaAg.....
 2
gCAGCAGGCACAGACAGGCAGT.....
 2
cCAGCAGGCACAGACAGGCAGT.....
 2
TgCAGCAGGCACAGACAGGCAGT.....
 2
ACAGCAGGCACAGACAGGCataaA.....
 2
CAGCAGGCACAGACAGGctAG.....
 2
ACNGCAGGCACAGACAGGCAGTaAa.....
 2
TACAGCAGGCACAGACAGGtA.....
 2
TACAGCAGGCACAGACAGGCat.....
 2
CAGCAGGCACAGACAGGCAGTaAt.....
 2
ACAGCAGGCACAGACAGaaAaG.....
 2
ACNGCAGGCACAGACAGGCAa.....
 2
ACAGCAGGCACAGACAGGCAGTtgt.....
 2
ACAGCAGGCACAGACAGGctAa.....
 2
CAGCAGGCACAGACAGGCAGTa.....
 2
ACAGCAGGCACAGACAGGCAG-CA.....
 2
CAGCAGGCACAGACAGGCAGTat.....

Supplemental Figure S1

..... 2ACAGCAGGCACAGACTAGGCAGa.....

..... 2TACAGCAGGCACAGACAGGCAGc.....

..... 2TACAGCAGGCACAGACAGGCaaa.....

..... 2TACAGCAGGCACAGACAGaa.....

..... 2aACAGCAGGCACAGACAGGCAGTaAa.....

..... 2TACAGCAGaCACAGACAGGCAGT.....

..... 2ACAGCAGGCACAGACAGGCAtTa.....

..... 2ACAGCAGGCACAGACAGGCaa.....

..... 2ACAGCAGGCACAGACAGGCAGT.....

..... 2TACAGaCAGGCACAGACAGGCAG.....

..... 2TACAGCAGGCACAGACAGGCtAaa.....

..... 2aaACAGCAGGCACAGACAGGCAGT.....

..... 2ACNGCAGGCACAGACAGGCAGa.....

..... 2TACAGCAGaCACAGACAGGCaaa.....

..... 2ACAGCAGGCACAGACTAGGCAG.....

..... 2ACAGCAGGCACAGACAGGCAGaag.....

..... 2TACAGCAaGGCACAGACAGGCAGT.....

..... 2aACAGCAGGaCACAGACAGGCAGT.....

..... 2ACAGCAGGCACAGACAGGCAGTaAa.....

..... 2CAGCAGGCACAGACAGGCAGTtAa.....

..... 2aACAGCAGGCACAGACAGGCAGTtAt.....

..... 2TACAGCAGGCACAGACAGGCAGTat.....

..... 2ACAGCAaGCACAGACAGGCAGT.....

..... 2

mmu-mir-215(mmu-mir-215)
AGCTCTCAGCATCAACGGTGTACAGGAGAATGACCTATGATTTGACAGACCGTGCAGCTGTGTATGCTGTCAATTCTGTAGGCCAATATTCTGTATGTCACTGCT

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) . . (-37.10)
*****TACTGCATCAGGAAGTGA*****
***

```

```

..... (-38.70)
*****TTGTGCTTGATCTAACCATGT*****
*****

```

..... 2
.....ATCTAACCATGTG.....

..... 2
.....TTGTGCTTGATCTAACCATG.....
..... 1

..... 40
TTGTGCTTGATCTAACCATGTGt.....
 Page 61

Supplemental Figure S1

..... 4
.....TGTCAGTTTGTCAAATACCCCA.....
..... 2

Supplemental Figure S1

Sequence	Count
.tATTGCACTTGTCTCGGTCTGA	10
.CATTGCACTTGTCTCGGTCTGt	8
.CATTGCACTTGTCTCGGTCTGAt	6
aCATTGCACTTGTCTCGGTCTGA	5
.CATTGCACTTGTCTCGGTCTaA	4
.CNTTGCACTTGTCTCGGTCTGAt	4
cATTGCACTTGTCTCGGTCTGA	4
.CATTGCACTTGTCTCGGTCTGAat	4
.CATTGCACTTGTCTCGGTCTGAtA	3
.CATTGCACTTGTCTCGGTCTa.	3
.CATTGCACTTGTCTCGGTCTGAg	3
.tTTGTCTCGGTCTGA	2
.CATTGCACTTGTCTCGGTCTtGA	2
.CATTGCACTTaGTCTCGGTCTGA	2
.tNTTGCACTTGTCTCGGTCTGA	2
actATTGCACTTGTCTCGGTCTGA	2
.CATTGCACTTGTCTCaGTCTGA	2
.CATTGCgCTTGTCTCGGTCTGA	2
.CATTGCACTTaTCTCGGTCTGA	2
.CATTGCACTTGTCTCGGcCTGA	2

mmu-mir-26a(mmu-mir-26a-1)

AAGGCCGTGGCCTCGTTCAAGTAATCCAGGATAGGCTGTGCAGGTCCCAAGGGGCCTATTCTTGGTTACTTGCACGGGGACGCGGGCCTG

```

*****TTCAAGTAATCCAGGATAGGCT*****
.....TTCAAGTAATCCAGGATAGGCT.....158*
.....TTCAAGTAATCCAGGATAGGC.....67
.....TTCAAGTAATCCAGGATAGG.....12
.....TCAAGTAATCCAGGATAGGC.....1

```

TTCAAGTAATCCAGGATAGGCTaT	17
TTCAAGTAATCCAGGATAGGCTa	16
TTCAAGTAATCCAGGATAGGCTaa	15
TTCAAGTAATCCAGGATAGGCTt	15
TTCAAGTAATCCAGGATAGGCTc	13
TTCAAGTAATCCAGGATAGGCTta	11
TTtAAGTAATCCAGGATAGGCT	10
TTCAAGTAATCCAGGATAGGCG	8
TTCAAGTAATCCAGGATAGGCa	8
TTCAAGTAATCCAGGATAGGT	7
TTCAAGTAATCCAGGATAGGTCT	7
TTCAAGTAATCCAGGATAGGCTaaa	6
TTCAAGTAATCCAGGATAGaCT	5
TTCAAGTAATtCAGGATAGGCT	4
TTCAAGTAATCCAGGATAGGTt	4
CTCAAGTAATCCAGGATAGGCT	4
TTCAAGTA-TCCAGGATAGGC	3
TTCAAGTAATCCAGGATAGGa	3
TTtAAGTAATCCAGGATAGGC	3
TTCAAGTAATCCAGGATAGGCTc	3
TTCAAGTAATCCAGGATAGGcc	3
TTCAAGTAATCCAGGATAGGaCT	2
.....ATCCAGGATAGGCTaa	2
TTtAAGTAATCCAGGATAGGCTa	2
TcCAAGTAATCCAGGATAGGCT	2
TTCAAGTAATCCAGGATAGGCT-TG	2
TTCAAGTAATCCAtGATAGGCT	2
TTCAAGTAATCCAGGATtAGGt	2
aTCAAGTAATCCAGGATAGGCT	2
TTCAAGTAgtCCAGGATAGGC	2
TTCAAGTAATCCAGGATAGGCTaTa	2
TTCAAGTAATCCAGGATAGGCaT	2
TTaCAAGTAATCCAGGATAGGCT	2
.....caATCCAGGATAGTt	2
TTCAAGTAATCCAGGATAGGCTtaa	2

mmu-mir-26a(mmu-mir-26a-2)

GGCTGCGGCTGGATTCAAGTAATCCAGGATAGGCTGTGTCCGTCCATGAGGCCTGTTCTTGATTACTTGTTTCTGGAGGCAGCG

*****TTCAAGTAATCCAGGATAGGCT*****
TTCAAGTAATCCAGGATAGGCT..... 158*

Supplemental Figure S1

[illegible]

mmu-mir-27a(mmu-mir-27a)

[illegible]

Supplemental Figure S1

Supplemental Figure S1

.....TTCACAGTGGCTAAGTCCGC.....	61*
.....TTCACAGTGGCTAAGTCCG.....	3
.....AGGGCTTAGCTGCTGTGAGCA.....	2

```

.....aTTCACAGTGGCTAAGTTCCGC.....7
.....TTCACAGTGGCTAAGTTCCGct.....6
.....TTTACAGTGGCTAAGTTCCGC.....5
.....TTCACAGTGGCTAAGTTCCGtC.....3
.....TTCACAGTGGCTAAGTTCCGa.....2

```

mmu-mir-27b(mmu-mir-27b)

AGGTGCAGAGCTTAGCTGATTGGTGAACAGTGATTGGTTTCCGCTTTGTTACAGTGGCTAAGTTCTGCACCT

```

*****TTCACAGTGGCTAAGTTCTGC*****
.....TTCACAGTGGCTAAGTTCTGC..... 76*
.....TTCACAGTGGCTAAGTTCTG..... 14
.....AGAGCTTAGCTGATTGGTGAACA..... 2
.....TTCACAGTGGCTAAGTTCTGCA..... 2

```

.....	TTCACAGTGGCTAAGTTCTGt.....	7
.....	TTCACAGTGGCTAAGTTCCcGCA.....	4
.....	TTCACAGTGGCTAAGTTCTGct.....	4
.....	TTCACAGTGGCTAAGTTCTGa.....	4
.....	aTTCACAGTGGCTAAGTTCTGC.....	3
.....	TcCACAGTGGCTAAGTTCTGC.....	3
.....	TTCACAGTGaCTAAGTTCTGC.....	2
.....	TTCACAGTGGCTAAGTTCCcGCAa.....	2
.....	TTCACAGTGGCTAAGTTCTGtC.....	2
.....	TTCACAGTGGCTAAGTTCTaG.....	2

mmu-mir-28(mmu-mir-28)

GGTCCCTACCTTCAAGGAGCTCACAGTCTATTGAGTTGCCTTTCTGATTCTCCCACTAGATTGTGAGCTGCTGGAGGGCAGGCACT

```

*****AAGGAGCTCACAGTCTATTGAG*****
.....AAGGAGCTCACAGTCTATTGAG.....82+
.....CACTAGATTGTGAGCTGCTGGA.....29
.....AAGGAGCTCACAGTCTATTGAGT.....12
.....CACTAGATTGTGAGCTGCTGG.....8
.....AAGGAGCTCACAGTCTATTGA.....6
.....AGGAGCTCACAGTCTATTGAG.....5
.....CACTAGATTGTGAGCTGCTGGAG.....3
.....TTGTGAGCTGCTGGA.....2

```

..aAAGGAGCTCACAGTCTATTGAG..	6
..AAGGAGCTCACAGTCTATTGtAG..	5
..AAGGAGCTCACAGTCTATTGAA..	5
..AAGGAGCTCACAGTCTATTGAGa..	4
..aAAGGAGCTCACAGTCTATTGA..	3
..CACTAGATTGTGAGCTGCTGGAaa..	3
..CACTAGATTGTGAGCTGCTGGAGt..	2
..CACTAGATTGTGAGCTGCTGGAtt..	2
..AGGAGCTCACAGTCTATTGtAG..	2
..CACTAGATTGTGAGCTGCTGGAa..	2
..AAGGAGtTCACAGTCTATTGAG..	2
..aCACTAGATTGTGAGCTGCTGGA..	2
..CACTAGATTGTGAGCTGCTGGAt..	2
..AAGGAaCTCACAGTCTATTGAG..	2
..AAGGAGCTCACAaTCTATTGAG..	2

mmu-mir-290-3p(mmu-mir-290)

CTCATCTTGCGGTACTCAAACATATGGGGGCACTTTTTTTTTTCTTTAAAAAGTGCCGCCTAGTTTTAAGCCCCGCCGGTTGAG

$$(((.((.((((..((.(((((((.(.((((((((((.....)))))))))).)))))).)))))) (-35.60)$$

mmu-mir-290-5p(mmu-mir-290)

CTCATCTTGCGGGTACTCAAACATATGGGGGGCACTTTTTTTTTTCTTTAAAAAGTGCCGCCTAGTTTTAAGCCCCGCCGGTTGAG

Supplemental Figure S1

```

.....GAGGGTTGGGTGGAGGCTCTC..... 5
.....GAGGGTTGGGTGGAGGCTCTCCT..... 4
.....AGAGGGTTGGGTGGAGGCTCTCC..... 2
.....AGGGTTGGGTGGAGGCTCTCC..... 2
.....GGGCCCCCCTCAATCCTGT..... 2
.....GAGGGTTGGGTGGAGGCTCT..... 2
.....GAGGGTTGGGTGGAGGCTCNCC..... 3
.....AGAGGGTTGGGTGGAGGCTCTC..... 1
.....AGGGCCCCCCTCAATCCTG..... 1
-----

```

```

mmu-mir-296-5p(mmu-mir-296)
GGGCCTTCTGGAGGGCCCCCCTCAATCCTGTTGTGCTCGCTTCAGAGGGTTGGGTGGAGGCTCTCCTGAAGGTGTCC
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****AGGGCCCCCCTCAATCCTGT***** (-43.70)

```

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.....GAGGGTTGGGTGGAGGCTCTCC..... 68
.....AGGGCCCCCCTCAATCCTGT..... 24*
.....GAGGGTTGGGTGGAGGCTCTC..... 5
.....GAGGGTTGGGTGGAGGCTCTCCT..... 4
.....AGAGGGTTGGGTGGAGGCTCTCC..... 2
.....AGGGTTGGGTGGAGGCTCTCC..... 2
.....GGGCCCCCCTCAATCCTGT..... 2
.....GAGGGTTGGGTGGAGGCTCT..... 2
.....GAGGGTTGGGTGGAGGCTCNCC..... 3
.....AGAGGGTTGGGTGGAGGCTCTC..... 1
.....AGGGCCCCCCTCAATCCTG..... 1
-----
.....GAGGGTTGGGTGGAGGCTCTCca..... 38
.....GAGGGTTGGGTGGAGGCTCTCca..... 15
.....GAGGGTTGGGTGGAGGCTCTCa..... 13
.....GAGGGTTGGGTGGAGGCTCTCcaT..... 12
.....AGGGCCCCCCTCAATCCTGT..... 9
.....AGGGCCCCCCTCAATCCTGT..... 8
.....aAGGGCCCCCCTCAATCCTGT..... 6
.....AGGGCCCCCCTCAATCCTGT..... 5
.....GAGGGTTGGGTGGAGGCTCTCcaA..... 5
.....AGGGTTGGGTGGAGGCTCTCca..... 4
.....AGGGCCCCCCTCAATCCTG..... 4
.....tAGGGTTGGGTGGAGGCTCTCC..... 4
.....GAGGGTTGGGTGGAGGCTCTCCTa..... 3
.....GAGGGTTGGGTGGAGGCTCTCC..... 3
.....aAGGGTTGGGTGGAGGCTCTCca..... 3
.....aAGGGTTGGGTGGAGGCTCTCC..... 3
.....GAGGGTTGGGTGGAGGCTCTCcaGt..... 3
.....GAGGGTTGGGTGGAGGCTCTCC-GA..... 3
.....GAGGGTTGGGTGGAGGCTCTCca..... 3
.....GAGGGTTGG-TGGAGGCTCTCC..... 2
.....GAGGGTTGGGTGGAGGCTCTCt..... 2
.....GAGGGTTGGGTGGAGGCTCTaaC..... 2
.....AGGGCCCCCCTCAATCCTGT..... 2
.....GAGGGTTGGGTGGAGGCTCTCCc..... 2
.....AGAGGGTTGGGTGGAGGCTCTCca..... 2
.....GAGGGTTGGGTGGAGGCTCTCcaTt..... 2
.....AGGGCCCCCCTCAATCCTGTa..... 2
.....cGGGCCCCCCTCAATCCTGT..... 2
.....AGAGGGTTGGGTGGAGGCTCTCcaat..... 2
.....AGAGGGTTGGGTGGAGGCTCTCcaT..... 2
.....GAGGGTTGGGTGGAGGCTCTaCC..... 2
.....GAGGGTTGGGTGGtAGGCTCTCC..... 2
.....GAGGGTTGGGTGGAGGCTCa..... 2
.....GAGG-TTGGGTGGAGGCTCTCC..... 2
.....GGGCCCCCCTCAATCCTGT..... 2
.....tAGGGTTGGGTGGAGGCTCTCa..... 2
.....GAGGGTTGGGTGGAGGCTCTCcaat..... 2
-----

```

```

mmu-mir-297a(mmu-mir-297a-1)
ATATGTATGTATGTATGTATGTGTGTCATGTGTCATGTGTCATGTATGTCATATTGTCATGTATATATTATGCATACATGT
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****ATGTATGTGTGTCATGTGTCATGT***** (-35.90)

```

```
mmu-mir-297a(mmu-mir-297a-2)
TGTATGTGCATGCATATGTGCTCATGTGTGTACATGTATGTGTGCATGTGCATGTATATATG
.((((((((((((((((((.(((((.(((...)))...)))...)))...)))...)))...)))... (-36.40)
*****ATGTATGTGTGCATGTGCATGT*****

-----

mmu-mir-297a(mmu-mir-297a-3)
CTGTGTGTATATGTATGTGTGCATGTGCATGTGTGTATATGAATATACATATACATACACACATACCCATACAAACATGCACACAAACACACAGAAAATTGA
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))
..... (-38.17)
*****ATGTATGTGTGCATGTGCATGT*****

-----

mmu-mir-297a(mmu-mir-297a-4)
CTGTGTGTATATGTATGTGTGCATGTGCATGTGTGTATATGAGTATACATATACATACACACATACCCATACAAGCATGCACACAAATACACGCAAAA
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))
..... (-39.80)
*****ATGTATGTGTGCATGTGCATGT*****

-----

mmu-mir-297a(mmu-mir-297a-5)
CTGTGTGTATATGTATGTGTGCATGTGCATGTGTGTATATGAGTATACATATACATACGCACATACCCATACAAGCATGCACACAAACCC
.((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))
..... (-38.80)
*****ATGTATGTGTGCATGTGCATGT*****

-----

mmu-mir-297a(mmu-mir-297a-6)
ATGTGCATGTGTGTATGTGCATGAGTGCATGTGCATGCATGTGTGTGCGCATGTATGTGTGCATGTGCATGTATGTGTGCAT
..(((((.(((.((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))
..... (-44.70)
*****ATGTATGTGTGCATGTGCATGT*****

-----

mmu-mir-297b-3p(mmu-mir-297a-3)
CTGTGTGTATATGTATGTGTGCATGTGCATGTGTGTATATGAATATACATATACATACACACATACCCATACAAACATGCACACAAACACACAGAAAATTGA
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))
..... (-38.17)
*****TATACATACACACATACCCATA*****

-----

mmu-mir-297b-3p(mmu-mir-297a-4)
CTGTGTGTATATGTATGTGTGCATGTGCATGTGTGTATATGAGTATACATATACATACACACATACCCATACAAGCATGCACACAAATACACGCAAAA
.((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))
..... (-39.80)
*****TATACATACACACATACCCATA*****

-----

mmu-mir-297b-3p(mmu-mir-297b)
TCTATTTGCTTGTGTGTATATGTATGTGTGCATGAACATGTGTATATGAATATACATATACATACACACATACCCATACAAACATGCATACAAACACACAGAAAA
TGGA
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))
..... (-36.90)
*****TATACATACACACATACCCATA*****

****

-----

mmu-mir-297b-3p(mmu-mir-297c)
CTGTGTGTATATGTATGTGTGCATGTACATGTGTGTATATGAATATACATATACATACACACATACCCATACAAACATGCATACAAACACACAAAAAT
```


Supplemental Figure S1

.....TGGTTTACCcGTCCACATACAT..... 2
TGGTTTACCGTCCACATAaA..... 2
TGGTTTACCGTCCACATACAc..... 2

mmu-mir-29a(mmu-mir-29a)

ACCCCTTAGAGGATGACTGATTCTTTTGGTGTTTCAGAGTCAATAGAAATTTCTAGCACCATCTGAAATCGGTTATAATGATTGGGGA
 .((((.....((((((((((((.....((((((((((((.....)))))))))))))))))))))))))))))))))))))) (-35.14)
 *****TAGCACCATCTGAAATCGGTTA*****
TAGCACCATCTGAAATCGGTTA..... 7*

mmu-mir-29b(mmu-mir-29b-1)

AGGAAGCTGGTTTCATATGGTGGTTTATAGATTAAATAGTGATTGTCTAGCACCATTGAAATCAGTGTTCT
 .((((((((((((((((((((((((((((((((.....)))))))))))))))))))))))))))))))))))))) (-26.42)
 *****TAGCACCATTGAAATCAGTGTT*****
TAGCACCATTGAAATCAGTGTT... 4*
TAGCACCATTGAAATCAGTGTT... 2

.....TAGCACCATTGAAATCAGTGTTa.. 4

mmu-mir-29b(mmu-mir-29b-2)

CTTCTGGAAGCTGGTTTCACATGGTGGCTTAGATTTTCCATCTTTGTATCTAGCACCATTGAAATCAGTGTTTATAGGAG
 .((((((((((((((((((((((((((((((((.....)))))))))))))))))))))))))))))))))))))) (-31.24)
 *****TAGCACCATTGAAATCAGTGTT*****
TAGCACCATTGAAATCAGTGTT..... 4*
TAGCACCATTGAAATCAGTGTT..... 2

mmu-mir-29c(mmu-mir-29c)

ATCTCTTACACAGGCTGACCGATTTCTCCTGGTGTTTCAGAGTCTGTTTTGTCTAGCACCATTGAAATCGGTTATGATGTAGGGGGA
 .((((((((((((((((((((((((((((((((.....)))))))))))))))))))))))))))))))))))))) (-35.40)
 *****TAGCACCATTGAAATCGGTTA*****
TAGCACCATTGAAATCGGTTA..... 4*
TTTGAATCGGTTA..... 2

mmu-mir-300(mmu-mir-300)

GCTACTTGAAGAGAGGTTATCCTTTGTGTGTTGCTTTACGCGAAATGAATATGCAAGGGCAAGCTCTCTTCGAGGAGC
 .((((((((((((((((((((((((((((((((.....)))))))))))))))))))))))))))))))))))))) (-35.50)
 *****TATGCAAGGGCAAGCTCTCTTC*****
TATGCAAGGGCAAGCTCTCTTC..... 23*
CAAGGGCAAGCTCTCTTCGAGG... 3
TGCAAGGGCAAGCTCTCTTCGAG... 3
TGAAGAGAGGTTATCCTTTGTGTGT... 2

.....TATGCAAGGGCAAGCTCTCTTCa..... 16
TATGCAAGGGCAAGCTCTCTTCat..... 3
TATGCAAGGGCAAGCTCTCTTg..... 2
TGCAAGGGCAAGCTCTCTTCGAGt... 2
TATGCAAGGGCAAGCTCTCTTa..... 2
CAAGGGCAAGCTCTCTTCGAGgt... 2

mmu-mir-301a(mmu-mir-301a)

CCTGCTAACGGCTGCTCTGACTTTATTGCACTACTGTACTTTACAGCGAGCAGTGCAATAGTATTGTCAAAGCATCCGCGAGCAGG
 .((((((((((((((((((((((((((((((((.....)))))))))))))))))))))))))))))))))))))) (-39.40)
 *****CAGTGCAATAGTATTGTCAAAGC*****
CAGTGCAATAGTATTGTCAAAGCAT..... 67
CAGTGCAATAGTATTGTCAAAGC..... 66*
CAGTGCAATAGTATTGTCAAAGCA..... 29
CAGTGCAATAGTATTGTCAAAG..... 22
CNGTGCAATAGTATTGTCAAAGC..... 5
CNGTGCAATAGTATTGTCAAAGCAT..... 5
CAGTGCAATAGTATTGTCAAAGCAtt..... 13
aCAGTGCAATAGTATTGTCAAAGC..... 7
CAGTGCAATAGTATTGTCAAAGCAa..... 7
CAGTGCAATAGTATTGTCAAAGCtAT..... 5

Supplemental Figure S1

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.....tAGTGCAATAGTATTGTCAAAGC..... 4
.....CAGTGCAATAGTATTGTCAAAGtC..... 4
.....CAGTGCAATAGTATTGTCAAAGctA..... 3
.....CAGTGCAATAGTATTGTCAAAGCgT..... 3
.....CAGTGCAATAGTATTGTctAAAGCAT..... 2
.....CAGTGCAATAGTATTGTCAAAGCac..... 2
.....aCAGTGCAATAGTATTGTCAAAGCA..... 2
.....ctAGTGCAATAGTATTGTCAAAGCAT..... 2
.....aCAGTGCAATAGTATTGTCAAAGCAT..... 2
.....CAGTaGCAATAGTATTGTCAAAGC..... 2
.....tAGTGCAATAGTATTGTCAAAGCAT..... 2

```

mmu-mir-301b(mmu-mir-301b)

```

TTTCCTGCTGGCTGCGGGTGTCTGTGACTAGGTTGCACTACTGTGCTGTGAGAAGCAGTGCAATGGTATTGTCAAAGCATCTGGGACCAGCCTCGAAG
.((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((

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(-38.70)

```

*****CAGTGCAATGGTATTGTCAAAGC*****
.....CAGTGCAATGGTATTGTCAAAGC..... 23*
.....CAGTGCAATGGTATTGTCAAAGCAT..... 12
.....CAGTGCAATGGTATTGTCAAAGCA..... 10
.....CAGTGCAATGGTATTGTCAAAG..... 6
.....CNGTGCAATGGTATTGTCAAAGCAT..... 5
.....CAGTGCAATGGTATTGTCAAAGCATt..... 5
.....CAGTGCAATGGTATTGTCAAAGtC..... 2
.....CAGTtCAATGGTATTGTCAAAGCAa..... 2
.....CNGTGCAATGGTATTGTCAAAGt..... 2
.....CAGTGCAATGGTATTGTCAAAGa..... 2

```

mmu-mir-302a(mmu-mir-302a)

```

CCACCACCTTAAACGTGGTTGTACTTGTCTTAGACCTAAGAAAGTAAGTGCTTCCATGTTTTGGTGATGG
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((

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```

*****TAAGTGCTTCCATGTTTTGGTGA***
.....TAAGTGCTTCCATGTTTTGGT..... 2

```

mmu-mir-302b(mmu-mir-302b)

```

GTTCCCTTCAACTTTAACATGGGAATGCTTTCTGTCTCATCGAAGAGTAAGTGCTTCCATGTTTTAGTAGAAGT
.....((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((

```

```

*****TAAGTGCTTCCATGTTTTAGTAG***

```

mmu-mir-302c(mmu-mir-302c)

```

CCTCTGTCTTTAACATGGGGTTACTGTGTGTAAACAAAAGCAAGTGCTTCCATGTTTCAGTGGGGG
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((

```

```

*****AAGTGCTTCCATGTTTCAGTGG***

```

mmu-mir-302d(mmu-mir-302d)

```

CCTTTACTTTAACATGGAGGCACTTGTGTGCATTTAAAAATAAGTGCTTCCATGTTTGAGTGTGG
(((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((

```

```

*****TAAGTGCTTCCATGTTTGAGTGT**

```

mmu-mir-30a(mmu-mir-30a)

```

GCGACTGTAAACATCCTCGACTGGAAGCTGTGAAGCCACAAATGGGCTTTCAGTCGGATGTTTGCAGCTGC
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((

```

```

*****TGTAACATCCTCGACTGGAAG*****
.....TGTAACATCCTCGACTGGAAG..... 24*
.....TGTAACATCCTCGACTGGAAGCT..... 18
.....CTTTCAGTCGGATGTTTGCAGC..... 15
.....TGTAACATCCTCGACTGGAAGC..... 15
.....CTTTCAGTCGGATGTTTGCAG..... 8
.....TTTCAGTCGGATGTTTGCAGC..... 7
.....ATCCTCGACTGGAAGC..... 3
.....TGTAACATCCTCGACTGGAAG..... 3

```


Supplemental Figure S1

.. 5

.....AGGCAAGATGCTGGCATAAGCTGa.....

.. 2

mmu-mir-32(mmu-mir-32)

GGAGATATTGCACATTACTAAGTTGCATGTTGTACGGCCTCAATGCAATTTAGTGTGTGTGATATTTTC
((((((((((..(((((((.((((((((((((((((((..((...)).)).))))))))))))))))))..))))))))) (-31.90)

*****TATTGCACATTACTAAGTTGCA*****
.....TATTGCACATTACTAAGTTGCA..... 12*
.....TATTGCACATTACTAAGTTGC..... 10
.....TATTGCACATTACTAAGTTGCAT..... 8
.....CAATTTAGTGTGTGTGATATT..... 4
.....ATATTGCACATTACTAAGTTGC..... 2
.....ATATTGCACATTACTAAGTTGCA..... 2
.....TNTTGCACATTACTAAGTTGCA..... 2

.....TATTGCACATTACTAAGTTGCAa..... 5
.....TATTGCACATTACTAAGTTGCAG..... 2

mmu-mir-320(mmu-mir-320)

GCCTCGCCGCCCTCCGCCCTTCTCTCCCGGTTCTTCCCGAGTCGGGAAAAGCTGGGTTGAGAGGGCGAAAAAGGATGTGGG
.....((((((((((..(((((((.((((((((((((((((((..((...)).)).))))))))))))))))))..))))))))) (-44.80)

*****AAAAGCTGGGTTGAGAGGGCGA*****
.....AAAAGCTGGGTTGAGAGGGCGAA..... 4
.....AAAGCTGGGTTGAGAGGGCGA..... 2
.....aAAAAGCTGGGTTGAGAGGGCGAA..... 2

mmu-mir-322(mmu-mir-322)

CCTCGTTGACTCCGAAGGGCTGCAGCAGCAATTCATGTTTTGGAGTATTGCCAAGGTTCAAACATGAAGCGCTGCAACACCCCTTCGTGGGGAA
.....((((((((((..(((((((.((((((((((((((((((..((...)).)).))))))))))))))))))..))))))))) (-42.80)

*****CAGCAGCAATTCATGTTTTGGA*****
.....AAACATGAAGCGCTGCAACAC..... 95
.....AAACATGAAGCGCTGCAACA..... 92
.....CAGCAGCAATTCATGTTTTGGA..... 71*
.....CAAAACATGAAGCGCTGCAACA..... 67
.....AAACATGAAGCGCTGCAACA..... 27
.....AAACATGAAGCGCTGCAACAC..... 23
.....GCAGCAGCAATTCATGTTTTG..... 19
.....AACATGAAGCGCTGCAACA..... 17
.....AACATGAAGCGCTGCAACAC..... 17
.....AAACNTGAAGCGCTGCAACAC..... 16
.....CAAAACATGAAGCGCTGCAAC..... 14
.....AAACNTGAAGCGCTGCAACA..... 11
.....AAACNTGAAGCGCTGCAACA..... 11
.....AAACNTGAAGCGCTGCAACAC..... 10
.....CAAAACNTGAAGCGCTGCAACA..... 8
.....CNGCAGCAATTCATGTTTTGGA..... 7
.....CAGCAGCAATTCATGTTTTG..... 5
.....AAACATGAAGCGCTGCAAC..... 3
.....CAAAACATGAAGCGCTGCAA..... 3
.....CAGCAGCAATTCATGTTTTGG..... 3
.....CAAAACNTGAAGCGCTGCAAC..... 2
.....AAACATGAAGCGCTGCAACACT..... 18
.....aAAAACATGAAGCGCTGCAACA..... 11
.....CAGCAGCAATTCATGTTTTGGAa..... 7
.....AAACATGAAGCGCTGCAACAa..... 6
.....GCAGCAGCAATTCATGTTTTGa..... 6
.....AAACATGAAGCGCTGCAACtA..... 5
.....CAAAACATGAAGCGCTGCAAA..... 4
.....AAACATGAAGCGCTGCAACat..... 4
.....tAAAACATGAAGCGCTGCAACA..... 4
.....TAGCAGCAATTCATGTTTTGGA..... 4
.....CAGCAGCAATTCATGTTTTtGGA..... 4
.....AAACATGAAGCGCTGCAACtAct..... 4
.....CAAAACATGAAGCGCTGCAACA..... 3

Supplemental Figure S1

Supplemental Table 1	Sequence	Count
.....	AAAAATGAAGCGCTGCAActA.....	3
.....	AAACATGAAGCGCTGCAAAa.....	3
.....	cAAACATGAAGCGCTGCAAC.....	3
.....CAGCAGCAATTCATGTTT-GGA.....	.....	3
.....	CAAAACATGAAGCGCTGCAACaA.....	3
.....aCAGCAGCAATTCATGTTTTGGA.....	.....	3
.....	aAAAAATGAAGCGCTGCAACAC.....	3
.....ctAGCAGCAATTCATGTTTTGGA.....	.....	3
.....	CAAAACATGAAGCGCTGCAActA.....	3
.....	AAACATGAAGCGCTaCAACAC.....	3
.....	CAAAACATGAAGCGCTGCAAct.....	3
.....	CAAAACATGAAGCGCTGCAActAa.....	3
.....CAGCAGCAATTCATGTTTTGGAt.....	.....	2
.....	cAACATGAAGCGCTGCAACA.....	2
.....GCAGCAGCAATTCATGTTTTgt.....	.....	2
.....	AAAAATGAAGCGCTGCAACaAC.....	2
.....CAGCAGCAATTCATGTTTTgt.....	.....	2
.....	AAACaATGAAGCGCTGCAACAC.....	2
.....	AACATGAAGCGCTGCAActA.....	2
.....GCAGCAGCAATTCATGTTTTg.....	.....	2
.....CAaCAGCAATTCATGTTTTGGA.....	.....	2
.....	AAAAATGAAGCGCTGCAACaA.....	2
.....	AACATGAAGCGCTGCAActAC.....	2
.....	CAAAACATGAAGCGCTGCAAAa.....	2
.....	AAAAATGAAGCGCTGCAACAct.....	2
.....	tAACATGAAGCGCTGCAACA.....	2
.....aGCAGCAGCAATTCATGTTTTG.....	.....	2
.....	AAACNTGAAGCGCTGCAAt.....	2
.....	AAACATaGAAGCGCTGCAACAC.....	2
.....	AAAAATGAAGCGCTGCAACAT.....	2
.....tgGCAGCAATTCATGTTTTGGA.....	.....	2
.....	caAAAAATGAAGCGCTGCAAC.....	2
.....CAGCAGCAATTCATGTTTTGGtA.....	.....	2
.....	AAACATGAaACGCTGCAACA.....	2
.....	tAAAAATGAAGCGCTGCAACg.....	2

```

mmu-mir-324-3p(mmu-mir-324)
AACTGACTATGCCTCCTCGCATCCCTAGGGCATTGGTGTAAGCTGGAGACCCACTGCCCCAGGTGCTGCTGGGGGTTGTAGTCTGAC
...(((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****CCACTGCCCCAGGTGCTGCT*****(-37.90)
.....CGCATCCCTAGGGCATTGGTG.....12
.....CGCATCCCTAGGGCATTGGTG.....2
.....ACTGCCCAAGGTGCTGCTGG.....2
.....CGCATCCCTAGGGCATTGGT.....1

```

Supplemental Figure S1

.....aTTTCTGGGTCTCTGTTTC.....AACACACCCAGC - AACCTTTTT.....3
AACACACCCAGCTAACCTTTTa.....3
AACACACCCAGCTtAACCTTTTT.....2
AACACACCCAGCTAACCCTTT.....2
AGAGGTTTTCTGGGTCTCTGTTTT.....2

```
mmu-mir-330(mmu-mir-330)
GACCCTTTGGCGATCTCTGCCTCTCTGGGCCTGTGTCTTAGGCTCTTCAAGATCCAACGAGCAAAGCACAGGGCCTGCAGAGAGGTAGCGCTCTGCTC
.....((((((((((((((((((((((((((((((.....)))))).)))))).)))))).)))))).)))))).)))))).))))).)).)).))
(-41.92)
*****TCTCTGGGCCTGTGTCTTAGGC*****
.....CAAAGCACAGGGCCTGCAGAGAGG.....
```

[illegible]

Page 80

Supplemental Figure S1

Supplemental Figure S2

.....CAAGAGCAATAACGAAAAATG.....	1
.....CAAGAGCAATAACGAAAAATGT.....	1
.....CAATAACGAAAAATGT.....	1
.....GCAATAACGAAAAATG.....	1
.....GTTTTTCATTATTGCTCCTGACC.....	1
TCAAGAGCAATAACGAAAAA.....	1

(-45.20)

*****TCAAGAGCAATAACGAAAAATGT*****	190
.....TCAAGAGCAATAACGAAAAATG.....	134*
.....TCAAGAGCAATAACGAAAAATGT.....	20
.....TCAAGAGCAATAACGAAAAAT.....	7
.....TCAAGAGCAATAACGAAAAATGTT.....	7
.....TTTTTCATTATTGCTCCTGACC.....	4
.....ATTGCTCCTGACC.....	4
.....TCAAGAGCAATAACGAAAAA.....	3
.....CAATAACGAAAAATG.....	2
.....AAGAGCAATAACGAAAAATGTT.....	1
.....AAGAGCAATAACGAAAAATG.....	3
.....TCAAGAGCAATAACGAAAAANGT.....	1
.....TTTTTCATTATTGCTCCTGACC.....	2
.....AAGNGCAATAACGAAAAATGTT.....	1
.....CAAGAGCAATAACGAAAAATG.....	1
.....CAAGAGCAATAACGAAAAATGT.....	1
.....CAATAACGAAAAATGT.....	1
.....GCAATAACGAAAAATG.....	1
.....GTTTTTCATTATTGCTCCTGACC.....	1
.....TCAAGAGCAATAACGAAAA.....	1

...	TCAAGAGCAATAACGAAAAA-TG...	88
...	TCAAGAGCAATAACGAAAAA-TGT...	60
...	TCAAGAGCAATAACGAAAAA...	23
...	aTCAAGAGCAATAACGAAAAATG...	17
...	aTCAAGAGCAATAACGAAAAATGT...	16
...	TCAAGAGCAATAACGAAAAATGa...	10
...	TCAAGAGCAATAACGAAAAATtG...	6
...	aTCAAGAGCAATAACGAAAAAaTGT...	4
...	TCAAGAGCAATAACGAAAAAaTGT...	4
...	TtAAGAGCAATAACGAAAAATGT...	4
...	TCAAGAGCAATA-CGAAAAA-TG...	3
...	TtAAGAGCAATAACGAAAAATG...	3
...	TTTTTCATTATTGCTCCTGtACC...	2
...	TTTTTCATTATTGCTCCTGAc...	2
...	TCAAGAGCAATAACGAAAAA...	2
...	cCAAGAGCAATAACGAAAAATGT...	2
...	TCAAGAGCAATAACGAAAAATaG...	2
...	TCAAGAGCAATAACGAAAAA...	2
...	TCAATAGCAATAACGAAAAATG...	2
...	TCAAGAGCAATAACGAAAAAgTGT...	2
...	TCAAGAGCAATAACGAAAAATa...	2
...	TCAAGAGCAATAACGAAAAA...	2
...	aaTCAAGAGCAATAACGAAAAATGT...	2
...	TCAAGAGCAATAACaAAAAATG...	2
...	aTCAAGAGCAATAACGAAAAA...	2
...	TCAAGAGaCAATAACGAAAAATGT...	2
...	TCAAGAGCAATAACGAAAAATGTTa...	2
...	TCAAGAGCAATAACGAAAAATtGT...	2
...	ATTGCTCCTGtACC...	2
...	TCAAGAGCAATAACGAAAAATGc...	2
...	TCAAGAGCAATAACGtAAAAATG...	2
...	TCAAGAGCAATAAC-AAAAATG...	2
...	TCAAGAGCAATAACGAAAAA...	2
...	TCAAGAGCAATAACGAAAAA...	2
...	aCAAGAGCAATAACGAAAAATGT...	2
...	TCAAGAGCAATAACGAAAAATaGT...	2
...	TCAAGAGCAATAACGAAAAA...	2
...	TCAAGAGCAATAACGAAAAA...	2
...	TCAAGAGCAATAACGAAAAA...	2
...	TCAAGAGCAATAACGAAAAA...	2

Supplemental Figure S1

mmu-mir-337-3p(mmu-mir-337)
CAGTGTAGTGAGAAGTTGGGGGGTGGGAACGGCGTCATGCAGGAGTTGATTGCACAGCCATTAGCTCCTATATGATGCCTTTCTTCACCCCTTCA
.....((((((((((((((((((((((((((((((((.....))).

(-49.60)
*****TTCAGCTCCTATATGATGCCT*****
.....CGGCGTCATGCAGGAGTTGATT..... 33
.....CGGCGTCATGCAGGAGTTGAT..... 11
.....TCAGCTCCTATATGATGCCTTT..... 7
.....TCAGCTCCTATATGATGCCTT..... 4
.....ACGGCGTCATGCAGGAGTTGATT..... 1

mmu-mir-337-5p(mmu-mir-337)
CAGTGTAGTGAGAAGTTGGGGGGTGGGAACGGCGTCATGCAGGAGTTGATTGCACAGCCATTAGCTCCTATATGATGCCTTTCTTCACCCCTTCA
.....((((((((((((((((((((((((((((((((.....))).

(-49.60)
*****GAACGGCGTCATGCAGGAGTT*****
.....CGGCGTCATGCAGGAGTTGATT..... 33
.....CGGCGTCATGCAGGAGTTGAT..... 11
.....TCAGCTCCTATATGATGCCTTT..... 7
.....TCAGCTCCTATATGATGCCTT..... 4
.....ACGGCGTCATGCAGGAGTTGATT..... 1
.....tGGCGTCATGCAGGAGTTGATT..... 6
.....TCAGCTCCTATATGATGCCTTc..... 3
.....CGGCGTCATGCAGGAGTTGATTt..... 3
.....tGGCGTCATGCAGGAtTTGATT..... 2
.....cgGGCGTCATGCAGGAGTTGATT..... 2
.....CGGCGTCATGCAGGAGTTGtATT..... 2
.....CGGCGTCATaCAGGAGTTGATT..... 2
.....TCAGCTCCTATATGAcTGCCTT..... 2
.....TCAGCTCCTATATGATGCCTTa..... 2
.....TT-AGCTCCTATATGATGCCTTT..... 2

mmu-mir-338-3p(mmu-mir-338)
CAACGCTGCACAGGCCGCTCCTCCCAACAATATCCTGGTGCTGAGTGGGTGCACAGTGAAGAGGGCAGCTGCCA
.....(((.....(((.....(((.....(((.....(((.....(((.....(((.....))).

(-42.20)
*****TCCAGCATCAGTGATTTTGTG*****
.....TCCAGCATCAGTGATTTTGTG..... 1*
.....TCCAGCATCAGTGATTTTGTGA..... 1

mmu-mir-338-5p(mmu-mir-338)
CAACGCTGCACAGGCCGCTCCTCCCAACAATATCCTGGTGCTGAGTGGGTGCACAGTGAAGAGGGCAGCTGCCA
.....(((.....(((.....(((.....(((.....(((.....(((.....(((.....))).

(-42.20)
*****AACAATATCCTGGTGCTGAGTG*****
.....TCCAGCATCAGTGATTTTGTG..... 1
.....TCCAGCATCAGTGATTTTGTGA..... 1

mmu-mir-339-3p(mmu-mir-339)
ACGGGGTGGCCACTATCCTGTCTCCAGGAGCTCACGTATGCCTGCCTGTGAGCGCCTCGGCGACAGAGCCGGTGTCCACCCTGCACTGTCCAC
..(((.....(((.....(((.....(((.....(((.....(((.....(((.....)) (-44.10)
*****TGAGCGCCTCGGCGACAGAGCCG*****
.....TGAGCGCCTCGGCGACAGAGCCG..... 2*
.....TCCTGTCTCCAGGAGCTC..... 1
.....TCCGTGTCTCCAGGAGCTCA..... 1

mmu-mir-339-5p(mmu-mir-339)
ACGGGGTGGCCACTATCCTGTCTCCAGGAGCTCACGTATGCCTGCCTGTGAGCGCCTCGGCGACAGAGCCGGTGTCCACCCTGCACTGTCCAC

```

.....(((((((.((((.(.((((.((((.(((((((.(.....)))))))).)))))).)))))).))))))..... (-44.10)
*****TCCTGTCTCCAGGAGCTCACG*****

```

```
mmu-mir-341(mmu-mir-341)
AAAATGATGATGTCAGTTGGCCGGTCGCCGATCGCTCGGTCTGTCAAGTCAGTCGGTCGGTCGATCGGTCGGTCGGTCAGTCGGCTTCCTGTCTTC
.....(((((((.....((((((((((.....((((((((((.....))))))))))))))))))))))))))))))))))))))))))... (-47..10)
*****TCGGTCGATCGGTCGGTCGGT*****
```

[illegible]

(-48.90)

mmu-mir-343(mmu-mir-343)

mmu-mir-344(mmu-mir-344-1)

mmu-mir-344(mmu-mir-344-2)

mmu-mir-345-3p(mmu-mir-345)

Page 84

AATCCTTGGAACCTAGGTGTGAAT

mmu-mir-363(mmu-mir-363)

mmu-mir-365(mmu-mir-365-1)

mmu-mir-365(mmu-mir-365-2)

AGAGTGATCAAGGACAGCAAGAAAAATGAGGGACTTTCAGGGGCAGCTGTGTTTCCTGACTCAGTCATAATGCCCTAAAAATCCTTATTGTTCTTGCAGTGTGC

ATCGGAG

* * * * *

mmu-mir-367(mmu-mir-367)

mmu-mir-369-3p(mmu-mir-369)

Page 87

Supplemental Figure S1

.....AGATCGACCGTGTATATTCGCT..... 1
TAATACATGGTTGATCTT..... 1

.....	AATAATACATGGTTGATCTTT	98
.....	AATAATACATGGTTGATCTT	26
.....AGATCGACCGTGTTATATTCGC		22*
.....AGATCGACCGTGTTATATTCG		13
.....	ATAATACATGGTTGATCTTT	12
.....	AATAATACATGGTTGATCTTTT	11
.....	ATAATACATGGTTGATCTT	8
.....	GAATAATACATGGTTGATCTTT	8
.....	AATAATACATGGTTGANCCTT	4
.....	GAATAATACATGGTTGATCTT	2
.....GATCGACCGTGTTATATTCGC		1
.....GATCGACCGTGTTATATTCGCT		1
.....	AATAATACATGGTTGANCCTTT	2
.....AGATCGACCGTGTTATATTCGCT		1
.....	TAATACATGGTTGATCTT	1

.....aAATAATACATGGTTGATCTTT.....	9
.....AATAATACATGGTTGATCTTTa.....	4
.....aAATAATACATGGTTGATCTTTT.....	4
.....AGATCGACCGTGTTATATTCa.....	3
.....AATAATACATGGTTGATCCTT.....	3
.....aAGATCGACCGTGTTATATTCG.....	3
.....AATA-TACATGGTTGATCTTT.....	3
.....AATAATACATGaTTGATCTTT.....	3
.....AATAATACATGGTTGATtCTTT.....	2
.....aAATAATACATGGTTGATtCTT.....	2
.....AATA-TACATGGTTGATCTT.....	2
.....AATAATACATGGTTGATCTgT.....	2
.....AATAATACATaGTTGATCTT.....	2
.....AATAATACATaGTTGATCTTT.....	2

.....GCCTGCTGGGGTGGAACTGG.....22
GCCTGCTGGGGTGGAACTGGT.....16*
 ..CAGGTCACGTCTCTGCAGTTACAC.....2

.....	GCCTGCTGGGGTGGAACTGGTaa.....	72
.....	GCCTGCTGGGGTGGAACTGGTaT.....	41
.....	GCCTGCTGGGGTGGAACTGGTaaT.....	11
.....	GCCTGCTGGG-TGGAACCTGGTaT.....	10
.....	GCCTGCTGGGGTGGAACTGGTa.....	7
.....	GCCTGCTGGG-TGGAACCTGG.....	6
.....	GCCTGCTGGGGTGGAACTGGTaaa.....	5
.....	GCCTGCTGGGGTGGAACTGGTag.....	5
.....	GCCTGCTGGG-TGGAACCTGGTaa.....	5
.....	aGCCTGCTGGGGTGGAACTGGTaa.....	4
.....	CTGCTGGGGTGGAACTGGTaa.....	3
.....	GCCTGCTGGGGgTGGAACTGGTaa.....	3
.....	GCCTGCTGGGGTGGAACTGGTTaa.....	3
.....	aGCCTGCTGGGGTGGAACTGGTaT.....	3
.....	tCCTGCTGGGGTGGAACTGGTaaT.....	2
.....	GCCTGCTGGGGTGGAACTGGTTa.....	2
.....	GCCTGCTGGGGTGGAACTGGTa-GT.....	2
.....	GCCTGCTGGGGTGGAACTGGaaa.....	2
.....	aGCCTGCTGGGGTGGAACTGG.....	2
.....	GCCTGCTGGGGTGGAACTaG.....	2
.....	GCCTGCTGGGGTGGAACTGGaa.....	2
.....	tCCTGCTGGGGTGGAACTGGTaa.....	2
.....	tCCTGCTGGGGTGGAACTGGTa.....	2
.....	aGCCTGCTGGGGTGGAACTGGT.....	2

.GCCTGCTGGGGTGGAACTGGTaTT..... 2

Page 89

Supplemental Figure S1

. CGTTctGCTCGCGTGA . . . 2
 TTTGTTcGTTcGGCTcGCGgGA . . . 2
 aTTTGTTcGTTcGGCTcGCGTGA . . . 2
 TTTT - TTCGTTcGGCTcGCGTGA . . . 2
 TTTGTTcGTTcGGCcCgCGTGA . . . 2
 TTTGTTcGTTcGGCTtGCGTgt . . . 2
 aTTTGTTcGTTcGGCTcGCGTG . . . 2
 TGTTcGTTcGGCTcGCGTGA . . . 2
 TTTGcTCGTTcGGCTcGCGTGA . . . 2
 TTGTTcGTTcGGCTcGtGTGA . . . 2
 agTTTGTTcGTTcGGCTcGtCGTGA . . . 2
 TTTGTTcCtTCGGCTcGCGTGA . . . 2
 aTTTGTTcGTTcGGtCTcGCGTGA . . . 2
 TtcGTTcGTTcGGCTcGCGTGA . . . 2
 TTTGtcCGTTcGGCTcGCGTGA . . . 2
 aGTTcGGCTcGCGTGA . . . 2
 TTTGTTcGTTcGGCTcGCGTGAaG . . . 2
 TTTGTTcGTTcGGCTcGCGTGAGa . . . 2
 TcGTTcGTTcGGCTcGCGTGA . . . 2
 TTTGTTcGTTcGGCTcGtCGTGA . . . 2
 TTTGTTCaTTcGGCTcGCGTGA . . . 2
 TTTGT - CGT - CGGCTcGCGTGA . . . 2
 TTTGTTcGTTcGGCTcGCGtTGA . . . 2
 TCGGCTcGCGTaA . . . 2
 TTTGTTcGTTcGGCTcTcGtGTGA . . . 2
 TGTTcGTTcGGCTcGCGTGatt . . . 2
 cTTGTTcGTTcGGCTcGCGTGA . . . 2
 TTTGTTcGTTcCaGCTcGCGTG . . . 2

mmu-mir-376a(mmu-mir-376a)

TAAAGGTAGATTCTCCTTCTATGAGTACAATATTAATGACTAATCGTAGAGGAAAAATCCACGTTTTTC
(((((((.....)))))))).))) (-16..21)

.....ATCGTAGAGGAAAAATCCACGT.....	451*
.....ATCGTAGAGGAAAAATCCACGT.....	58
.....AATCGTAGAGGAAAAATCCACGT.....	39
.....ATCGTAGAGGAAAAATCCACG.....	27
.....TCGTAGAGGAAAAATCCACGT.....	19
.....GTAGATTCTCCTTCTATGAGT.....	7
.....AATCGTAGAGGAAAAATCCACG.....	6
.....TCGTAGAGGAAAAATCCACGTT.....	6
.....TTCTCCTTCTATGAGT.....	6
.....AATCGTAGAGGAAAAATCCACGTT.....	5
.....ATCGTAGAGGAAAAATCCACGTTT.....	4
.....GGTAGATTCTCCTTCTATGAGT.....	2

.....	ATCGTAGAGGAAAAATCCACGTa...	61
.....	ATCGTAGAGGAAA- TCCACGT...	34
.....	ATCGTAGAGGAAAAATCCACGTa...	18
.....	tTCGTAGAGGAAAAATCCACGT...	16
.....	TCGTAGAGGAAA- TCCACGT...	15
.....	ATCGTAGAGGAAAAATCCtACGT...	14
.....	ATCGTAGAGGAAAAATCCACGTaa...	9
.....	AATCGTAGAGGAAAAATCCACGTa...	7
.....	ATCGTAGAGGAAAAATCCACGTg...	6
.....	ATCGTAGAGGAAA- TCCACG...	5
.....	TCGTAGAGGAAA- TCctACGT...	5
.....	TCGTAGAGGAAAAATCCACGTa...	5
.....	TCGTAGAGGAAA- TCCACGTT...	4
.....	AATCGTAGAGGAAAAaTCCACGT...	4
.....	ATCGTAGAGGAAA- TCCACGTa...	3
.....	ATCGTAGAGGgAAATCCACGTT...	3
.....	ATCGTAGAG- AAAATCCACGT...	3
.....	ATCGTAGAGGAAAAATCCACGa...	3
.....	tTCGTAGAGGAAAAATCCACGTT...	2
.....	ATCGTAGAGGAAAAATCCACGTaT...	2
.....	TCGTAGAGGAAAAATCCtACGTT...	2
.....	ATCGTAGAGGAAAAATCCACGc...	2
.....	AATCGTAGAGGAAAAATCCACGTTa...	2
.....	ATCGTAGAGGAAAAATCCACGg...	2
.....	ATCaTAGAGGAAAAATCCACGT...	2
.....	ATCGTAGAGGAAAAATCCtACG...	2

Supplemental Figure S1

.....ATaCGTAGAGGAAA-TCCACGT.....	2
.....ATCGTAGAGGAAA-TCCACGTaa.....	2
.....tTCGTAGAGGAAAATCCACGTTa.....	2
.....ATCGTAGAGGgAAAATCCACGT.....	2
.....TCGTAGAGGtAAATCCACGTa.....	2
.....AcCGTAGAGGAAAATCCACGT.....	2
.....ATCGTAGAGGAAAAaTCCACGT.....	2
.....ATCGTAGAGGAAAAgTCCACGT.....	2
.....ATCGTAGAGGAAAgTCCACGTa.....	2

mmu-mir-376b(mmu-mir-376b)

TGGTATTTTAAAGGTGGATATTCTTCTATGGTTACGTGCTTCTCGGATAATCATAGAGGAACATCCACTTTTTTCAGTATCA
 .(((((((.(((((((((((((.(((((.((((((((((((....((...)).)))))))))))))).)))))))))))))).)))))). (-34.40)

```

*****ATCATAGAGGAACATCCACTT*****
.....ATCATAGAGGAACATCCACTT..... 19*
.....GTGGATATTCCTTCTATGGTTA..... 9
.....GTGGATATTCCTTCTATGGTT..... 6
.....TTCCTTCTATGGTTA..... 5
.....ATCATAGAGGAACATCCACTTT..... 4
.....ATCATAGAGGAACATCCACT..... 2
.....GGTGGATATTCCTTCTATGGTT..... 2
.....GTGGATATTCCTTCTATGGT..... 2

```

```

.....ATCATAGAGGAACATCCACTT..... 4
.....ATCATAGAGGAACATCCACTTaa..... 3
.....ATCATAGAGGAACATCCACTc..... 2

```

mmu-mir-376c(mmu-mir-376c)

*****AACATAGAGGAAATTTACGT*****	
.....AACATAGAGGAAATTTACGT.....	62*
.....ACATAGAGGAAATTTACGT.....	8
.....AAACATAGAGGAAATTTACGT.....	7
.....AACATAGAGGAAATTTACG.....	4

.....ACATAGAGGAA-TTTACGT.....	5
.....AACATAGAGGAAATTTACGTa.....	3
.....tACATAGAGGAAATTTACGT.....	2

mmu-mir-377 (mmu-mir-377)

```

*****ATCACACAAAGGCAACTTTTGT***
.....ATCACACAAAGGCAACTTTTGT.... 12*
.....AATCACACAAAGGCAACTTTTGT... 7
...AGAGGTTGCCCTTGGTGAATTCG... 4
.....TGAATCACACAAAGGCAACTTT... 3
...AGAGGTTGCCCTTGGTGAATTC... 2
-----
.....ATCACACAAAGGCAACTTT-GT... 2

```

mmu-mir-378(mmu-mir-378)

AGGGCTCCTGA^{CT}CCAGG^TCCTGTGTGTTACCTCGAAATAGCACTGGACTTGGAGTCAGAAGGCCT
(((.(.(.(((((((((((((((((. . .(((((((((.)))))))).)))))))).)))))))).))) (-39..20)

```

*****ACTGGACTTGGAGTCAGAAGG*****
. . . . .ACTGGACTTGGAGTCAGAAGG. . . . .9*
. . . . .CTTGGAGTCAGAAGG. . . . .6
. . . . .ACTGGACTTGGAGTCAGAAG. . . . .5
. . . . .ACTGGACTTGGAGTCAGAAGGC. . . . .3
. . . . .CTGGACTTGGAGTCAGAAGGC. . . . .3
. . . . .CTTGGAGTCAGAAGGC. . . . .3
. . . . .ACTTGGAGTCAGAAGG. . . . .2
. . . . .CTTGGAGTCAGAAG. . . . .2

```

TACTCGAAATg... 5
 .ACTGGACTTGGAGTCAGAAGa... 3
 .CTTGGAGTCAGAAGGCg... 2
 .tTTGGAGTCAGtAAGG... 2

Supplemental Figure S1

.....CTTGGAGTCAGAAGGCaa. 2
ACTGGACTTGGAGTCAGAAGGt... 2

 mmu-mir-379(mmu-mir-379)

AGAGATGGTAGACTATGGAACGTAGGCGTTATGTTTTGACCTATGTAACATGGTCCACTAACTCT
 ((((((.....))))))..))))) (-27.40)

*****TGGTAGACTATGGAACGTAGG*****
TGGTAGACTATGGAACGTAGG..... 497*
TGGTAGACTATGGAACGTAG..... 174
TATGTAACATGGTCCACTAAC..... 89
ATGGTAGACTATGGAACGTAGG..... 30
CTATGGAACGTAGG..... 19
TGGTAGACTATGGAACGTAGGC..... 10
ATGGTAGACTATGGAACGTAG..... 9
TATGTAACATGGTCCACTAA..... 6
TATGTAACATGGTCCACTAACT... 5
ATGGAACGTAGG..... 3

.....TATGTAACAcGGTCCACTAACT... 48
TGGTAGACTATGGAACGTAGGa..... 20
TATGTAACATGGTCCACTAAa... 20
TGGTAGACTATGGAACGTtAGG..... 16
TGGTAGACTATGGAACGTAGa..... 16
TGGTAGACTATGGAACGTAGGt..... 14
TATGTAACAcGGTCCACTAAtT... 12
TATGTAACAcGGTCCACTAAaT... 10
aTATGTAACATGGTCCACTAAC... 7
TGGTAGACTATGGAACGTAA..... 7
TATGTAACATGGTCCACTAAca... 7
TGGTAGACTATGGAACGTAAg..... 5
TGGTAGACTATGGAACGTAGt..... 5
ATGGTAGACTATGGAACGTAGGa..... 4
TATGTAACATGGTCCACTtAAC... 4
TGGTAGACTATG-AACGTAGG..... 4
CGGTAGACTATGGAACGTAGG..... 4
TcGTAGACTATGGAACGTAGG..... 4
TtTGTAAcATGGTCCACTAAC... 4
TGGTAGACTATGGAACGTAGGaa..... 3
TGGTAGACTATaGAACGTAG..... 3
TGGTAGACTATGGA-CGTAGG..... 3
TtGTAGACTATGGAACGTAGG..... 3
TGGTAGACTATGGAACGTtAG..... 3
CTATGGAACGTAGGa..... 3
TGGTAGACTATG-AACGTAG..... 2
tGTAGACTATGGAACGTAGG..... 2
TATGTAACATGGcCCACTAAC... 2
TGGTAGACTAgTGAACGTAG..... 2
TGGTAGACTATGGAACGTAGGta..... 2
TGGTAGgCTATGGAACGTAGG..... 2
TGGTAGACTATGGAACGTAcG..... 2
TtGTAGACTATGGAACGTAG..... 2
aATGGTAGACTATGGAACGTAGG..... 2
TATGTAACAcGGTCCACTAACTa... 2
TGGTAGACTATaGAACGTAGG..... 2
TGGTAGACTATGGA-CGTAG..... 2
TGGTAGACTATGGAgCGTAGG..... 2
TGaTAGACTATGGAACGTAGG..... 2
tGTAGACTATGGAACGTAG..... 2
TGGTAGACTAgTGAACGTAGGt..... 2
CTATGGAACGTAGGt..... 2
aTATGTAACAcGGTCCACTAACT... 2
TATGTAACATGGTCCACTgAC... 2
TGGTAaACTATGGAACGTAGG..... 2

 mmu-mir-380-3p(mmu-mir-380)

AAGATGGTTGACCATAGAACATCTTCTGTGTCGTATGATGATGGTCCACATCTT
 ((((((.....))))))..))))) (-27.00)
 *****TATGTAGTATGGTCCACATCTT

...ATGGTTGACCATAGAACATGCG..... 18
TATGTAGTATGGTCCACATCT... 4
TATGTAGTATGGTCCACATC... 1

Supplemental Figure S1

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.....TATGTAGTATGGTCCACATCTT. 1*
....TGGTTGACCATAGAACATGCG..... 1
-----

mmu-mir-380-5p(mmu-mir-380)
AAGATGGTTGACCATAGAACATGCGCTACTTCTGTGTCGTATGTAGTATGGTCCACATCTT
(((((((...(((((((...(((((((...(((((((...)))))))).)))))))).)))))) (-27.00)
***ATGGTTGACCATAGAACATGCG*****
...ATGGTTGACCATAGAACATGCG..... 18*
.....TATGTAGTATGGTCCACATCT.. 4
.....TATGTAGTATGGTCCACATC... 1
.....TATGTAGTATGGTCCACATCTT. 1
....TGGTTGACCATAGAACATGCG..... 1
-----

.....TATGTAGTATGGTCCACATCTa. 7
...ATGGTTGACCATAGAACATGtCG..... 3
...ATGGTTGACCATAGAACATGCa..... 2
...aATGGTTGACCATAGAACATGCG..... 2
AA-ATGGTTGACCATAGAACATGCG..... 2
...ATGGTTGACCATAGAACATGCGa..... 2
...tTGGTTGACCATAGAACATGCG..... 2
-----

mmu-mir-381(mmu-mir-381)
TACTTAAAGCGAGGTTGCCCTTTGTATATTCGGTTTATTGACATGGAATATACAAGGGCAAGCTCTCTGTGAGTA
(((((((...(((((((...(((((((...(((((((...)))))))).)))))))).)))))) (-35.00)
*****TATACAAGGGCAAGCTCTCTGT*****
.....TATACAAGGGCAAGCTCTCTGT..... 22*
.....TATACAAGGGCAAGCTCTCTG..... 3
-----

.....TATACAAGGGCAAGCTCTCTGTa..... 8
.....TtTACAAGGGCAAGCTCTCTGT..... 2
-----

mmu-mir-382(mmu-mir-382)
TACTTGAAGAGAAGTTGTTTCGTGGTGGATTTCGCTTTACTTGTGACGAATCATTACGGACAACACTTTTTTCAGTA
(((((((...(((((((...(((((((...(((((((...)))))))).)))))))).)))))) (-28.50)
*****GAAGTTGTTTCGTGGTGGATTTCG*****
.....GAAGTTGTTTCGTGGTGGATTTCG..... 212*
.....AAGTTGTTTCGTGGTGGATTTCG..... 19
.....AGAAGTTGTTTCGTGGTGGATTTCG..... 17
.....GAAGTTGTTTCGTGGTGGATTTC..... 11
.....AATCATTACGGACAACACTTT..... 10
.....TTCGTGGTGGATTTCG..... 6
.....AATCATTACGGACAACACTT..... 4
.....AGTTGTTTCGTGGTGGATTTCG..... 3
.....GAAGTTGTTTCGTGGTGGATTTC..... 3
.....AGTTGTTTCGTGGTGGATTTCGCT..... 2
.....ATCATTACGGACAACACTT..... 2
.....TCGTGGTGGATTTCG..... 2
.....TTGTTTCGTGGTGGATTTCG..... 2
-----

.....GAAGTTGTTTCGTGGTGGATTTCa..... 9
.....GAAGTTGTTTCGTGGTGGATTTCGt..... 7
.....GAAGTTGTTTCGTGGTGGATTTCGa..... 7
.....AaAGTTGTTTCGTGGTGGATTTCG..... 3
.....gtAAGTTGTTTCGTGGTGGATTTCG..... 3
.....GAAGTTGTTTCGTGGTGGtATTTCG..... 3
.....GAAGTTGTTTCGTGGTGGATTTCG..... 3
.....tAAGTTGTTTCGTGGTGGATTTCG..... 3
.....GgAGTTGTTTCGTGGTGGATTTCG..... 2
.....AAGTTGTTTCGTGGTGGATTTCa..... 2
.....GAAGTTGTTTCGTGGTGGATTTCt..... 2
.....AGAAGTTGTTTCGTGGTGGATTTCa..... 2
.....GAAGTTGTTTCGTGGTGGAT-CG..... 2
.....GAAGTTGTTTCGTGGTaGATTTCG..... 2
.....GAAGTTGTTTCGTGGcGGATTTCG..... 2
.....AGAAGTTGTTTCGTGGTGGATTTCGa..... 2
-----

mmu-mir-383(mmu-mir-383)
CTCAGATCAGAAGGTGACTGTGGCTTTGGGTGGATATTAATCAGCCACAGCACTGCCTGGTCAGAAAGAG

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Supplemental Figure S1

.....GAATGTTGCTCGGTGAACCCCTa.....	9
.....CGAATGTTGCTCGGTGAACCCct.....	7
.....CGAATGTTGCTCGGTGAACCCCTa.....	5
.....CGAATGTTGCTCGGTGAACCCCTaa.....	5
.....GAATGTTGCTCGGTGAACCCCTaaa.....	5
.....aAATGTTGCTCGGTGAACCCCT.....	5
.....GAATGTTGCTCGGTGAACCCCTTaT.....	5
.....GAATGTTGCTCGGTGAACCCCT.....	4
.....AGGTTACCCGAGCAACTTTGCATCa.....	3
.....TGTTGCTCGGTGAACCCCTaT.....	3
.....GAATGTTGCTCGGTGtAACCCCT.....	3
.....GAATGTTGCTCGGTGAACCCCTaaT.....	3
.....CGAATGTTGCTCGGTGAACCCCa.....	3
.....GAATGTTGCTCGGTGAACCCCTT.....	2
.....AaGAATGTTGCTCGGTGAACCCCT.....	2
.....GAATGTTGCTCGGTGtAACCCCT.....	2
.....aGAATGTTGCTCGGTGAACCCct.....	2
.....tGAATGTTGCTCGGTGAACCCCT.....	2
.....CGAAcGTTGCTCGGTGAACCCCT.....	2
.....GAATGTTGCTCGGTGAACCCCTaaaa.....	2
.....GAATGTTGCTCGGTGtAACCCCT.....	2
.....aAGGTTACCCGAGCAACTTTGCATC.....	2
.....aGAATGTTGCTCGGTGAACCCCT.....	2
.....tAATGTTGCTCGGTGAACCCCT.....	2
.....GAATGTTGCTCGGTGAACCCct.....	2
.....GAATGTTGCTCGGTGAACCCCTTa.....	2
.....AATGTTGCTCGGTGAACCCCTg.....	2
.....GAATGTTGCTCGGTGAACCCCa.....	2
.....GAATGTTGCTCGGTGAACCCcta.....	2
.....aAATGTTGCTCGGTGAACCCCTaa.....	2
.....CGAATGTTGCTCGGTGtAACCCCT.....	2

mmu-mir-410(mmu-mir-410)

GGGTACTTGGAGAGAGGTGTGCTGTGATGAGTTTCGCTTTATTAATGACGAATATAACACAGATGGCCTGTTTTCAATACCA
 .(((.((((.((((.((((.((((.((((.(.....).))))).).))))).))))).))))).))))).))))). (-35.80)

*****AATATAACACAGATGGCCTGT*****	
.....AAATATAACACAGATGGCCTGT.....	56*
.....ATATAACACAGATGGCCTGT.....	7
.....AAATATAACACAGATGGCCTGT.....	6
.....AAATATAACACAGATGGCCTGT.....	2
.....AGGTTGTCTGTGATGAGTTCG.....	2
.....ATATAACACAGATGGCCTGT.....	2

mmu-mir-411(mmu-mir-411)

*****TAGTAGACCGTATAGCGTACG*****	
.....TATGTAACACGGTCCACTAAC.....	532
.....TAGTAGACCGTATAGCGTACG.....	101*
.....TATGTAACACGGTCCACTAA.....	89
.....ATAGTAGACCGTATAGCGTACG.....	44
.....TAGTAGACCGTATAGCGTAC.....	11
.....ATGTAACACGGTCCACTAAC.....	6
.....TATGTAACACGGTCCACTAAC.....	4
.....AGTAGACCGTATAGCGTACGCT.....	3
.....CGTATGTAACACGGTCCACTAA.....	3
.....TATGTAACACGGTCCACTA.....	3
.....AGTAGACCGTATAGCGTACG.....	2

.....TATGTAACACGGTCCACTAAt.....	171
.....TATGTAACACGGTCCACTAAa.....	118
.....TATGTAACACGGTCCACTAACa.....	31
.....aTATGTAACACGGTCCACTAAC.....	13
.....TATGTAACACGGTCCACTtAAC.....	11
.....TATGTAACACGGTCCACTAAaC.....	10
.....TATGTAACACGaTCCACTAAC.....	8
.....TAGTAGACCGTATAGCGTACa.....	7
.....TtTGTAACACGGTCCACTAAa.....	6
.....TATGTAACACGGTCCACTAAaa.....	6

[illegible]

```
mmu-mir-423-3p(mmu-mir-423)
ACTTGTGAGGAAATAAAGGAAGTTAGGCTGAGGGGCAGAGAGCGAGACTTTTCTATTTTCCAAAAGCTCGGTCTGAGGCCCTCAGTCTTGCTTCCTACCCCGG
CTTG
....(((.(.....((((((.(((((((((((.(.(((.((((.((((.....)))))))))).)))...)))))))))))))).)))...))
)... (-52.20)
*****AGCTCGGTCTGAGGCCCTCAGT*****
****
.....AGCTCGGTCTGAGGCCCTCAGT.....
..... 55*
```


Supplemental Figure S1

```

.....AAGCTCGGTCTGAGGCCCTCAG.....
..... 1 .....
.....GCTCGGTCTGAGGCCCTCAGT.....
..... 1 .....
.....TGAGGGGCAGAGAGCGAGA.....
..... 1 .....
-----
.....AGCTCGGTCTGAGGCCCTCAGa.....
..... 11 .....
.....AGCTCGGTCTGAGGCCCTCAGTaa.....
..... 8 .....
.....AGCTCGGTCTGAGGCCCTCAGTaT.....
..... 7 .....
.....TGAGGG-CAGAGAGCGAGACTTT.....
..... 5 .....
.....AGCTCGGTCTGAGGCCCTCtAGT.....
..... 5 .....
.....AGCTCGGTCTGAGGCCC-TCAGT.....
..... 4 .....
.....TGAGGGGCAGAGAGCGAGACTTTTt.....
..... 4 .....
.....aTGAGGGGCAGAGAGCGAGACTT.....
..... 3 .....
.....AGCTCGGTCTGAGGCCCTCAGTa.....
..... 3 .....
.....TGAGGGGCAGAGAGCGAGACTTTa.....
..... 3 .....
.....AGCTCGGTCTGAGGCCCTCAGTt.....
..... 3 .....
.....AGCTCGGTCTGAGGCCCTCAGTta.....
..... 3 .....
.....TGAGGGGCAGAGAGCGAGtACTTT.....
..... 3 .....
.....TGAGGGGCAGAGAGCGAGtACTT.....
..... 2 .....
.....TGAGGGaCAGAGAGCGAGACTTT.....
..... 2 .....
.....AAGCTCGGTCTGAGGCCCTCAGTa.....
..... 2 .....
.....AGCTCGGTCTGAGGCCCTCAGTtaT.....
..... 2 .....
.....aTGAGGGGCAGAGAGCGAGACTTT.....
..... 2 .....
.....AAGCTCGGTCTGAGGCCCTCAa.....
..... 2 .....
.....AGCTCGGTCTGAGGCCCTCAGTaTT.....
..... 2 .....
.....aTGAGGGGCAGAGAGCGAGACT.....
..... 2 .....

```


mmu-mir-433(mmu-mir-433)
TGCCCGGGGAGAAGTACGGTGAGCCTGTCAATTATTCAGAGAGGCTAGATCCTCTGTGTTGAGAAGGATCATGATGGGCTCCTCGGTGTTCTCCAGGTAGCGGCAC

```

mmu-mir-434-3p(mmu-mir-434)
TCGACTCTGGGTTTGAACCAAAGCTCGACTCATGGTTTGAACCATTACTTAATTCGTGGTTTGAACCATCACTCGACTCCTGGTTCGAACCATC
.....((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****(((((.....TTTGAACCATCACTCGACTCCT*****
.....TTTGAACCATCACTCGACTCC.....18
.....TTTGAACCATCACTCGACTCCT.....17*
.....GCTCGACTCATGGTTTGAACCA.....5
.....GCTCGACTCATGGTTTGAACC.....4
.....CTCATGGTTTGAACC.....3
.....AGCTCGACTCATGGTTTGAACC.....2
.....GCTCGACTCATGGTTTGAAC.....2
.....GTTTGAACCATCACTCGACTCC.....1
.....AGCTCGACTCATGGTTTGAACCA.....1
.....CTCATGGTTTGAACCA.....1

```

```
mmu-mir-448(mmu-mir-448)
ACGAGGAGGTTGAACATCCTGCATAGTGCTGCCAGGAATCCCTACTTCATACTAAGAGGGGGCTGGCTGGTTGCATATGTAGGATGTCCCATCTCCTG6CCCCAC
TTCGTCA
.(.(((((((.(.((((((((((.(.(((((.(.(((.(. ....))) .)))).). .))))).))))))))) . .))))) . . . . .
..... (-50.70)
```

*****TTGCATATGTAGGATGTCCCAT*****

[illegible]

Supplemental Figure S1

mmu-mir-451(mmu-mir-451)

CTTGGGAATGGCGAGGAAACCGTTACCATTACTGAGTTAGTAATGGTAACGGTTCTCTGTGCTCCACA
 ..(((((((((.....))))))))))..)))))..))))).. (-45.70)
 *****AAACCGTTACCATTACTGAGTT*****
AAACCGTTACCATTACTGAGTTAGT..... 34
AAACCGTTACCATTACTGAGTTT..... 29
AAACCGTTACCATTACTGAGTTAG..... 17
AACC GTTACCATTACTGAGTTT..... 11
AACC GTTACCATTACTGAGTTAGT..... 10
AAACCGTTACCATTACTGAGTT..... 6*
AAACCGTTACCATTACTGAGTTTA..... 5
AACC GTTACCATTACTGAGTTTA..... 5
AACC GTTACCATTACTGAGTTAG..... 5
AAACCGTTACCATTACTGAGTTAGTAA..... 2
aAAACCGTTACCATTACTGAGTTT..... 6
AAACCGTTACCATTACTGAGTTTt..... 3
aAAACCGTTACCATTACTGAGTTAGT..... 3
tAAACCGTTACCATTACTGAGTT..... 2
aAAACCGTTACCATTACTGAGTTAG..... 2

mmu-mir-452(mmu-mir-452)

GCTAAGCAGTTACAAGTGTGTCAGAGGAACTGAGACTTTATAACTATGTCTCAGTCTCATCTGCAAAGAGGTAAGTGCTTTGC
 ((.....))..)))))..)))))..)))))..)))))..)))))..))))).. (-39.70)
 *****TGTTTGCAGAGGAACTGAGAC*****

mmu-mir-453(mmu-mir-453)

AGAAGATGCAGGAGTGCTGTGAGAAAGTCCATCCCCTGGTACTTGGAGGGAGGTTGCCTCATAGTGAGCTTGCATTATTTAA
(((((((.....))))))))..)))))..)))))..)))))..)))))..)))))..))))).. (-34.20)
 *****AGGTTGCCTCATAGTGAGCTTGCA*****

mmu-mir-455(mmu-mir-455)

CTCCCTGGTGTGAGCGTATGTGCTTTGGACTACATCGTGAACGCAGCACCATGCAGTCCACGGGCATATACACTTGCCTCA
((.....))..)))))..)))))..)))))..)))))..)))))..))))).. (-37.50)
 *****GCAGTCCACGGGCATATACAC*****
GCAGTCCACGGGCATATACAC..... 30*
GCAGTCCACGGGCATATACACT..... 15
ATGCAGTCCACGGGCATATACAC..... 10
TGCAGTCCACGGGCATATACAC..... 9
GCAGTCCACGGGCATATACA..... 7
TGCAGTCCACGGGCATATACA..... 2
GCAGTCCACGGGCATATACACc..... 9
aATGCAGTCCACGGGCATATACAC..... 4
GCAGTCCACGGGCATATACtAC..... 3
GCAGTCCACGGGCATATACa..... 2
GCAGTCCACGGGCATATACaA..... 2
tCAGTCCACGGGCATATACA..... 2

mmu-mir-463(mmu-mir-463)

CTTTACCTAATTGTTGTCCATCATGTAAAACATAAATGATGATAGACACCATATAAGGTAGAGGAAGGTTCACT
 ((((((((((.....))))))))..)))))..)))))..)))))..)))))..)))))..))))).. (-20.20)
 *****TGATAGACACCATATAAGGTAG*****

mmu-mir-464(mmu-mir-464)

ACCTTGTTATGGGGGCTGGGGTAAGGAGTGGTCATCAGGGGGTACTACCAAGTTTATTCTGTGAGATAGA
 .(((.....))..)))))..)))))..)))))..)))))..)))))..))))).. (-13.20)
 *****TACCAAGTTTATTCTGTGAGATA**

mmu-mir-465a-3p(mmu-mir-465a)

Supplemental Figure S1

mmu-mir-465b-5p(mmu-mir-465b-1)

TGCAATGCCCTATTTAGAATGGTGCTGATCTGATGAATAAAAAATTGATCAGGGCCTTTCTAAGTAGAGTAAGGCTTA
 .(((.(((.(((((((((.(((.((((((.....)))))).)))..)))..)))..)))... (-30.53)
 *****TATTTAGAATGGTGCTGATCTG*****

mmu-mir-465b-5p(mmu-mir-465b-2)

TGCAATGCCCTATTTAGAATGGTGCTGATCTGATGAATAAAAAATTGATCAGGGCCTTTCTAAGTAGAGTAAGGCTTA
 .(((.(((.(((((((((.(((.((((((.....)))))).)))..)))..)))..)))... (-30.53)
 *****TATTTAGAATGGTGCTGATCTG*****

mmu-mir-465c-3p(mmu-mir-465a)

GCCTATTTAGAATGGCACTGATGTGATGAATAAAAAATTGATCAGGGCCTTTCTAAGTAGAGTAAGGCTTAC
 ((((((((((((((.(((.((((((.....)))))).)))..)))..)))..)))... (-23.40)
 *****GATCAGGGCCTTTCTAAGTAGA*****

mmu-mir-465c-3p(mmu-mir-465b-1)

TGCAATGCCCTATTTAGAATGGTGCTGATCTGATGAATAAAAAATTGATCAGGGCCTTTCTAAGTAGAGTAAGGCTTA
 .(((.(((.(((((((((.(((.((((((.....)))))).)))..)))..)))..)))... (-30.53)
 *****GATCAGGGCCTTTCTAAGTAGA*****

mmu-mir-465c-3p(mmu-mir-465b-2)

TGCAATGCCCTATTTAGAATGGTGCTGATCTGATGAATAAAAAATTGATCAGGGCCTTTCTAAGTAGAGTAAGGCTTA
 .(((.(((.(((((((((.(((.((((((.....)))))).)))..)))..)))..)))... (-30.53)
 *****GATCAGGGCCTTTCTAAGTAGA*****

mmu-mir-465c-3p(mmu-mir-465c-1)

TGCAATGCCCTATTTAGAATGGCGCTGATCTGATGAATAAAAAAAAATGATCAGGGCCTTTCTAAGTAGAGTAAGGCTTA
 .(((.(((.(((((((((.(((.((((((.....)))))).)))..)))..)))..)))... (-32.01)
 *****GATCAGGGCCTTTCTAAGTAGA*****

mmu-mir-465c-3p(mmu-mir-465c-2)

TGCAATGCCCTATTTAGAATGGCGCTGATCTGATGAATAAAAAAAAATGATCAGGGCCTTTCTAAGTAGAGTAAGGCTTA
 .(((.(((.(((((((((.(((.((((((.....)))))).)))..)))..)))..)))... (-32.01)
 *****GATCAGGGCCTTTCTAAGTAGA*****

mmu-mir-465c-5p(mmu-mir-465c-1)

TGCAATGCCCTATTTAGAATGGCGCTGATCTGATGAATAAAAAAAAATGATCAGGGCCTTTCTAAGTAGAGTAAGGCTTA
 .(((.(((.(((((((((.(((.((((((.....)))))).)))..)))..)))..)))... (-32.01)
 *****TATTTAGAATGGCGCTGATCTG*****

mmu-mir-465c-5p(mmu-mir-465c-2)

TGCAATGCCCTATTTAGAATGGCGCTGATCTGATGAATAAAAAAAAATGATCAGGGCCTTTCTAAGTAGAGTAAGGCTTA
 .(((.(((.(((((((((.(((.((((((.....)))))).)))..)))..)))..)))... (-32.01)
 *****TATTTAGAATGGCGCTGATCTG*****

mmu-mir-466a-3p(mmu-mir-466a)

TATATGTGTTTATGTGTGTACATATGTGAATATGATATCCATATACATACACGCACACATAAGAC
 ..((((((((.....(((((((((((.(((.((((((.....)))))).)))..)))..)))..)))... (-22.70)
 *****TATACATACACGCACACATAAGA*
ATACATACACGCACACATAAGA.. 0
ATACATACACGCACACATAAG... 0
TATACATACACGCACACATAAG... 0

Supplemental Figure S1

mmu-mir-466b-3-3p(mmu-mir-466b-3)

TATATGTGTTGATGTGTGTACATGTACATGTGTGAATATGATAACAAATACATACACGCACACATAAGACACATATGA
 ((((((((((((.(((((((((((.((((((.(((((((.....)))))))).)))))).)))))))).)))))))).))))). (-32.40)
 *****AATACATACACGCACACATAAGA*****
 ATACATACACGCACACATAAGA 0
 ATACATACACGCACACATAAG 0
 TACATACACGCACACATAAGAC 0
 ATACATACACGCACACATAAA 0

mmu-mir-466b-3p(mmu-mir-466a)

TATATGTGTTTATGTGTGTGTACATGTACATATGTGAATATGATATCCATATACATACACGCACACATAAGAC
 ..((((((((((...(((((((((((...)))))))).))..)))))))).)).... (-22..70)
 *****TATACATACACGCACACATAAGA*
ATACATACACGCACACATAAGA.. 0
ATACATACACGCACACATAAG.. 0
TATACATACACGCACACATAAG.. 0
TATACATACACGCACACATAAGA.. 0*
TACATACACGCACACATAAGAC.. 0
ATACATACACGCACACATAA.. 0

mmu-mir-466b-3p(mmu-mir-466b-1)

mmu-mir-466b-3p(mmu-mir-466b-2)

mmu-mir-466b-3p(mmu-mir-466c)

[illegible]

mmu-mir-466b-3p(mmu-mir-466e)

GTGTATGTTGATGTGTGTACATGTACATATGTGAATATGATAACATATACATACACGCACACATAAGACACATATGAGC
 ..((((((((((..(((((((((((..((((((..(((((((.....)))))))))))))..))))))))))..)))))))))).... (-30.00)
 *****TATACATACACGCACACATAAGA*****
ATACATACACGCACACATAAGA..... 0
ATACATACACGCACACATAAG..... 0
TATACATACACGCACACATAAG..... 0
TATACATACACGCACACATAAGA..... 0*
TACATACACGCACACATAAGAC..... 0

Supplemental Figure S1

.....TATACATACACGCACACATAAG.....	0
.....TATACATACACGCACACATAAGA.....	0*
.....TACATACACGCACACATAAGAC.....	0
.....ATACATACACGCACACATAA.....	0

mmu-mir-466c-3p(mmu-mir-466c)	
GTATATGTGTTGATGTGTGTGCATGTACATATGTGAATATGATATACATATACATACACGCACACATAAGACACATATGAGC	
..(((((((((((.(((((((((((.(((((((.(((((((.....))))))))))))).))))))))))..)))))))))).... (-34.60)	
*****TATACATACACGCACACATAAGA*****	
.....ATACATACACGCACACATAAGA.....	0
.....ATACATACACGCACACATAAG.....	0
.....TATACATACACGCACACATAAG.....	0
.....TATACATACACGCACACATAAGA.....	0*
.....TACATACACGCACACATAAGAC.....	0
.....ATACATACACGCACACATAA.....	0
.....TGATGTGTGTGTGCATGTACAT.....	0

mmu-mir-466c-3p(mmu-mir-466e)	
GTGTATGTGTTGATGTGTGTGTACATGTGTGAATATGATATACATATACATACACGCACACATAAGACACATATGAGC	
..(((((((((((.(((((((((((.(((((((.(((((((.....))))))))))))).))))))))))..)))))))))).... (-30.00)	
*****TATACATACACGCACACATAAGA*****	
.....ATACATACACGCACACATAAGA.....	0
.....ATACATACACGCACACATAAG.....	0
.....TATACATACACGCACACATAAG.....	0
.....TATACATACACGCACACATAAGA.....	0*
.....TACATACACGCACACATAAGAC.....	0
.....ATACATACACGCACACATAA.....	0

mmu-mir-466c-5p(mmu-mir-466c)	
GTATATGTGTTGATGTGTGTGTGCATGTACATATGTGAATATGATATACATATACATACACGCACACATAAGACACATATGAGC	
..(((((((((((.(((((((((((.(((((((.(((((((.....))))))))))))).))))))))))..)))))))))).... (-34.60)	
*****GATGTGTGTGTGCATGTACATA*****	
.....ATACATACACGCACACATAAGA.....	0
.....ATACATACACGCACACATAAG.....	0
.....TATACATACACGCACACATAAG.....	0
.....TATACATACACGCACACATAAGA.....	0
.....TACATACACGCACACATAAGAC.....	0
.....ATACATACACGCACACATAA.....	0
.....TGATGTGTGTGTGCATGTACAT.....	0

mmu-mir-466d-3p(mmu-mir-466d)	
CATGTGTGTTTGTGTGTGCGTACATGTACATGTGTGTATATGAATATACATATACATACACGCACACATAGATACGCACGCACACACACACAGG	
..(((((((((((.(((((((((((.(((((((.(((((((.....))))))))))))).))))))))))..)))))))))).... (-46.60)	
*****TATACATACACGCACACATAG*****	
.....TATACATACACGCACACATAGA.....	3
.....GTGTGTGCGTACATGTACATGT.....	1
.....ATATACATACACGCACACATAG.....	1
.....ATATACATACACGCACACATAGA.....	1
.....TACGCACGCACACACACACA.....	0

mmu-mir-466d-5p(mmu-mir-466d)	
CATGTGTGTTTGTGTGTGCGTACATGTACATGTGTGTATATGAATATACATATACATACACGCACACATAGATACGCACGCACACACACACAGG	
..(((((((((((.(((((((((((.(((((((.(((((((.....))))))))))))).))))))))))..)))))))))).... (-46.60)	
*****TGTGTGTGCGTACATGTACATG*****	
.....TATACATACACGCACACATAGA.....	3
.....GTGTGTGCGTACATGTACATGT.....	1
.....ATATACATACACGCACACATAG.....	1
.....ATATACATACACGCACACATAGA.....	1
.....TACGCACGCACACACACACA.....	0

.....TATACATACACGCACACATAGt.....	6
.....TATACATACACGCACACATAG-TA.....	3

.....TATACATACACGCACACATAAG.....	0
.....TATACATACACGCACACATAAGA.....	0
.....TACATACACGCACACATAAGAC.....	0
.....ATACATACACGCACACATAA.....	0

```
mmu-mir-466f(mmu-mir-466f-2)
AATGTGTGTTACGTGTGTGTGCATGTGCATGTGTGTATATGAATATATGTATACATACACACACATACACACTCATGTAACACACACACAC
..(((((((((((((((.(((((.(((((.(((((.(((((((((((((.))))))))))..))))).))))).)))))).. (-42.40)
*****ACGTGTGTGTGCATGTGCATGT*****.ATACACACACATACACACTC..... 1
```

```
mmu-mir-466f(mmu-mir-466f-4)
CATCTGCATCTGTGTGTCTACGTGTGTGTGCATGTGCATGTGTGTGTATCTGTATGTGAGTGTGTGCATGCATGTGTGTGCATCTATATCTGTGTGTCTACTTGT
GTGTGGAATGTGCATAT
(((...(((...(((...(((...(((...(((...(((...(((...(((...(((...(((...(((...(((...(((...(((...(((...(((...(((...(((...
))))))... (-35.00)
*****ACGTGTGTGTGCATGTGCATGT*****
*****
```

```

mmu-mir-466f-3p(mmu-mir-466f-2)
AATGTGTGTTTACGTGTGTGTGCATGTGCATGTGTGTATATGAATATATGTATACATACACACACATACACACTCATGTAACACACACACAC
..(((((((((((((((.(((((.(((((.(((((.((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****CATACACACACATACACAC*****
*****ATACACACACATACACTC.....1

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Page 110

Supplemental Figure S1

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..)))))).)))).)) (-45.20)
*****TGTGTGTGTACATGTACATGTGA*****

*****
-----

mmu-mir-466l(mmu-mir-466l)
CTATGTATGTGCATGTGTGTTGTGTGTACATGTACATGTATATATATTGATATACATATAAATACATGCACACATATTCATGCATGCACACGCACACATTAA
TGCACTCTTAGATCC
..(((((.(((((((((((((.((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
..... (-43.60)
*****TATAAATACATGCACACATATT*****

*****
-----

mmu-mir-467a(mmu-mir-467a)
CTGTGTGCGTAAGTGCCTGCATGTATATGCGTGTATATTTTATGCATATACATACACACCTACACACACAT
..(((((((.((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****TAAGTGCCTGCATGTATATGCG*****
.....TAAGTGCCTGCATGTATATGCG..... 2*
.....TAAGTGCCTGCATGTATATGCG..... 1
.....ATATACATACACACACCTACAC..... 1
-----
.....TAAGTGCCTGCATGTATATGtC..... 3
-----

mmu-mir-467a(mmu-mir-467b)
CCGTGTGCGTAAGTGCCTGCATGTATATGCGTGTATATTTTATGCATATACATACACACCAACACACACAT
..(((((((.((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****TAAGTGCCTGCATGTATATGCG*****
.....TAAGTGCCTGCATGTATATGCG..... 2*
.....TAAGTGCCTGCATGTATATGCG..... 1
-----

mmu-mir-467b(mmu-mir-467a)
CTGTGTGCGTAAGTGCCTGCATGTATATGCGTGTATATTTTATGCATATACATACACACCTACACACACAT
..(((((((.((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****GTAAGTGCCTGCATGTATATG*****
.....TAAGTGCCTGCATGTATATGCG..... 2
.....TAAGTGCCTGCATGTATATGCG..... 1
.....ATATACATACACACACCTACAC..... 1
-----

mmu-mir-467b(mmu-mir-467b)
CCGTGTGCGTAAGTGCCTGCATGTATATGCGTGTATATTTTATGCATATACATACACACCAACACACACAT
..(((((((.((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****GTAAGTGCCTGCATGTATATG*****
.....TAAGTGCCTGCATGTATATGCG..... 2
.....TAAGTGCCTGCATGTATATGCG..... 1
-----

mmu-mir-467c(mmu-mir-467c)
CCTTTGTGCATAAGTGCCTGCATGTATATGCGTGTATATTTTATGCATATACATACACACCTATACACACATGCACACAGACATGCGAGAATGGC
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
(-29.36)
*****TAAGTGCCTGCATGTATATGTG*****
.....TAAGTGCCTGCATGTATATGTG..... 4*
-----
.....TAAGTGCCTGCATGTATATGTGa..... 2
-----

mmu-mir-467d(mmu-mir-467d)
CCTGTGTGCATAAGTGCCTGCATGTATATGCGTGTATATTTTATGCATATACATACACACCTACACACATGCACACAGACA
..((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
(-33.10)

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Supplemental Figure S1

.....(((((((((((((.....((((((((((((((((.....)))))))))))))))).....))..... (-29.90)

*****TTCCTGGACTGGCACTGGTGAGT*****

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mmu-mir-483(mmu-mir-483)
GAGGGGGAAGACGGGAGAAGAGAAGGGAGTGTTTTGGGTGCCTCACTCCTCCCTCCCGTCTTGTCTCTC
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****AAGACGGGAGAAGAGAAGGGAG***** (-33.90)
*****
.....AAGACGGGAGAAGAGAAGGGAG..... 73*
.....CACTCCTCCCTCCCGTCTTGT..... 50
.....AAGACGGGAGAAGAGAAGGGAGT..... 9
.....AGACGGGAGAAGAGAAGGGAG..... 9
.....AAGACGGGAGAAGAGAAGGGA..... 7
.....TCACTCCTCCCTCCCGTCTTGT..... 6
.....AGACGGGAGAAGAGAAGGGAGTGG..... 4
.....TCACTCCTCCCTCCCGTCTTG..... 4
.....CACTCCTCCCTCCCGTCTTG..... 3
.....AAGACGGGAGAAGAGAAGGG..... 2
.....AGACGGGAGAAGAGAAGGGAGT..... 2
-----
.....aAAGACGGGAGAAGAGAAGGGAG..... 8
.....AAGACGGGAGAAGAGAAGGGAGa..... 5
.....CACTCCTCCCTCCCGTCTTGa..... 4
.....AAGACGGGAGAAGAGAAGGGAA..... 3
.....AAGACGGGAGAAGAGAAGGGaT..... 2
.....AAGACGGGAGAAGAGAAGGGAGTt..... 2
.....CACTCCTCCCTCCCGTCTTtGT..... 2
.....AAGACGGGAGAAGAGAAGG-AG..... 2
.....TCACTCCTCCCTCCCGTCTTGa..... 2
.....CACTCCTCCC-TCCTCGTCTTGT..... 2
.....aCACTCCTCCCTCCCGTCTTGT..... 2

```

[illegible]

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mmu-mir-485(mmu-mir-485)
ACTTGGAGAGAGGCTGGCCGTGATGAATTCGATTCTCTAAACGAGTCATACACGGGCTCTCCTCTCTCTAGT
(((.(((((((.((((((((((.((((.....)))))))))).)))))).)))))))).)))))))).))))) (-35..50)
*****AGAGGCTGGCCGTGATGAATTC*****
.....AGAGGCTGGCCGTGATGAATTCG.....17
.....AGNGGCTGGCCGTGATGAATTCG.....11
.....GTCATACACGGGCTCTCCTCTCT.....10
.....AGAGAGGCTGGCCGTGATGAAT.....5
.....AGTCATACACGGGCTCTCCTCTCT.....5
.....AGAGGCTGGCCGTGATGAATTC.....3*
.....CATACACGGGCTCTCCTCTCTTC.....3
.....AGTCATACACGGGCTCTCCTCTC.....2
.....CTCTCCTCTCT.....2
.....CTCTCCTCTCTTC.....2
.....GTCATACACGGGCTCTCCTCTC.....2
-----
.....aAGAGGCTGGCCGTGATGAATTCG.....4
.....tGAGGCTGGCCGTGATGAATTCG.....4
.....AGTCATACACGGGCTCTCCTCTCTaaa.....3
.....CTCTCCTCTCTaT.....3

```


Supplemental Figure S1
*****CAACCTGGAGGACTCCATGCTG*****

```
mmu-mir-491(mmu-mir-491)
AATTGACTTAGCTGGGAAGTGGGGAACCCCTTCATGAGGAGTAGAACACTCCTTATGCAAGATTCCCTTCTACCTGACTGAGTTGA
..(((((.....((((.....((((.....((((.....)))))))).)))....))))).)))))...)))))..)) (-40..10)
*****AGTGGGGAACCCCTTCATGAGG*****
```

```
mmu-mir-496(mmu-mir-496)
AGTGTTCGAATGGAGTTGCCCATGGTGTTGCATTCTATTTATGATGAGTATTACATGGCCAATCCTCTTCGGCACT
(((((((((.( ((((((((((.( ((((((((((.( .....)))))))).)))..))))).))))))))) (-35..30)
*****T*****TGAGTATTACATGGCCAATCTC*****
.....TGAGTATTACATGGCCAATCTC..... 18*
.....AGTATTACATGGCCAATCTCC.....   7
.....AGGTTGCCCATGGTGTTTCA.....    2
```

Page 116

```
mmu-mir-499(mmu-mir-499)
GGGTGGGCAGCTGTTAAGACTTGCAGTGATGTTTAGCTCCTCTGCATGTGAACATCACAGCAAGTCGTGCTGCTGCCCT
....(((((((.(.(.(((((((((.((((((((.....)))...)))))))).))))))..))..)))))) (-41.20)
*****TTAAGACTTGCAGTGATGTT*****

-----

mmu-mir-500(mmu-mir-500)
CTCCTCTGCTCCCCCTCTCTAATCCTTGCTATCTGGGTGCTTAGTGCTATCTCAATGCAATGCACCTGGGCAAGGGTTCAGAGAAGGTGAGC
.....(((((((.(.(.(((((((((.((((((((.....)))...)))))))).))))))..))..)))))) (-42.90)
*****AATGCACCTGGGCAAGGGTTCA*****
.....AATGCACCTGGGCAAGGGTTCA..... 18*
.....AATGCACCTGGGCAAGGGTTC..... 5

-----

mmu-mir-501-3p(mmu-mir-501)
CTTCTGCTCTGCTCATCCTCTCTAATCCTTTGTCCTGGGTGAAAATGCTATTGTATGCAATGCACC CGGCAAGGATTGGGGAAGGTGAGCCTGATCTGCAT
GGAG
(((((((((((.((((((((.((((((((.((((((((.(.....)))...)))))))).))))))..))..)))))) (-47.40)
*****AATGCACCCGGGCAAGGATTTG*****
***
.....AATGCACCCGGGCAAGGATTTGG.....
..... 3
.....AATCCTTTGTCCTGGGTGAA.....
..... 1

-----

mmu-mir-501-5p(mmu-mir-501)
CTTCTGCTCTGCTCATCCTCTCTAATCCTTTGTCCTGGGTGAAAATGCTATTGTATGCAATGCACC CGGCAAGGATTGGGGAAGGTGAGCCTGATCTGCAT
GGAG
(((((((((((.((((((((.((((((((.((((((((.(.....)))...)))))))).))))))..))..)))))) (-47.40)
*****AATCCTTTGTCCTGGGTGAAA*****
***
.....AATGCACCCGGGCAAGGATTTGG.....
..... 3
.....AATCCTTTGTCCTGGGTGAA.....
..... 1
..... CTC-TCCTCTCTAA.....
..... 4
.....AATGCACCCGGGCAAGGATTTGGt.....
..... 3
..... CTC-TCCTCTCTAAa.....
..... 2
.....aAATCCTTTGTCCTGGGTGAAAAAT.....
..... 2

-----

mmu-mir-503(mmu-mir-503)
TGCCCTAGCAGCGGGAACAGTACTGCAGTGAGTGTTGGTGCCCTGGAGTATTGTTTCCA CTGCCTGGGTA
(((((((.(.(.(((((((((.((((((((.(.....)))...)))))))).))))))..))..)))))) (-37.70)
*****TAGCAGCGGGAACAGTACTGCAG*****
.....TAGCAGCGGGAACAGTACTGCAG..... 307*
```

Supplemental Figure S1

```

.....TAGCAGCGGGAACAGTACTGCAGT..... 37
.....TAGCAGCGGGAACAGTACTGCA..... 17
.....TAGCAGCGGGAACAGTACTGC..... 9
.....TAGCAGCGGGAACAGTACTG..... 7
.....TAGCAGCGGGAACAGTACT..... 3

```

```

.....TAGCAGCGGGAACAGTACTGCAa..... 17
.....TAGCAGCGGGAACAGTACTGCAGa..... 16
.....TAGCAGCGGGAACAGTACTGctAG..... 9
.....aTAGCAGCGGGAACAGTACTGCAG..... 9
.....tGCAGCGGGAACAGTACTGCAG..... 9
.....TAGCAGCGGGAACAGTACTGCAaG..... 7
.....TAGCAGCGG-AACAGTACTGCAG..... 5
.....TtGCAGCGGGAACAGTACTGCAG..... 4
.....TAGCAGCGG-AACAGTACTGctAG..... 4
.....TgGCAGCGGGAACAGTACTGCAG..... 4
.....TAGCAGCGGGAACAGTACTGaCAG..... 3
.....aTAGCAGCGGGAACAGTACTGCA..... 3
.....aTAGCAGCGGGAACAGTACTGCAa..... 3
.....TAGCAGCGGGAACAGTACTaaA..... 3
.....TAGCAGCGGGAACAGTACTGCAaa..... 3
.....TAGCAGCGGGAACgAGTACTGCAGa..... 2
.....TAGaCAGCGGGAACAGTACTGctAG..... 2
.....TAGCAGCGGGAAGcAGTACTGCAG..... 2
.....tGCAGCGGGAACAGTACTGCAa..... 2
.....TAGCAGCGGGAACAcGTACTGCAG..... 2
.....TAGtCAGCGGGAACAGTACTGCAG..... 2
.....TAGCAGCGGGA-CAGTACTGCAG..... 2
.....TAGCAGCGGGAACaTACTGCAG..... 2
.....tGCAGCGGGAACAGTACTGCAGT..... 2
.....TAGCAGCGGGAACAGTACTGCAG..... 2
.....TAGCAGCGGGAACAGTACTGCAT..... 2
.....cAGCAGCGGGAACAGTACTGCAgT..... 2

```

mmu-mir-504(mmu-mir-504)

```

TCCTGTTGGGAGACCCTGGTCTGCACTCTATCTGTAACTTACTGAAGGGAGAGCAGGGCAGGGTTTCCCATACAGAGG
..((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****AGACCCTGGTCTGCACTCTATC*****

```

mmu-mir-505(mmu-mir-505)

```

AAATTGATGCACCCAGTGGGGGAGCCAGGAAGTATTGATGTTTCTGCCAGGTTAGCGTCAACACTTCTGCTGGTTTTCTCTGGAGTATCA
....((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****CGTCAACACTTCTGCTGGTTTTCT*****

```

mmu-mir-509-3p(mmu-mir-509)

```

GTGGTTCTTTACTCCAGAATGTGGCAATCATGCATAATTAATGTGATTGACATTTCTGTAATGGAGTAACACAT
(((...((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****TGATTGACATTTCTGTAATGG*****

```

mmu-mir-509-5p(mmu-mir-509)

```

GTGGTTCTTTACTCCAGAATGTGGCAATCATGCATAATTAATGTGATTGACATTTCTGTAATGGAGTAACACAT
(((...((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****TACTCCAGAATGTGGCAATCAT*****

```

```

.....TACTtCAaAATGT..... 2

```

mmu-mir-511(mmu-mir-511)

```

GATACCCACCATGCCTTTTGTCTCTGCACTCAGTAAATAATAATTTGTGAATGTGTAGCAAAAGACAGGATGGGGATCCA
(((.((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****ATGCCTTTTGTCTCTGCACTCA*****

```

mmu-mir-532-3p(mmu-mir-532)

```

CAGATTTGCTTTTTCTCTTCCATGCCTTGAGTGTAGGACCGTTGACATCTTAATTACCCTCCCACACCAAGGCTTGCAAGGAGCAAGCCTTCTC

```


Supplemental Figure S1

.....AGGTCAGAGGTCGATCCTGGGa....	6
.....AGGTCAGAGGTCGATCCTGGGCa..	3
.....aAGGTCAGAGGTCGATCCTGGG....	3
.....tAAGGGTCACCCTCTGACTCTGT.....	3
.....AGGTCAGAGGTCGATCCTGGGct...	3
.....AGGTCAGAGGtTGATCCTGGGC....	3
.....AGGTCAGAGGTCGATCCTGGGaa...	3
.....AGGTCAGAGGTCGATCCTGGGctTat	2
.....AGGTCAGAGGTCGATCCTGGGctaA.	2
.....AGGTCAGAGGTCGATCCTGGGaaa...	2
.....AGGTCAGAGGTCGATCCTGGGctaT.	2
.....AGGTCAGAGGTCGATCCTGGGCaaAa	2
.....CAAGGGTCACCCTCTGACTCTGTa.....	2
.....AGGTCAGAGGTCGATCCTGGGt....	2
.....AGGTCAGAGGTCGATCCTGGGcaT..	2

mmu-mir-541(mmu-mir-541)

GCCAAAATCAGAGAAGGGATTCTGATGTTGGTCACACTCCAAGAGTTTTAAATGAGTGCGAACACAGAATCCATACTCTGCTTATGGC
 ((((((.....(((((((.....)))))).....)))))).....)))))).....)))))).....)))))).....)))))) (-37.50)

*****AAGGGATTCTGATGTTGGTCACACT*****	
.....AAGGGATTCTGATGTTGGTCACACT.....	388*
.....AAGGGATTCTGATGTTGGTCAC.....	325
.....AAGGGATTCTGATGTTGGTCACA.....	202
.....TTCTGATGTTGGTCACACT.....	179
.....AAGGGATTCTGATGTTGGTCACAC.....	173
.....TTCTGATGTTGGTCACA.....	116
.....AAGGGATTCTGATGTTGGTCACACTC.....	112
.....TTCTGATGTTGGTCAC.....	110
.....TTCTGATGTTGGTCACAC.....	67
.....AAGGGNTTCTGATGTTGGTCAC.....	62
.....AAGGGATTCTGATGTTGGTCA.....	58
.....AAGGGNTTCTGATGTTGGTCACACT.....	53
.....AAGGGNTTCTGATGTTGGTCACA.....	43
.....AGGGATTCTGATGTTGGTCACACT.....	36
.....AGGGATTCTGATGTTGGTCAC.....	35
.....AGGGATTCTGATGTTGGTCACAC.....	23
.....AAGGGNTTCTGATGTTGGTCACAC.....	22
.....AGGGATTCTGATGTTGGTCACA.....	22
.....TTCTGATGTTGGTCACACTC.....	22
.....ATTCTGATGTTGGTCACA.....	16
.....CTGATGTTGGTCACACT.....	15
.....AAGGGNTTCTGATGTTGGTCACACTC.....	14
.....ATTCTGATGTTGGTCACACT.....	13
.....AGGGATTCTGATGTTGGTCACACTC.....	12
.....ATTCTGATGTTGGTCACAC.....	12
.....ATTCTGATGTTGGTCAC.....	11
.....TGTTGGTCACACT.....	10
.....TGTTGGTCACAC.....	9
.....AAGGGATTCTGATGTTGGT.....	8
.....AGGGNTTCTGATGTTGGTCAC.....	6
.....CTGATGTTGGTCACAC.....	6
.....AAGGGATTCTGATGTTGGTC.....	5
.....AGGGATTCTGATGTTGGTCA.....	4
.....AGGGNTTCTGATGTTGGTCACACT.....	4
.....CTGATGTTGGTCACA.....	4
.....AGGGNTTCTGATGTTGGTCA.....	3
.....AGGGNTTCTGATGTTGGTCACAC.....	3
.....GTTGGTCACACT.....	3
.....TCTGATGTTGGTCACAC.....	3
.....TCTGATGTTGGTCACACT.....	3
.....AAGGGNTTCTGATGTTGGTCA.....	2
.....ATTCTGATGTTGGTCACACTC.....	2
.....GATTCTGATGTTGGTCACACTC.....	2
.....TCTGATGTTGGTCACA.....	2

.....aAAGGGATTCTGATGTTGGTCAC.....	41
.....aAAGGGATTCTGATGTTGGTCACACT.....	32
.....aAAGGGATTCTGATGTTGGTCACA.....	28
.....AAGGGATTCTGATGTTGGTCACACa.....	28
.....AAGGGATTCTGATGTTGGTCACACTct.....	27
.....AAGGGATTCTGATGTTGGTCACAa.....	26

Supplemental Figure S1

.....AAGGGATTCTGATGTTGGTCACAt.....	25
.....aAAGGGATTCTGATGTTGGTCACAC.....	25
.....AAGGGATTCTGATGTTGGTCaA.....	24
.....AAGGGATTCTGATGTTGGTCACt.....	21
.....AAGGGATTCTGATGTTGGTCACtACT.....	19
.....AAGGGATTCTGATGTTGGTCACtAC.....	19
.....TTCTGATGTTGGTCACACa.....	18
.....AAGGGATTCTGATGTTGGTCACACTt.....	17
.....AAGGGATTCTGATGTTGGTCtAC.....	17
.....AAGGGATTCTGATGTTGGTCaAa.....	13
.....aAAGGGATTCTGATGTTGGTCACACTC.....	12
.....TTCTGATGTTGGTCACtA.....	12
.....TTCTGATGTTGGTCACtACT.....	11
.....AAGGGATTCTGATGTTGGTCACACTa.....	11
.....AAGGGATTCTGATGTTGGTCACaAt.....	11
.....TTCTGATGTTGGTCtAC.....	10
.....TTCTGATGTTGGTCACaA.....	9
.....TTCTGATGTTGGTCACAt.....	9
.....TTCTGATGTTGGTCACt.....	9
.....AAGGGATTCTGATGTTGGTCACtA.....	8
.....TTCTGATGTTGGTCACtAC.....	8
.....AGGGATTCTGATGTTGGTCACtACT.....	8
.....AAGGGNTTCTGATGTTGGTCaA.....	8
.....aAAGGGATTCTGATGTTGGTCa.....	7
.....AaAgGGGATTCTGATGTTGGTCAC.....	7
.....AAGGGATTCTGATGTTGGTCACACg.....	7
.....AAGGGATTCTGATGTTGGTCACaAa.....	6
.....AAGGGgNTTCTGATGTTGGTCAC.....	6
.....AAGGGATTCTGATGTTGGTCtA.....	6
.....tAGGGATTCTGATGTTGGTCAC.....	6
.....AAGGGATTaCTGATGTTGGTCACACT.....	6
.....TTCTGATGTTGGTCACACTt.....	5
.....AAGGGATTCTGATGTTGGTCACACTCa.....	5
.....AAGGGATTCTGATGTTGGTCtACAC.....	5
.....AAGGGNTTCTGATGTTGGTCACaA.....	5
.....AaAgGGGNTTCTGATGTTGGTCACAC.....	5
.....AAGGGATTCTGATGTTGGTCAt.....	5
.....AAGGGNTTCTGATGTTGGTCACt.....	5
.....tAGGGATTCTGATGTTGGTCACACT.....	5
.....TTCTGATGTTGGTCAt.....	5
.....TTCTGATGTTGGTCaA.....	5
.....tAGGGATTCTGATGTTGGTCACACTC.....	4
.....aAAGGGNTTCTGATGTTGGTCACa.....	4
.....AaAgGGGNTTCTGATGTTGGTCACACT.....	4
.....aAAGGGNTTCTGATGTTGGTCAC.....	4
.....AaAgGGGATTCTGATGTTGGTCACACT.....	4
.....TTCTGATGTTGGTCACACTCa.....	4
.....AAGGGATTCTGATGTTGGTCtACACT.....	4
.....aAAGGGNTTCTGATGTTGGTCACACT.....	4
.....tAGGGATTCTGATGTTGGTCACa.....	4
.....AGGGATTCTGATGTTGGTCACt.....	4
.....AAaGGATTCTGATGTTGGTCACACT.....	4
.....AAGaGATTCTGATGTTGGTCACACT.....	3
.....AAGG-ATTCTGATGTTGGTCACa.....	3
.....AAGGGAgTTCTGATGTTGGTCACAC.....	3
.....CAGGGATTCTGATGTTGGTCAC.....	3
.....TTCTGATGTTGGTCACg.....	3
.....AGGGATTCTGATGTTGGTCACtA.....	3
.....aAAGGGATTCTGATGTTGGTCtAC.....	3
.....AAGGGATTCTGATGTTGGTCACg.....	3
.....ATTCTGATGTTGGTCACACa.....	3
.....AAGGGAagTTCTGATGTTGGTCACa.....	3
.....aGGATTCTGATGTTGGTCACACT.....	3
.....AAGGGATTCTGATGTTGGTCACACTat.....	3
.....tAGGGATTCTGATGTTGGTCACAC.....	3
.....gAGGGATTCTGATGTTGGTCACACT.....	3
.....AAGGGATTCTGATGTTGGcCACACT.....	3
.....AAGGGATTCTGATGTTGGTCACACaa.....	3
.....TTCTGATGTTGGTCACaAa.....	3
.....AAGGGATTCTGATGTTGGTCtACACTC.....	3
.....aAAGGGATTCTGATGTTGGTCaAa.....	3
.....AAaGGATTCTGATGTTGGTCACACTC.....	3
.....AAGGGATTCTGATGTTGGTCACaAC.....	3

Supplemental Figure S1

.....AAGGGNTTCTGATGTTGGTCACAt.....	3
.....TcCTGATGTTGGTCACA.....	3
.....AaAgGGGATTCTGATGTTGGTCACAC.....	3
.....AAGGGNTTCTGATGTTGGTCACACTCt.....	3
.....aAAGGgtATTCTGATGTTGGTCACACT.....	3
.....AgGGGATTCTGATGTTGGTCACA.....	3
.....AGGGATTCTGATGTTGGTctAC.....	3
.....AAGGGATTCTGATGTTGGTct- ACT.....	2
.....aAAGGGNTTCTGATGTTGGTCACAC.....	2
.....AAGGGATTaCTGATGTTGGTCACA.....	2
.....AAGGGATTCTGATaTTGGTCAC.....	2
.....aAAGGGATTCTGATGTTGGTCACAa.....	2
.....aATTCTGATGTTGGTCACACT.....	2
.....AAGGGATTCTaATGTTGGTCAC.....	2
.....TTaCTGATGTTGGTCACA.....	2
.....AAGGGATTaCTGATGTTGGTCAC.....	2
.....TTCTGATGTTGaTCACACT.....	2
.....AAGGGNTTCTGATGTTGGTCACACTt.....	2
.....AAGGGATTCTGATGTTGGTCAat.....	2
.....aAAGGGATTCTGATGTTGGTCACAt.....	2
.....TTCTGATGTTGGTCACTACTC.....	2
.....AAGGGATTCTGATGTTGGTCACgCTC.....	2
.....gAGGGATTCTGATGTTGGTCACACTC.....	2
.....AAGGGATTCTGATGcTGGTCACAC.....	2
.....AAGGGgATTCTGATGTTGGTCAC.....	2
.....AGGGATTCTGATGTTGGTCACAt.....	2
.....ATTCTGATGTTGGTCACACTat.....	2
.....AAGGaATTCTGATGTTGGTCACACT.....	2
.....AAGGGgAaTTCTGATGTTGGTCACAC.....	2
.....AAaGGATTCTGATGTTGGTCAC.....	2
.....AtGGGATTCTGATGTTGGTCACAa.....	2
.....AAGGGNTTCTGATGTTGGTCACACTa.....	2
.....AaAgGGGATTCTGATGTTGGTCAa.....	2
.....TTCTGATGTTGGTCACACTat.....	2
.....AAGGGAcTCTGATGTTGGTCACAC.....	2
.....tTGATGTTGGTCACACT.....	2
.....AAGGGATTCTGATGTTGGTCACAaCT.....	2
.....AAGaGATTCTGATGTTGGTCAC.....	2
.....AgGGGATTCTGATGTTGGTCACACTC.....	2
.....gAGGGATTCTGATGTTGGTCACAC.....	2
.....AAGGGATTcCGATGTTGGTCACACT.....	2
.....AAGGGATTCTGATGTTGGcCACACTC.....	2
.....AAGGGATTCTGATGTTGGTCACAg.....	2
.....AAGGGgNTTCTGATGTTGGTCACACT.....	2
.....CTGATGTTGGTCACAt.....	2
.....TTCTGATGTTGGTaAC.....	2
.....aAAGGGATTCTGATGTTGGTCACACTCt.....	2
.....gAGGGATTCTGATGTTGGTCAC.....	2
.....AAGGGATcCTGATGTTGGTCACACT.....	2
.....AAGGGATTCTGATGtcGGTCAC.....	2
.....AAGGGgNTTCTGATGTTGGTCACA.....	2
.....AAGG-ATTCTGATGTTGGTCACACT.....	2
.....TTCTGATGtcGGTCACA.....	2
.....AGGGATTCTGATGTTGGTCACaCa.....	2
.....AAGGGgATTCTGATGTTGGTCACACT.....	2
.....AAGGGATTCTGATGTTGGTCACTaA.....	2
.....TTCTGATaTTGGTCACACT.....	2
.....AAGGGATTCTGATaGTTGGTCAC.....	2
.....CTGATGTTGGTCACTACT.....	2
.....gAGGGATTCTGATGTTGGTCACA.....	2
.....AAGGGtATTCTGATGTTGGTCAC.....	2
.....ATTCTGATGTTGGTCACACTCt.....	2
.....AGGGATTCTGATGTTGGTCACAa.....	2
.....ATTCTGATGTTGGTCACg.....	2
.....TTCTGATGTTGGTCACACTCt.....	2
.....AGGGATTCTGATGTTG-TCAC.....	2
.....ATTCTGATGTTGGTCAa.....	2
.....TTCTGATGTTGcTCACA.....	2
.....TTCTGATGTTGGTaA.....	2
.....AGGGATTCTGATGTTGGTCAa.....	2
.....AAGGGATTCTGATGTTGGTcgCACT.....	2
.....AAGGGATTCTGATGTTGGTCACAgT.....	2
.....AGGGATTCTGtATGTTGGTCACACT.....	2

Supplemental Figure S1

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.....AAGGGgTTCTGATGTTGGTCAC..... 2
.....CAGGGATTCTGATGTTGGTCACACTC..... 2
.....CAGGGATTCTGATGTTGGTCACACT..... 2
.....ATTCTGATGTTGGTCACAAa..... 2
.....AAGGNTTCTGATGTTGGTCACtA..... 2

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mmu-mir-542-3p(mmu-mir-542)
GGATCTCAGACGTCTCGGGGATCATCATGTCACGAGATACCACTGTGCCCTTGTGACAGATTGATAACTGAAAGGTCTGGGAGCC
((.(((((((((.(((((.(((((.(((((((((.(((((.)))))))).)))))))).)))))))).)))))))).)))))))).)) (-38.80)
*****TGTGACAGATTGATAACTGAAA*****
.....CTCGGGGATCATCATGTCACGA..... 15
.....TGTGACAGATTGATAACTGAAAG..... 2
.....CTCGGGGATCATCATGTCACG..... 1
.....CTCGGGGATCATCATGTCACGAG..... 1
.....TGTGACAGATTGATAACTGAAA..... 1*
.....TTGATAACTGAAAG..... 1
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mmu-mir-542-5p(mmu-mir-542)
GGATCTCAGACGTCTCGGGGATCATCATGTCACGAGATACCACTGTGCCCTTGTGACAGATTGATAACTGAAAGGTCTGGGAGCC
((.(((((((((.(((((.(((((.(((((((((.(((((.)))))))).)))))))).)))))))).)))))))).)))))))).)) (-38.80)
*****CTCGGGGATCATCATGTCACGA*****
.....CTCGGGGATCATCATGTCACGA..... 15*
.....TGTGACAGATTGATAACTGAAAG..... 2
.....CTCGGGGATCATCATGTCACG..... 1
.....CTCGGGGATCATCATGTCACGAG..... 1
.....TGTGACAGATTGATAACTGAAA..... 1
.....TTGATAACTGAAAG..... 1
-----
.....tTCGGGGATCATCATGTCACGA..... 4
.....CTCGGGGATCATCATGTCACGA..... 3
.....CTCGGGGATCATCATGTCACaA..... 2
-----

```

```

-----
mmu-mir-543(mmu-mir-543)
TGCTTAATGAGAAAGTTGCCCGGTGTTTTTCGCTTTATATGTGACGAAACATTGCGGGTGCACCTTCTTTTCAGCA
(((.(((.(((((((((.(((((((((((((((((((((.)))))))).)))))))).)))))))).)))))))).)) (-31.70)
*****AAACATTGCGGGTGCACCTTCTT*****
.....CGGTGCACCTTCTT..... 19
.....AAACATTGCGGGTGCACCTTCTT..... 8
.....AAACATTGCGGGTGCACCTTCTT..... 6*
.....AAGTTGCCCGGTGTTTTTCG..... 5
.....AACATTGCGGGTGCACCTTCTT..... 4
.....AACATTGCGGGTGCACCTTCTT..... 3
.....CGGTGCACCTTCTT..... 3
.....GGTGCACCTTCTT..... 1
.....AAACNTTGCAGGTGCACCTTCTT..... 2
.....CGCGGTGCACCTTCTT..... 2
.....CGCGGTGCACCTTCTT..... 2
.....CGGTGCACCTTCT..... 2
-----
.....CGGTGCACCTTCTTaT..... 3
.....AAACATTGCGGGTGCACCTTCTTaT..... 3
.....AAACATTGCGGGTGCACCTTCTTa..... 2
.....GTGCACCTTCTTaT..... 2
.....AACATTGCGGGTGCACCTTCTTa..... 2
.....aAAACNTTGCAGGTGCACCTTCTT..... 2
-----

```

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mmu-mir-544(mmu-mir-544)
CACCTAGGGATCTTGTTAAAAAGCAGAGTCTGATTGAGGGGCCAAGATTCTGCATTTTATAGCAAGCTCTCAAGTGATG
(((.(((.(((((((((((((((((((((((((((((((((.)))))))).)))))))).)))))))).)))))))).)) (-30.52)
*****ATTCTGCATTTTATAGCAAGCTC*****
-----

```

```

-----
mmu-mir-546(mmu-mir-546)
CCTCTCTTCCAAAACAAACAGGATCTATCATGGTGGCACGGAGTCAGCTAGATGTTGTCTTGTCTATCCCTGTGCTAGTCCATGTTTTAGAAGCAAAGTGA
TACTGGGGAGGAGAGG
(((((((((((((.(((((((((.(((((((((((((.(((((((((.)))))))).)))))))).)))))))).)))))))).)))))))).))

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Supplemental Figure S1

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. .).) ) ) ) ) ) ) ) ) ) (-49.60)
*****ATGGTGGCACC GGAGTC*****
```

* * * * *

(-43.70)
*****GCGACCCGATACTTGGTTTCAG*****

```
mmu-mir-568(mmu-mir-568)
ACACTATATTATGTATAAATGTATACACACTTCTATATATGTCACATATATGCGGTGTGTGTATTATACAGGTATAGGTGTG
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****ATGTATAAATGTATACACAC*****)))))))))))))))))))))))))))))))))))))))))))). (-31..10)
```

[illegible]

.....CACGCTCATGCACACACCCACA.....	12*
.....TGAGTGTGTGTGTGTGAGTGTGT.....	7
.....TGAGTGTGTGTGTGTGAGTGT.....	3
.....TGAGTGTGTGTGTGTGAGTGTG.....	2
.....TGAGTGTGTGTGTGTGAGTGTGTG.....	1
.....TGAGTGTGTGTGTGTGAGTGTGTGT.....	1

[illegible]

.....CACGCTCATGCACACACCCACA.....	12
.....TGAGTGTGTGTGTGTGAGTGTGT.....	7*
.....TGAGTGTGTGTGTGTGAGTGT.....	3
.....TGAGTGTGTGTGTGTGAGTGTG.....	3
.....TGAGTGTGTGTGTGTGAGTGTG.....	2
.....TGAGTGTGTGTGTGTGAGTGTGTG.....	1
.....TGAGTGTGTGTGTGTGAGTGTGTGT.....	1

.....TGAGTGTGTGTGTGTGAGTGTGTaa.....	4
.....TGAGTGTGTGTGTGTGAaa.....	3
.....CACGCTCATGCACACACCCACAa.....	3
.....TGAGTGTGTGTGTGTGAGTGTGTa.....	2
.....tGaGTGTGTGTGTGAGTGTGT.....	2
.....CACGCTCATGCACACACCCAAa.....	2
.....TGAGTGTGTGTGTGTGAGTGTGa.....	2
.....aTGAGTGTGTGTGTGTGAGTGTGT.....	2
.....CACGCTCATGCACACACCCCACT.....	2

[illegible]

Supplemental Figure S1

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mmu-mir-582-5p(mmu-mir-582)
ACTCTTTGGATACAGTTGTTCAACCAAGTTACTAATCTAACTAATTGTAACCTGTTGAACAACTGAACCCAAAGGGTGCAAA
((((((((((...((((((((((((((...((((((((((((((((...))))))))))))...)))))))))).... (-33.94)
*****TACAGTTGTTCAACCAAGTTACT*****

-----

mmu-mir-590-3p(mmu-mir-590)
AGTCAGAAATGAGCTTATTCTATAAAAGTGCAGTATGGTGAAGTCAATCTGTAATTTTATGTATAAGCTAGTCTCTGATTGA
(((((((...((((((((((((((((...((((((((((((((((...))))))))))))...)))))))))).. (-28.50)
*****TAATTTTATGTATAAGCTAGT*****

-----

mmu-mir-590-5p(mmu-mir-590)
AGTCAGAAATGAGCTTATTCTATAAAAGTGCAGTATGGTGAAGTCAATCTGTAATTTTATGTATAAGCTAGTCTCTGATTGA
(((((((...((((((((((((((((...((((((((((((((((...))))))))))))...)))))))))).. (-28.50)
*****GAGCTTATTCTATAAAAGTGCAG*****

-----

mmu-mir-592(mmu-mir-592)
TGATATTATGCCATGACATTGTTCAATATGCGATGATGTTGTTGATGGCAGCGTCATCACGTGGTGACGCAACATCATGACGTAAGACATCA
.((((((((((((((((...((((((((((((((((...((((((((((((((((...))))))))))))...)))))))))).. (-39.90)
*****ATTGTTGTTCAATATGCGATGATG*****

-----

mmu-mir-598(mmu-mir-598)
GCTGATGCTGGCGGTGATGCCGATGGTGCAGCTGAAATGGGCTGTACGTCATCGTCGTCATCGTTATCATCATCAT
.((((((((((((((((...((((((((((((((((...((((((((((((((((...))))))))))))...)))))))))).. (-33.30)
*****TACGTCATCGTCGTCATCGTTA*****
.....TACGTCATCGTCGTCATCGTTAT..... 2

-----

mmu-mir-615-3p(mmu-mir-615)
TCGGGAGGGGCGGGAGGGGGGTCCCCGGTGCTCGGATCTCGAGGGTGCTTATTGTTCCGGTCCGAGCCTGGGTCTCCCTCTTCCCCCATCCC
..((((((((((((((((...((((((((((((((((...((((((((((((((((...))))))))))))...)))))))))).. (-61.00)
*****TCCGAGCCTGGGTCTCCCTCT*****
.....TCCGAGCCTGGGTCTCCCTCT..... 1

-----

mmu-mir-615-5p(mmu-mir-615)
TCGGGAGGGGCGGGAGGGGGGTCCCCGGTGCTCGGATCTCGAGGGTGCTTATTGTTCCGGTCCGAGCCTGGGTCTCCCTCTTCCCCCATCCC
..((((((((((((((((...((((((((((((((((...((((((((((((((((...))))))))))))...)))))))))).. (-61.00)
*****GGGGGTCCCCGGTGCTCGGATC*****
.....TCCGAGCCTGGGTCTCCCTCT..... 1

-----

mmu-mir-652(mmu-mir-652)
AGGAACAGCTATGTACTGCACAACCCTAGGAGGGGGTGCCATTACATAGAGTATAATTGAATGGCGCCACTAGGGTTGTGAGTGTACAGCCTACAC
.....((((((((((((((((...((((((((((((((((...((((((((((((((((...))))))))))))...)))))))))).. (-51.30)
*****AATGGCGCCACTAGGGTTGTG*****
.....AATGGCGCCACTAGGGTTGTG..... 36*
.....AATGGCGCCACTAGGGTTGT..... 7
.....AATGGCGCCACTAGGGTTGTG..... 3
.....ATGGCGCCACTAGGGTTGT..... 2
.....ATGGCGCCACTAGGGTTGTG..... 2
.....AATGGCGCCACTAGGGTTGTG..... 119
.....AATGGCGCCACTAGGGTTGTG..... 29
.....AATGGCGCCACTAGGGTTGTG..... 18
.....ATGGCGCCACTAGGGTTGTG..... 12
.....AATGGCGCCACTAGGGTTGTG..... 6
.....AATGGCGaCCACTAGGGTTGTG..... 2
.....AATGGaCGCCACTAGGGTTGTG..... 2
.....AATGGCGCCACTAGGGTTGTG..... 2
.....AATGGCGCCACTAGGGTTGTat..... 2

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Supplemental Figure S1

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.....aATGGCGCCACTAGGGTTGTG..... 2
.....AATGGCGCCACTAGGGTTaGTGt..... 2
.....TGGCGCCACTAGGGTTGTGt..... 2
.....AATGGCGCCACTAGGGTTGtGt..... 2
.....AATGGCGCCACTAGGGTTGTtG..... 2

```

mmu-mir-653(mmu-mir-653)

```

CATTCTTTCAAGTGGGAAGATGGTAAGCTGCAGAACATGTGTGTTTCTCATGTCTATGTCTGCTGACCATCACCTTTGGGTCTCTG
(((((((.((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****GTGTTGAAACAATCTCTACTG*****

```

mmu-mir-654-3p(mmu-mir-654)

```

CTCGGTAAGTGGGAAGATGGTAAGCTGCAGAACATGTGTGTTTCTCATGTCTATGTCTGCTGACCATCACCTTTGGGTCTCTG
(((((((.((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****TATGTCTGCTGACCATCACCT*****

```

mmu-mir-654-5p(mmu-mir-654)

```

CTCGGTAAGTGGGAAGATGGTAAGCTGCAGAACATGTGTGTTTCTCATGTCTATGTCTGCTGACCATCACCTTTGGGTCTCTG
(((((((.((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****TGGTAAGCTGCAGAACATGTGT*****

```

mmu-mir-665(mmu-mir-665)

```

AGAACAGGGTCTCCTTGAGGGGCTCTGCCTCTATCCAGGATTATGTTTTATGACCAGGAGGCTGAGGTCCCTTACAGGCGGCCTCTTACTCT
.....(((((((.((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****ACCAGGAGGCTGAGGTCCCT*****
.....ACCAGGAGGCTGAGGTCCCTTAC..... 22
.....ACCAGGAGGCTGAGGTCCCTTA..... 15
.....ACCAGGAGGCTGAGGTCCCTTACA..... 6
.....CCAGGAGGCTGAGGTCCCTTAC..... 4
.....ACCAGGAGGCTGAGGTCCCTTAa..... 14
.....ACCAGGAGGCTGAGGTCCCTTAt..... 7
.....ACCAGGAGGCTGAGGTCCCTTAaA..... 6
.....ACCAGGAGGCTGAGGTCCCTTAct..... 5
.....ACCAGGAGGCTGAGGTCCCTTAat..... 4
.....ACCAGGAGGCTGAGGTCCCTTtaA..... 3
.....ACCAGGAGGCTGAGGTCCCTTtA..... 3
.....ACCAGGAGGCTGAGGTCCCTTACa..... 2
.....ACCAGGAGGCTGAGGTCCCTTAaC..... 2
.....ACCAGGAGGCTGAGGTCCCTTAtA..... 2
.....ACCAGGAGGCTGAGGTCCCTTAtt..... 2
.....ACCAGGAGGCTGAGGTCCCTTACg..... 2
.....ACCAGGAGGCTGAGGTCCCTTAgt..... 2

```

mmu-mir-666-3p(mmu-mir-666)

```

CTGATTCTGCCTGCGTGGAGCGGGCACAGCTGTGAGAGCCCCCTAGGTACAGCGGGGCTGCAGCGTGATCGCCTGCTCACGCACAGGAAGTGACGACAG
(((.(((.(((.(((.(((.(((.(((.(((.(((.(((.(((.(((.(((.(((.(((.(((.(((.(((.(((.(((.(((.(((.(((.(((.(((.(((
(-47.30)
*****GGCTGCAGCGTGATCGCCTGCT*****
.....AGCGGGCACAGCTGTGAGAG..... 3
.....AGCGGGCACAGCTGTGAGAGC..... 2
.....AGCGGGCACAGCTGTGAGA..... 1
.....AGCGGGCACAGCTGTGAGAGCC..... 1

```

mmu-mir-666-5p(mmu-mir-666)

```

CTGATTCTGCCTGCGTGGAGCGGGCACAGCTGTGAGAGCCCCCTAGGTACAGCGGGGCTGCAGCGTGATCGCCTGCTCACGCACAGGAAGTGACGACAG
(((.(((.(((.(((.(((.(((.(((.(((.(((.(((.(((.(((.(((.(((.(((.(((.(((.(((.(((.(((.(((.(((.(((.(((.(((
(-47.30)
*****AGCGGGCACAGCTGTGAGAGCC*****
.....AGCGGGCACAGCTGTGAGAG..... 3
.....AGCGGGCACAGCTGTGAGAGC..... 2

```

Supplemental Figure S1

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.....AGCGGGCACAGCTGTGAGA..... 1
.....AGCGGGCACAGCTGTGAGAGCC..... 1*
-----
.....GGCTGCAGCGTGATCGCCTGCTct..... 3
-----

mmu-mir-667(mmu-mir-667)
GTGGGTACTGGCCTCGGTGCTGGTGAGCAGTGAGCACGCCATACATTATCTGTGACACCTGCCACCCAGCCCAAGGCCCTAGGCCAC
(((((((.....(((((((.....(((((((.....(((((((.....(((((((.....(((((((.....(((((((.....(((((((.....))))))))) (-40.94)
*****TGCACCTGCCACCCAGCCCAAG*****
.....TGACACCTGCCACCCAGCCCAAG..... 29*
.....TGACACCTGCCACCCAGCCCAA..... 25
.....GACACCTGCCACCCAGCCCAA..... 2
-----
.....TGACACCTGCCACCCAGCCCAa..... 17
.....TGACACCTGCCACCCAGCCCAAt..... 15
.....TGACACCTGCCACCCAGCCCAAgT..... 13
.....TGACACCTGCCACCCAGCCCAaT..... 5
.....TGACACCTGCCACCCAGCCCAAGa..... 5
.....TGACACCTGCCACCCAGCCCAAG..... 3
.....TGACACCTGCCACCCAGCCCAAGTa..... 2
.....aTGACACCTGCCACCCAGCCCAa..... 2
.....TGACACCTGCCACCCAGCCCAAG..... 2
.....TGACACCTGCCACCCAGCCCAAtT..... 2
.....TGACACCTGCCACCCAGCCCAaaa..... 2
.....TGACACCTGCCACCCAGCCCAAG..... 2
.....TGACACCTGCCACCCAGCCCAAGT..... 2
.....TGACACCTGCCACCCAGCCCAAG..... 2
.....TGACACCTGCCACCCAGCCCAg..... 2
.....TGACACCTGCCACCCAGCCCAa..... 2
-----

mmu-mir-668(mmu-mir-668)
GGTAAGTGTGCCTCGGGTGAGCATGCACTTAATGTAGGTGTATGTCACTCGGCTCGGCCCACTACC
(((((((.....(((((((.....(((((((.....(((((((.....(((((((.....(((((((.....(((((((.....))))))))) (-33.30)
*****TGTCACCTCGGCTCGGCCCACTACC
-----

mmu-mir-669a(mmu-mir-669a-1)
TGTATGTGCATGTGTGTATAGTTGTGTGTGCATGTTTCATGTCTATATTTGAATATACATAACATACACACACGTATAAACGCAAGCACACATACA
.(((((((.....(((((((.....(((((((.....(((((((.....(((((((.....(((((((.....(((((((.....))))))))) (-36.80)
*****AGTTGTGTGTGCATGTTTCATGT*****
.....ACATAACATACACACACACGTAT..... 4
.....ACATAACATACACACACACGT..... 1
.....ACATAACATACACACACACGTA..... 1
.....AGTTGTGTGTGCATGTTTCATGTC..... 1
.....AGTTGTGTGTGCATGTTTCATGTCT..... 1
.....CATAACATACACACACACGTA..... 1
.....ACATAACATACACACACACGTAa..... 4
-----

mmu-mir-669a(mmu-mir-669a-2)
CATGTATGTGCATGTGTGTATAGTTGTGTGTGCATGTTTCATGTCTATATTTGAATATACATAACATACACACACGTATAAACGCAAGCACACACA
..(((((((.....(((((((.....(((((((.....(((((((.....(((((((.....(((((((.....))))))))) (-37.80)
*****AGTTGTGTGTGCATGTTTCATGT*****
.....ACATAACATACACACACACGTAT..... 4
.....ACATAACATACACACACACGT..... 1
.....ACATAACATACACACACACGTA..... 1
.....AGTTGTGTGTGCATGTTTCATGTC..... 1
.....AGTTGTGTGTGCATGTTTCATGTCT..... 1
.....CATAACATACACACACACGTA..... 1
-----

mmu-mir-669a(mmu-mir-669a-3)
TTCCTCCATGTATGTGCATGTGTGTATAGTTGTGTGTGCATGTTTCATGTCTATATTTGAATATACATAACATACACACACATGTATAAACGCAAGCACACATACA

```


AGCATGCGATTCATGTGATGTCCACCAAGAATGTGCATGTGTGTATAGTTGTGTACATATTCACTTTTGTATATGAATATGCATATACTCACATGCAAACATACT

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Supplemental Figure S1

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mmu-mir-673-5p(mmu-mir-673)
TGGAGCCTGAGGGGCTCACAGCTCTGGTCCCTTGGAGCTCCAGAGAAAATGTTGCTCCGGGGCTGAGTTCTGTGCACCCCCCTTGCCCTCCA
.((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****CTCACAGCTCTGGTCCCTTGGAG***** (-43.20)
-----
.....CTCACAGCTCcGGTCCCTTGGAGC..... 4
.....CTCACAGCTCcGGTCCCTTGGGA..... 3
-----
mmu-mir-674(mmu-mir-674)
GGCCTAGTCATCACCTGAGCCTTGCACTGAGATGGGAGTGGTGTAAAGGCTCAGGTATGCACAGCTCCCATCTCAGAACAAGGCTCGGGTGTGCTCAGCT
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
(-60.40)
*****GCACTGAGATGGGAGTGGTGTAA*****
.....GCACTGAGATGGGAGTGGTGTAA..... 40
.....GCACTGAGATGGGAGTGGTGT..... 28
.....GCACTGAGATGGGAGTGGTGT..... 27*
.....GCACTGAGATGGGAGTGGTGT..... 17
.....CACAGCTCCCATCTCAGAACAA..... 6
.....GCACTGAGATGGGAGTGGTGT..... 4
.....CACAGCTCCCATCTCAGAAC..... 4
.....CACAGCTCCCATCTCAGAACA..... 4
.....TGCACTGAGATGGGAGTGGTGT..... 2
-----
.....GCACTGAGATGGGAGTGGTGTat..... 30
.....GCACTGAGATGGGAGTGGTGTAAat..... 4
.....GCACTGAGATGGGAGTGGTGTAAa..... 2
.....GCACTGAGATGGGAGTGGTGTGaA..... 2
.....aCACTGAGATGGGAGTGGTGTat..... 2
.....GCACTGAGATGGGAGTGGTGTAg..... 2
.....GCACTGAGATGaGAGTGGTGTAAa..... 2
.....tCACTGAGATGGGAGTGGTGTat..... 2
-----
mmu-mir-675-3p(mmu-mir-675)
TGCGGCCAGGGACTGGTGCAGAAAGGGCCACAGTGGACTTGGTACACTGTATGCCCTAACCCTCAGTCCCTGGGTCTGGCA
.((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****CTGTATGCCCTAACCCTCAGT***** (-56.00)
.....TGTATGCCCTAACCCTCAGT..... 1
.....TGGTGCAGAAAGGGCCACAGT..... 1
.....TGGTGCAGAAAGGGCCACAGTG..... 1
-----
mmu-mir-675-5p(mmu-mir-675)
TGCGGCCAGGGACTGGTGCAGAAAGGGCCACAGTGGACTTGGTACACTGTATGCCCTAACCCTCAGTCCCTGGGTCTGGCA
.((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****TGGTGCAGAAAGGGCCACAGT***** (-56.00)
.....TGTATGCCCTAACCCTCAGT..... 1
.....TGGTGCAGAAAGGGCCACAGT..... 1*
.....TGGTGCAGAAAGGGCCACAGTG..... 1
-----
.....TGGTGCAGAAAGGGCCACAGTga..... 2
-----
mmu-mir-676(mmu-mir-676)
CTTTGCCTGAATGCATGACTCTACACCTTAGGACTTGCAGAATTAAAGGAATGCCCTCCTGAGGTTGTTGAGCTGTGCGTTTCTGGGC
....((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****CCGTCTGAGGTTGTTGAGCT***** (-42.80)
.....CCGTCTGAGGTTGTTGAGCTG..... 5
.....CCGTCTGAGGTTGTTGAGCT..... 4*
.....CCGTCTGAGGTTGTTGAGCTGT..... 3
-----
mmu-mir-677(mmu-mir-677)
GAGCCTTCAGTGATGATTAGCTTCTGACTTTCGTCTTCTGAATTTGCTGAAGCCAGATGCCGTTCTGAGAAGGGGAAATGGACAGAACTGAACATTTTGAA
GGCT
.((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
)))) (-35.20)
*****TTCAGTGATGATTAGCTTCTGA*****

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— — — —

* * * *

[illegible]

Supplemental Figure S1

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.))) (-83.60)
*****CGTCCCCGCTCGGCGGGGTCC*****

***
-----

mmu-mir-690(mmu-mir-690)
TGTGTTTTGTGGAGCTAATTGGCTGTATTAAAGTGCTAGTAAGAAACATTCTCTCCAGCTGGAGAGATGGCTCAGCTGTTAAAGGCTAGGCTCACAACCAAAA

TATA
(((((((((((((.....)))))).)))))).))))).)))

))) (-30.20)
*****AAAGGCTAGGCTCACAACCAAA*

***
-----

mmu-mir-691(mmu-mir-691)
GCTGATTATTTTTGCTTTCTTGGGTCTGCTTTGAATATTCTGAAGAGAGGCAGAAAATGTTATATTTAATAT
..((((.....))))).)))..... (-15.30)
*****ATTCTCTGAAGAGAGGCAGAAAA*****

-----

mmu-mir-692(mmu-mir-692-1)
AGGGTGGCAGGGCCACAACCAGCGCAGACTGGCGCGCCCGAGGGATCTCTGGGTGAGTATCTCTTTGAGCGCCTCACTCTCAAGCACAACTAGGAGGCCTCTGCC

TTCC
.((((((((((.....)))))).))))).))).....

))) (-42.82)
*****ATCTCTTTGAGCGCCTCACTC*****

***
-----

mmu-mir-692(mmu-mir-692-2)
GGTGGCAGGGCCACAACCAGCGCAGACTGGCGCGCCCGAGGGATCTCTGGGCGAGTATCTCTTTGAGCGCCTCACTCTCAAGCACGACTAGGAGGCCTCTGTGCC

TTCC
.((((.....))))).((((.....))))).((((.....))))).((((.....))))).((((.....))))).

... (-39.30)
*****ATCTCTTTGAGCGCCTCACTC*****

***
-----

mmu-mir-693-3p(mmu-mir-693)
AGTTGTAGGCATGCTCATTACAGCCACATCCGAAAGTTTTCTGGCTAGGGCAGCTTTCAGATGTGGCTGTAATGAGCATGCTCCCAGC
.((((.....))))).((((.....))))).((((.....))))).((((.....))))).((((.....))))).((((.....))))).((((.....))))).
*****GCAGCTTTCAGATGTGGCTGTAA*****

-----

mmu-mir-693-5p(mmu-mir-693)
AGTTGTAGGCATGCTCATTACAGCCACATCCGAAAGTTTTCTGGCTAGGGCAGCTTTCAGATGTGGCTGTAATGAGCATGCTCCCAGC
.((((.....))))).((((.....))))).((((.....))))).((((.....))))).((((.....))))).((((.....))))).((((.....))))).
*****CAGCCACATCCGAAAGTTTTCTGAAAAATGTTGCCTGAAG*****

-----

mmu-mir-694(mmu-mir-694)
AAAGGCCAGCTCAGGCATCGCTTTCACCCAAAGACCAAGGCTGAAAATGTTGCCTGAAGCAGTCTCTGCCT
..((((.....))))).((((.....))))).((((.....))))).((((.....))))).((((.....))))).((((.....))))).((((.....))))).
*****CTGAAAAATGTTGCCTGAAG*****

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Supplemental Figure S1

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mmu-mir-695(mmu-mir-695)
TCACGAGGAATCCTAGATTGGGCATAGGTGACTGAAGTACACAGCTGCCTTTCTTACAAAGGCACTGGTTACCTTGGTCCTGGTCACCGGCTCGGCTATCTGCTA
CTCG
...((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
)))))) (-37.32)
*****AGATTGGGCATAGGTGACTGAA*****

****
-----

mmu-mir-696(mmu-mir-696)
GGTCTGTCGCGGTGCCTGAAGCTGTCCCCGAGCCACGCTTCCTGCTTTCCCGGGCTTGCTGCTTGCGTGTGCTTGCTGTGGGCAGCTT
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
)))))) (-33.10)
*****GCGTGTGCTTGCTGTGGG*****

-----

mmu-mir-697(mmu-mir-697)
GAGTGGGGATGTGCTCTGGATGTTGGTCTTGACAGGTCTCAGAGGTGACTACCACACATTGAAGGGGTGGCGGTAACATCCTGGTCCTGTGGAGACTGTCATAGT
CTCC
...((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
)))))) (-40.70)
*****AACATCCTGGTCCTGTGGAGA*****

****
-----

mmu-mir-698(mmu-mir-698)
TCATCTCTGCCCTCACTGTAAGGGAGGGTGGTGGCTATGTGGGTGGGACAGGGATGTTCAAGTTGCTAAAGACATTCTCGTTTCCTTCCCTCAGTGTCCCCAGATG
GTGA
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
)))))) (-38.50)
*****CATTCTCGTTTCCTTCCCT*****

****
-----

mmu-mir-699(mmu-mir-699)
CGTGCAGCGGGGCGTCATCCGTCAGCTCACATAGTGACGCAGGCAGTGCGACCTGGCTCGCAC
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
)))))) (-26.40)
*****AGGCAGTGCGACCTGGCTCG**

-----

mmu-mir-700(mmu-mir-700)
TTCACTGGGAGTAAGGCTCCTTCTGTGCTTGACAGGGGAGAAATACGAAGTGCACGCGGGAACCGAGTCCACCCCACT
...((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
)))))) (-32.90)
*****CACGCGGGAACCGAGTCCACC*****
.....TAAGGCTCCTTCTGTGCTTGACAG..... 4
.....CACGCGGGAACCGAGTCCACC..... 3*
.....CACGCGGGAACCGAGTCCAC..... 2
.....CACGCGGGAACCGAGTCCACT..... 4

-----

mmu-mir-701(mmu-mir-701)
GTGGAGCATCTACCTTGAGCAAGTAATTAGCCGCTGAAATAGATGGATTGTATAGATGAGGTTCTATCTATTAAAGAGGCTAGCCACTTATCAAGTGCTAACAGC
CCAC
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
)))))) (-34.86)

```

*****TTAGCCGCTGAAATAGATGGA*****

CGGGACAAGGTGAGTGGGGTGGTTGGCATGGGTTGCCATGGGGACTCGACGCTGTGCCACAGCCTCCTGATGTCTCCTCACGCATGCCACCCCTTTACCCCG

.....(((((((((((..(((..((((((((.....(((((((((((.((((((...)))))).)..)).))))).)...)))).)))))))).)))))))))

*****TGCCCACCCCTTTACCCCG

.....TGCCCACCCTTTACCCCG

AGACTGGTTAATGATAACAATGCATCATAAACCTTCAGAAGGAAAGAATGTTGTGGACCATTTTTTTTTGTGTGTGGCAGTTTAAAGTTATTAGTTTTCAAAT

*****AAAACCTTCAGAAGGAAAGAA*****

.(((((((.((((.((((.....(((.((.(.....)))))).)))))..))))).)..... (-29.40)

.....(((((((((((.((((.((((.((((.....)))))))).).)))..)))).).....)..... (-40.80)

CTGTGTTTGAAATGGGGACTGCCCTCAAGGAGCTTACAATCTAGCTGGGGGTAGATGACTTGCACTTGAACACAAGTAGACTGTGAGCTTCTAGAGGGCAGGGGC

*****AAGGAGCTTACAATCTAGCTGGG*****

.....AAGGAGCTTACAATCTAGCTGGG.....

.....AAGGAGCTTACAATCTAGCTGG.....

.....AGGAGCTTACAATCTAGCTGGG.....

Supplemental Figure S1

[illegible]

.....
 .)))) (-34.10)
 *****CCAAGTCTTGGGGAGAGTTGAG*****

```
mmu-mir-711(mmu-mir-711)
CATGTTCTTAACTTTGAATCTCTTCTTAGGGTGCTTCAGGCCAAAGCTGGGGACCCGGGGAGAGATGTAAGTCTGGGGAGATG
(((..(((((((((((..(((((((((((..(((((((((((..(((((((((((..(((((((((((..(((((((((((..)))))))))
(*.*****GGGGACCCGGGGAGAGATGTAAG*****(-38.00)
```

```
mmu-mir-713(mmu-mir-713)
GGCCTATCCGAGGCCCTGATTGGTTAGTGAGACTTGATTGACATGAGCACCTCCCCTTAGGGT TAGAGTGCACTGAAGGCACACAGCATAGGGCTTC AAGATCG
GGT
.(((((((( (((((((((...((( (((. (. (. (. (. (. (. .))) ))) ).. )))) ).).)).).).)))))))).))).))
))) (-37.10)
*****TGC ACTGAAGGC ACAC AGC*****
```

```
mmu-mir-717(mmu-mir-717)
TTGTCCGCTATCACTGTACCGTCATTTTTCAGTCTCAGACAGAGATACCTTCTCTGAATTCATAGAAGCTGCTCTCCGTTCCGAAGGGATTAGAAGTGATAAAT
CCAG
.....(((((((.....(((((((.....(((((((.....(((((((.....(((((((.....(((((((.....(((((((.....(((((((.....
.))) (-25.30)
*****CTCAGACAGAGATACCTTCTCT*****
```

Page 138

mmu-mir-719(mmu-mir-719)
TTTAGGTGCTTAAGAACAGTATCTCGGCTACAGAAAAATGTTTTGGTGATGCTGTGGATGTGTTTGAAGCCAGGAGAACAGAAGCCAAGAAGTGGCAGAATG

* * * * *

.....TCaAaTCTCGCTGGGGCCTCCA.	11
.....TCagATCTCGCTGGGGCCTCCA.	5
.....TC-ATCTCGCTGGGGCCTCCA.	5
.....TCaTATCTCGCTGGGGCCTCCA.	5
.....TCaTATCTCGgTGGGaCCTCCA.	4
.....TATCTCGgTGGGaCCTCCA.	4
.....TCaTATCTCGCTGGGGaCCTCCA	2

```
mmu-mir-721(mmu-mir-721)
GGAAGACAGTGCAATTAAGAGGGGGAAAAAGTACCTGGGATGTTCTGAGAATTTCATTTTCTTGTTATTGCCACTCTGCTTGGA
.....(.(((.....(((.....(((.....(((.....)))..)))..)))..)))..)))..)))..((.....))) (-16.20)
*****CAGTGCAATTAAGAGGGGGAA*****
```

```
mmu-mir-741(mmu-mir-741)
TTGATCTACGTAGATTGGTACCTATCATGTAAATCATGTAAGCATGAGAGATGCCATTCTATGTAGATTAA
.(((((((((((.((((((.(.((((((.....)))))).).)))).))))))))).. (-31.60)
*****TGAGAGATGCCATTCTATGTAGA***
```

```
mmu-mir-742(mmu-mir-742)
TGCTCTACTCACAATGTTGCTAATCACGTGAAGTGTAGGTGAAGCCACCATGCTGGGTAAAGTA
(((((((((((((((.(.(((.((...)).)))))).)))))))).))))))))) (-25..70)
*****GAAAGCCACCATGCTGGGTAA**
```

```
mmu-mir-743b-5p(mmu-mir-743b)
TGCAGTGTCTGTGTTTCTAGACTGGTGCCATCATGTGAAATATTTGTGAAAGACATCATGCTGAATAGAGTAAGGCCCA
(.(((.((((.((((.((((.((((.(.....)))))).)))))).)))))).)))))).)))))).)))).. (-29.00)
*****TGTTCAGACTGGTGCCATCA*****
```

Supplemental Figure S1

```

(-45.50)
*****TGCGGGGCTAGGGCTAACAGCA*****
.....TGCGGGGCTAGGGCTAACAGCA..... 27*
.....TGCGGGGCTAGGGCTAACAGC..... 25
.....TGCGGGGCTAGGGCTAACAG..... 5
-----
.....TGCGGGGCTAGGGCTAACAGCAa..... 9
.....aTGCGGGGCTAGGGCTAACAGCA..... 4
.....TGCGGGGCTAGGGCTAACAGCAt..... 3
.....TGCGGGGCTAGGGCTAACAGCAaT..... 3
.....TGCGGGGCTAGGGCTAACAGCtA..... 2
.....TGCGGGGCTAGGGCTAACAGt..... 2
.....TGCGGG-CTAGGGCTAACAGCAa..... 2
.....TGCGGG-CTAGGGCTAACAGCA..... 2
.....TGCGGG-CTAGGGCTAACAGCtA..... 2
.....TGCGGGGCTAGGGCTAACAGCAtT..... 2
.....aTGCGGGGCTAGGGCTAACAGC..... 2
.....TGCGGG-CTAGGGCTAACAGC..... 2

```

```
mmu-mir-758(mmu-mir-758)
TGGGTGCGTGAGGTGGTTGACCAGAGAGCACACGCTATATTTGTGCCGTTTGTGACCTGGTCCACTAACCCCTCAGTATCTA
((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****TTTGTGACCTGGTCCACTA*****
TTTGTGACCTGGTCCACTAACCCCTCAGTATCTA 3
```

mmu-mir-759(mmu-mir-759)
GGATTATAATAAATTAAATGCTAAACTGGCAGAGTCAAACAATTTTGACTCAGATCTAAATGTTTGCACTGGCTGTTTAAACATTTAATTTGTTCC
.....((((((((((((((.(((((((((.((((.(.....)).))))))))))))).)))))))).)))))))).))))).)

(-31.40)
*****GCAGAGTGCAAACAATTTTGAC*****

```
mmu-mir-761(mmu-mir-761)
TGGCAAGTGGAGGAGCAGCAGGGTGAAACTGACACAGTGCTGGTGAGTTTCACTTTGCTGCTCCTCTGACTCCCA
((..((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
*****GCAGCAGGGTGAAACTGCACAC*****)))))))))))))))
(-47.50)
```

```
mmu-mir-762(mmu-mir-762)
GCCCCGGCTCCGGGTCTCGGCCCGCACGGTTCGGGCCGGCCATGCTGGCGGGGCTGGGGCCGGGACAGAGCCCGTGGC
(((((((...(((((((...((((((...)))))))))...)))))))))...)))...))) (-55..20)
*****GGGGCTGGGGCCGGGACAGAGC*****
```

```
mmu-mir-763(mmu-mir-763)
AATGATGAGAGTGCAGGCGTTTCTGGGGATTAATGACCAGCTGGGAAGAACCAGTGGCCCTCGGCTCTGCCTCCCAGCCAGCCATTAACTCCAAGGAAATGTCT
TTTGCTGAGGTCGTT
(((((((...(((...(((((((((((((((...((((...(((...(((...(((...(((...(((...(((...(((...(((...(((...(((...(((...
...)))...)))))) (-49.80)
*****CCAGCTGGGAAGAACCAGTGGC*****
```


Supplemental Figure S1

.... 7
TGGAAGACTAGTGATTTTGTGTTT.....

.... 9
ACTAGTGATTTTGTGTT.....

.... 1
CTAGTGATTTTGTGTT.....

.... 1
CTAGTGATTTTGTGTTT.....

.... 2
GACTAGTGATTTTGTGTT.....

.... 1

TGGAAGACTAGTGATTTT-GTTGT.....

.... 14
TGGAAGACTAGTGATTTTGT-GT.....

.... 7
TGGAAGACTAGTGATTTT-GTTGTT.....

.... 7
aTGGAAGACTAGTGATTTTGTGTT.....

.... 6
cGGAAGACTAGTGATTTTGTGTT.....

.... 5
TGGAAGACTAGTGATTTT-GTTG.....

.... 5
TGGAAGACTAGTGATTTGtGT.....

.... 4
aTGGAAGACTAGTGATTTTGTGTT.....

.... 4
TGGAAGACTAGTGATTTTGTGTTa.....

.... 4
TtGAAGACTAGTGATTTTGTGTT.....

.... 4
TtGAAGACTAGTGATTTTGTGTT.....

.... 3
TGGAAGACTAGTGATTTTGTGc.....

.... 3
TGGAAGACTAGTGATTTTGT-GTT.....

.... 3
aTGGAAGACTAGTGATTTT-GTTGT.....

.... 3
TGGAAGACTAGTGATTTTGTaT.....

.... 2
TGGAAGACTAGTGATTTTGTtGTT.....

.... 2
TGGAAGACTAGTGAcTTTGTGTT.....

.... 2
TGGAAGACT-GTGATTTTGTGTT.....

.... 2
TGGAAGACTAGTGATTTTGTaGT.....

.CTTGTGATT^{TT}TTGTTGTT

mmu-mir-802(mmu-mir-802)
GGTCTATTATTGCAATCAGTAACAAAGATTCATCCTTGTCATCATACAACACGGAGAGTCTTTGTCAGTCAGTGAATTAATAGCCTTCACC
(..(((((((.....))))))..)))))))).))..)))))).....

[illegible]

```
mmu-mir-871(mmu-mir-871)
TGCAAGTCTATTATTCAGATTAGTGCCAGTCATGTGAATACATATGACTGGCACCATTCTGGATAATGTAATGCTCA
(((((((.....)))))))))... (-40..30)
*****TATTCAAGTATTAGTGCCAGTCATG*****
```

Page 144

Supplemental Figure S1

[illegible]

```

mmu-mir-92a(mmu-mir-92a-1)
CTTTCTACACAGGTTGGGATTGTGCGCAATGCTGTGTTTCTCTGTATGGTATTGCACCTTGTCCCGGCTGTTGAGTTTGG
..(((..(((((((((((..(((((((((((((.....)))))))))).)))).).... (-35.30)
*****TATTGCACTTGTCCCGGCTG*****
.....TATTGCACTTGTCCCGGCTGT..... 151
.....TATTGCACTTGTCCCGGCTG..... 11*
.....TATTGCACTTGTCCCGGCTGTT..... 10
.....CTTGTCCCGGCTGT..... 5
.....TNTTGCACCTTGTCCCGGCTGT..... 5
.....AGGTTGGGATTGTGCGCAATGCT..... 2
.....ATTGCACTTGTCCCGGCTGT..... 2
.....CTTGTCCCGGCTGTT..... 2
.....GGTTGGGATTGTGCGCAATGCT..... 2
.....TTGTCCCGGCTGT..... 2

```

.....	TATTGCACTTGTCCCGGCCTGTaa.....	18
.....	TATTGCACTTGTCCCGGCCTGTaat.....	5
.....	TATTGCACTTGTCCCGGCCTtGT.....	5
.....	TATTGCACTTGTCCCGGCCTGTa.....	4
.....	TATTGCACTTGTCCCGGCCTGTTt.....	3
.....	TATTGCACTTGTCCCGGCCTGTaT.....	3
.....	TATTGCACTTGTCCCGGCCTaT.....	3
.....	TATTGCACTTGTCCCGGCCTaGT.....	2
.....	CTTGTCCCGGCCTGTaa.....	2
.....	TtTTGCACTTGTCCCGGCCTGT.....	2
.....	TATTGCACTTGTCC- -GCCTGT.....	2
.....	TATTGCACTTGTCCCGGCCTGTaT.....	2
.....	TATTGCACTTGTCCCGGCCTGTtA.....	2
.....	TATTGCACTTGTCCCGGCCTGTtA.....	2
.....	TATTGCACTTGTCCCGGCCTGTaaA.....	2

[illegible]

```

mmu-mir-92b(mmu-mir-92b)
GGTGGGCGGGAGGGACGGGACGTGGTGCAGTGTGTCTTTCCCTGCCAATATTGCACTCGTCCCGGCCTCCGGCCCCCTCG
(((((((((((.....))))))))))))))))))))))))))))))))))))))))))))))))))))))))))... (-52.92)
*****TATTGCACTCGTCCCGGCCTCC*****
-----
TATTGCACTCGTCCCGGCCTCC†..... 2

```

```
mmu-mir-93(mmu-mir-93)
AGTCATGGG6GCTCCAAAGTGCTGTTCGTGCAGGTAGTGTAACTACCTGACCTACTGCTGAGCTAGCACTTCCCAGAGCCCCAGGACA
.(((.( (((((((((.( (((((((((((.( ((((. ((.( ..... ))))))))))) )))))). ) )))))). ) )))))). ) ))). (-47.20)
*****CAAAGTGCTGTTTCGTGCAGGTAG*****
.....CAAAGTGCTGTTTCGTGCAGGTAG.....162*
.....CAAAGTGCTGTTTCGTGCAGGTAGT.....37
.....ACTGCTGAGCTAGCACTTCCCGA.....5
.....CAAAGTGCTGTTTCGTGCAGGTA.....4
.....CAAAGTGCTGTTTCGTGCAGG.....3
.....ACTGCTGAGCTAGCACTTCCCAG.....2
-----
.....CAAAGTGCTGTTTCGTGCAGGTAGa.....14
.....CAAAGTGCTGTTTCGTGCAGGTaa.....11
```

CAAAGTGCTGTTTCGTGCAGGTTAG	8
CAAAGTGCTGTTTCGTGCAGGTAAa	6
CAAAGTGCTGTTTCGTGCAGGTAT	6
tAAAGTGCTGTTTCGTGCAGGTAG	5
CAAAGTGCTacGTaCGTGCAGGTAG	4
CAAAGTGCTaTTCGTGCAGGTAG	3
CAAAGTGCT- TTCGTGCAGGTAG	3
CAAAGTGCTaTaCGTGCAGGTAG	3
CaAAAGTGCTGTTTCGTGCAGGTAG	3
cAAAGTGCTTTCGTGCAGGTA	2
CaAAAGTGCTGTTTCGTGCAGGTAGT	2
aCAAAGTGCTGTTTCGTGCAGGTAG	2
cAAAGTGCTTTCGTGCAGGTAG	2
gAAAGTGCTGTTTCGTGCAGGTAG	2
CAAAGTGCTGTTTCGTGCAG- TAG	2
CAAAGTGCTGTTTCGTGCAGGTTAGT	2
CAAAGTGCTaGTaCGTGCAGGTAG	2
CAAAGTGCTGTTCTTGCAGGTAG	2

C
(((((((...((((((..((.(.(((((((((.(((((.(((((.(((.....)).).)))))..)))))))).))).).).).)))))).)))
. (-47.30)
*****TTTGGCACTAGCACATTTTTGCT*****

*
TTTGGCACTAGCACATTTTGGCT.....
 .. 23*
TTTGGCACTAGCACATTTTGGCT.....
 .. 3

aTTGGCACTAGCACATTTTGGCT.....
 .. 2
aTTTGGCACTAGCACATTTTGGCT.....
 .. 2

CAT
(((((((.(.((.((((((((((((((((.((((((((((.....))))))....)))..)))))))).).))))).
))). (-50.10)
*****TGAGGTAGTAAGTTGATTGTT*****

```

***
.....TGAGGTAGTAAGTTGTATTGTT.....
... 15*
.....TGAGGTAGTAAGTTGTATTGT.....
... 7
-----
.....TGAGGTAGTAAGTTGTATTGTTa.....
... 3
.....TGAGGTAGTAAGTTGTAT-GTT.....
... 2

```

Page 148

AACCGGTAGATCCGATCTTGTG**

...AACCCGTAGATCCGATCTTGtGt	58
...AACCCGTAGATCCGATCTTGtGa	13
...ATCCGATCTTGtGt	6
...AAACCCGTAGATCCGATCTTGtGt	4
...AAACCCGTAGATCCGATCTTGtGa	4
...AACCCGTAGATCCGATCTTGtT	2
...AACCCGTAGATCCGATCTTGtA	2
...TCCGATCTTGtGt	2
...AACCCGT-GATCCGATCTTGtG	2
...AACCCGTaaATCCGATCTTGtA	2
...AACCCGTAGATCCGATCTTGtGT	2

*****CACCCGTAGAACCGACCTTGCG*****

.....CACCCGTAGAACCGACCTTGCGt.....	52
.....CACCCGTAGAACCGACCTTGCGa.....	23
.....CACCCGTAGAACCGACCTTGCa.....	20
.....tACCCGTAGAACCGACCTTGCG.....	13
.....CACCCGTAGAACCGACCTTGtCG.....	8
.....aACCCGTAGAACCGACCTTGCG.....	6
.....tACCCGTAGAACCGACCTTGCGt.....	5
.....aACCCGTAGAACCGACCTTGCGa.....	4
.....CACCCGTAGAACCaACCTTGCG.....	3
.....CACCCGTAGAACCGACCTTGa.....	3
.....CACCCGTAGAACCGACCTTGCGaa.....	2
.....CACCCGTAGAACCGACCTTGCGtt.....	2
.....CACCCGTAGA-CCGACCTTGCG.....	2
.....CACCCGTAGAACCGACCTTGtC.....	2
.....CtACCCGTAGAACCGACCTTGCG.....	2
.....CACCCGTAGAACCGACCTTGtCGt.....	2
.....CACCCGTAGAACCGACCTTGCa.....	2
.....tACCCGTAGAACCGACCTTGC.....	2
.....CACCCcGTAGAACCGACCTTGC.....	2
.....CACC-GTAGAACCGAC-TTGCG.....	2