

Supplement

Supplemental Methods

RT-PCR

The primer pairs used for RT-PCR to detect the deletion of targeted exons are as follows:

z-cMKspMO4

(forward) 5' TCCGGCTGATGCTAAATGTGTCATTGAGAC 3'

(reverse) 5' CTGGTAAACACGATGGCATCCAGCTCCGTC 3'

z-cMKspMO6

(forward) 5' CGGGACAACAATTGGAGAAGATTGAGGAT 3'

(reverse) 5' CTGGTAAACACGATGGCATCCAGCTCCGTC 3'

z-MLCspMO2

(forward) 5' AAATCAGCATTTCCTCACTCGC 3'

(reverse) 5' GCGTACGCATTGATACATG 3'

Gene silencing via RNA interference.

Sequences of siRNAs which were used to suppress the expression of cardiac-MLCK in cultured cardiomyocytes are as follows:

si-cMK-1: gggagaagcuaaagguaaaTT(sense), uuaaccuuuagcuucuccTT (antisense)

si-cMK-3: gagaagaguuguaggaugaTT(sense), ucauccuacaacucuucTT (antisense)

si-smMK: gcgacuaggauucgggaaaTT (sense), uuucccagaucucgTT (antisense)

Whole-mount in situ hybridization.

The specific probes which were used for whole-mount in situ hybridization were amplified by using following primers:

Primer pairs 1

(forward) 5' GATCAACGCTTCTCAGCACAGGAGGGTTCA 3'

(reverse) 5' CTCTTCTAGTTGTCTTTGTCCAGG 3'

Primer pairs 2

(forward) 5' CGGGACAACAATTGGAGAAGATTGAGGAT 3'

(reverse) 5'CTGGTAAACACGATGGCATCCAGCTCCGTC 3'

Primer pairs 3

(forward) 5' ACTTACATGCTTTTGAGTGGCCTTTCTCCA 3'

(reverse) 5'TCAAGTCACAGTATGGATTAACATTTCAGGA 3'

Injection of MO.

MO sequence information are as follows:

z-cMKaugMO: 5' TACAGCGAGGTCCCCATCATGCCCT 3'

z-mismatchMO: 5' TAGAGCCAGGTCGCCATGATGCGCT 3'

z-cMKspMO4: 5' AGCTCTATGAATAATCAGAAAGAAC 3' (acceptor site)

5' ATGATCTGGTAACTACCAATGATC 3' (donor site)

z-cMKspMO6: 5' CAAATCGGCCTCTGCAACAACACAC 3'(acceptor site)

5' GTATGCTTTGTACTCACCTTTCTT 3' (donor site)

z-MLCspMO2: 5' CCTTTTTGGGTGCCTGTAATGATAT 3'(acceptor site)

5' GTGCTCGGTTTGTACCTCTTTGAAC 3' (donor site)

Supplementary Movie 1 Cardiac motion of control mock-injected SAG4A strain of zebrafish.

Supplementary Movie 2 Cardiac motion of z-cMKaugMO-injected SAG4A strain of zebrafish.