**Table S1**

Primer Sets

Gene Names forward reverse

ZO1 5’-GTGGGTAACGCCATCCTCTG-3’ 5’- CCATTGCTGTGCTAGTGAGC-3’

Occludin 5’-AGGAGACGTCCCCAGCC-3’ 5’-GATAAACCAATCCGCTCGCC-3’

MALAT1 5’- AGTACAGCACAGTGCAGCTT-3’ 5’-CCCACCAATCCCAACCGTAA-3’ GAPDH 5’-CATACCAGGAAATGAGCTTG-3’ 5’-ATGACATCAAGAAGGTGGTG-3’ Nesprin1 5’-GGCTGAAAATCGAAGAGACG-3’ 5’-CATCTC TGTGAGCCAGACCA-3’ Nesprin2 5’-TCACAGAGCAGCAGTCAGGT-3’ 5’-GCTCACGTTGACAGAGACCA-3’

**Table S2**

si-RNA

Gene Names Gene ID sequence

SYNE1(Nesprin1) 23345 5’-CCAAACGGCUGGUGUGAUUTT-3’

 5-‘GAAGAGACGUGGCGAUUGUTT-3’

 5’-GCAAAGCCCUGGAUGAUAGTT-3’

 5’-GAAAUUGUCCCUAUUGAUUTT-3’

SYNE2(Nesprin2) 23224 5’-CCACAGAGCUCCAAAGUAGUU-3’

 5’-GAGCAAGUGUCCCAAGAUUUU-3’

MALAT1 378938 5′-GTGACTTAAACAGCTTAAATT-3’

GAPDH 2597 5’-UUCUUCGAACGUGUAACGUTT-3’