**Supplementary File 3.** Primers and RNA-FISH probes used in this study

|  |  |  |  |
| --- | --- | --- | --- |
| primer | Left | Right | experiment |
| ncRNA.540 5’ | ttgcagtaatgctcacggtag | gttgtgaaaactctccgtctcc | ChIP, RT-qPCR |
| ncRNA.540 3’ | gagaaaagatggggaaactgc | gaagacggcagaatggaaag | ChIP |
| ncRNA.489 5’ | tttatctggatggggtttatcg | gtgactcgtatgccagaagaag | ChIP |
| ncRNA.489 3’ | gccttttgttgccttctatgc | tgcttgtatgtttcggcctac | ChIP, RT-qPCR |
| mug93as 5’ | AACGGCAGTATTGGTGTGC | CGGATACACCAAGCAATGAAG | ChIP, RT-qPCR |
| mug93as 3’ | TCCACCAAGTTTACGTTCTCC | TCCACCAAGTTTACGTTCTCC | ChIP |
| act1 | gaatggatccaccaatccag | ccgatcgtatgcaaaaggag | RT-qPCR |
| nda2 | GCGTCCAACCTATGAAAACC | CCAGCAAATCGAAGAGAAGC | RT-qPCR |
| lsd90 | TTCTTCGGATAGCGACAAGG | ATACCCAAGGCATGACGAAC | ChIP, RT-qPCR |
| spac23h3.15c | GTTACAGCGGTGAGGGATATG | TGCAGTTGTACGAGCATTACG | ChIP, RT-qPCR |
| spbc660.05 | TCCAGGCTTGCATATTCCTC | AAGAACACTGCCGGCTAAAG | ChIP, RT-qPCR |
| cendH1 | cgctttgttgtcgtggacta | aacacggcgataagaaatgg | ChIP |
| NTS1 | GGCTGGATCTGGCAAAAAG | TCCAGCCTTCTCCATTTCAC | ChIP |
| CAR1806 | ATTGTCAACACGACCCCAAG | GGATGAAGTCGGTGCTTTTG | ChIP |
| CAR810 | TTCTTCACTGTTGGGCAAGC | CTACGTTGGCAATCTGAACG | ChIP |
| CAR928 | TTCGAACCTGGAGAAGAACG | GCCGTTGAAACTTTTTGTCG | ChIP |
| hsp9 | GTCAAAACGTGTTTTCGCTTATG | TGTAAACAATCGGCATTGAGAG | ChIP |
| ymr31 | GCAAGCTGTTGAATCTGGTG | AGTAATGGGATGCGTGATCG | ChIP |
| atf1 | TCAAGTTAAAATTTGCACCTTCAC | ACATCCTCAATGTAGCGACAAAC | ChIP |
| kgd1 | ATTGCGACGCGATGTTTG | TGCACACTCTCAACCAGAGG | ChIP |
| SPCC16A11.15c | TGAATTTTGGGTTTTCGACAG | AGGTTGGCCCATCATCAC | ChIP |
| SPCC11E10.01 | AAACGTGAGAAACCCTGTTTG | CCGCTGTTGTGTGTATTTCC | ChIP |
| SER | TGTCCGAGTGGTTAAGGAGTTAG | TCACCAGCAGGATTTGAACC | RT-qPCR |
| SER+MET | AGGTTCAAATCCTGCTGGTG | AGGTTCAAATCCTGCTGGTG | RT-qPCR |
| LEU | AGGGTGTCCGAGTGGTTATG | AAAGGGGTGGGACTCGAAC | RT-qPCR |
| THR | CCCCTATGGCTTAGTGGTACAG | CCCCACTCGGAATCGAAC | RT-qPCR |
| TRP | GCCCCTTAACTCAGTTGGTAGAG | TGACCCCTAAGTGACTTGAACAC | RT-qPCR |
| rDNA | TTTCTGCCTTTTTCGGTGAC | TGGCATGGATTTCCCTTTAG | qPCR |
| cct2\_1 | ttggatgccactttcgttaa | n.a. | smRNA-FISH |
| cct2\_2 | gaaagacgggcattttcacc | n.a. | smRNA-FISH |
| cct2\_3 | cagcaattgcacccacaaac | n.a. | smRNA-FISH |
| cct2\_4 | agtgctttttaccaaatcgc | n.a. | smRNA-FISH |
| cct2\_5 | aattttgtccattcccttag | n.a. | smRNA-FISH |
| cct2\_6 | gtcacaacaatatcacccga | n.a. | smRNA-FISH |
| cct2\_7 | aagaatggtagcaccgtcat | n.a. | smRNA-FISH |
| cct2\_8 | gctgcattatccaaagctat | n.a. | smRNA-FISH |
| cct2\_9 | ccaacttcatcatcttggac | n.a. | smRNA-FISH |
| cct2\_10 | gacacacacactggtagtac | n.a. | smRNA-FISH |
| cct2\_11 | gacgaagaagttcagcagcg | n.a. | smRNA-FISH |
| cct2\_12 | gcattgaccataatttctgc | n.a. | smRNA-FISH |
| cct2\_13 | cgaagagcatcgatagcagt | n.a. | smRNA-FISH |
| cct2\_14 | tattctcgaggtcactacga | n.a. | smRNA-FISH |
| cct2\_15 | gaagacagagtagttctggc | n.a. | smRNA-FISH |
| cct2\_16 | ccagctgagcaaaatggttt | n.a. | smRNA-FISH |
| cct2\_17 | caagcgaagcactgcatcaa | n.a. | smRNA-FISH |
| cct2\_18 | tgttatccaagttcgtgcta | n.a. | smRNA-FISH |
| cct2\_19 | gtttaccaccaaggatctta | n.a. | smRNA-FISH |
| cct2\_20 | aatccctcatcaaggaagga | n.a. | smRNA-FISH |
| cct2\_21 | ctttgggacagttaacacca | n.a. | smRNA-FISH |
| cct2\_22 | ccatagccgtattagcaatt | n.a. | smRNA-FISH |
| cct2\_23 | ccctagcaccaaaaactttc | n.a. | smRNA-FISH |
| cct2\_24 | gttcaagttcggcaagcttg | n.a. | smRNA-FISH |
| cct2\_25 | actttagccttcattttctc | n.a. | smRNA-FISH |
| cct2\_26 | gctctggccaattgtaaatg | n.a. | smRNA-FISH |
| cct2\_27 | aataccagcgtcagcgaaca | n.a. | smRNA-FISH |
| cct2\_28 | agtctgcatgttcaatggac | n.a. | smRNA-FISH |
| cct2\_29 | caaagacagccgctcaattc | n.a. | smRNA-FISH |
| cct2\_30 | ttgaagcaatttcaccacca | n.a. | smRNA-FISH |
| cct2\_31 | tgacaagttcaggatggtca | n.a. | smRNA-FISH |
| cct2\_32 | ttcaccgataatgatctcct | n.a. | smRNA-FISH |
| cct2\_33 | ggcttcaacgccagaaaact | n.a. | smRNA-FISH |
| cct2\_34 | aaacaatggtgcaggcttct | n.a. | smRNA-FISH |
| cct2\_35 | taactgatgagtggcaccac | n.a. | smRNA-FISH |
| cct2\_36 | tcatgaatggctcgttcaga | n.a. | smRNA-FISH |
| cct2\_37 | cagcgactgtttgggaaaga | n.a. | smRNA-FISH |
| cct2\_38 | tcctcctaaagtgactcgag | n.a. | smRNA-FISH |
| cct2\_39 | ccattagcatttcagcacaa | n.a. | smRNA-FISH |
| cct2\_40 | cagaaacagcaactgccttc | n.a. | smRNA-FISH |
| cct2\_41 | gtcaaagccagcattatcag | n.a. | smRNA-FISH |
| cct2\_42 | aactgagctactagctcact | n.a. | smRNA-FISH |
| cct2\_43 | gttgccatcataatgagctg | n.a. | smRNA-FISH |
| cct2\_44 | ccatatcaagacccattgta | n.a. | smRNA-FISH |
| cct2\_45 | atatcagcaatctctccttc | n.a. | smRNA-FISH |
| cct2\_46 | ttcaatgcctcgagtatacc | n.a. | smRNA-FISH |
| cct2\_47 | aagttgagcaccttcagatc | n.a. | smRNA-FISH |
| cct2\_48 | ggtgcagcctttaatatagt | n.a. | smRNA-FISH |
| mug93as\_1 | tttatcggtatggcaaggtt | n.a. | smRNA-FISH |
| mug93as\_2 | gcaacccttttctcataatc | n.a. | smRNA-FISH |
| mug93as\_3 | acagatacacagccaacgtg | n.a. | smRNA-FISH |
| mug93as\_4 | tgccatgaatcgcatattca | n.a. | smRNA-FISH |
| mug93as\_5 | aatactgccgtttctcatac | n.a. | smRNA-FISH |
| mug93as\_6 | agacagttttgtgttgcaca | n.a. | smRNA-FISH |
| mug93as\_7 | tacacaagtattgtccgtca | n.a. | smRNA-FISH |
| mug93as\_8 | atgaagacagtcatcgaccc | n.a. | smRNA-FISH |
| mug93as\_9 | tgtttgccattttgtttacc | n.a. | smRNA-FISH |
| mug93as\_10 | aacctcttattttcagtgct | n.a. | smRNA-FISH |
| mug93as\_11 | aggcattaataaccgtgtgt | n.a. | smRNA-FISH |
| mug93as\_12 | ccatcgatgcaatcatttgg | n.a. | smRNA-FISH |
| mug93as\_13 | gtatgttaagtcagtccaga | n.a. | smRNA-FISH |
| mug93as\_14 | tcccaatcaattgctacaca | n.a. | smRNA-FISH |
| mug93as\_15 | ggcatgtttccaaaaaaccc | n.a. | smRNA-FISH |
| mug93as\_16 | gcagctcaaattcttttgca | n.a. | smRNA-FISH |
| mug93as\_17 | ttcagttttgtcgtgcaaca | n.a. | smRNA-FISH |
| mug93as\_18 | caagcaatggtccgacaagg | n.a. | smRNA-FISH |
| mug93as\_19 | tcggattgtgttcaaggttt | n.a. | smRNA-FISH |
| mug93as\_20 | atggaatgtcggttgagcag | n.a. | smRNA-FISH |
| mug93as\_21 | tttcatttcctatttccaca | n.a. | smRNA-FISH |
| mug93as\_22 | cccctgtttgtacattgaaa | n.a. | smRNA-FISH |
| mug93as\_23 | gtacagatccaattacccat | n.a. | smRNA-FISH |
| mug93as\_24 | agaacactctctattggtcc | n.a. | smRNA-FISH |
| mug93as\_25 | agctcggaggacgaattaga | n.a. | smRNA-FISH |
| mug93as\_26 | gataccgaaaatcactcgcc | n.a. | smRNA-FISH |
| mug93as\_27 | tttcagcaatgcggtctatg | n.a. | smRNA-FISH |
| mug93as\_28 | tgtggacagcaatgcgaact | n.a. | smRNA-FISH |
| mug93as\_29 | aagtgcacgacaattgccaa | n.a. | smRNA-FISH |
| mug93as\_30 | aattcgtggcaagatctggt | n.a. | smRNA-FISH |
| mug93as\_31 | gcaattacctgtaggattgc | n.a. | smRNA-FISH |
| mug93as\_32 | agacaccttagagttgcttc | n.a. | smRNA-FISH |
| mug93as\_33 | atgtgcagaaacatggcagt | n.a. | smRNA-FISH |
| mug93as\_34 | tcacttgaactggacccaaa | n.a. | smRNA-FISH |
| mug93as\_35 | acttagccaatcgtgattgg | n.a. | smRNA-FISH |
| mug93as\_36 | tatttgcgacttggacatcc | n.a. | smRNA-FISH |
| mug93as\_37 | gtgatatggaggagaggact | n.a. | smRNA-FISH |
| mug93as\_38 | ctctagtcatcaatccgtat | n.a. | smRNA-FISH |
| mug93as\_39 | acttattttgcatgcagcta | n.a. | smRNA-FISH |
| mug93as\_40 | aacatcgtctgaacctttgc | n.a. | smRNA-FISH |
| mug93as\_41 | aggttcagagaatcctttgg | n.a. | smRNA-FISH |
| mug93as\_42 | ctcattaactcatttgcgca | n.a. | smRNA-FISH |
| mug93as\_43 | aacaccattacaccggttta | n.a. | smRNA-FISH |
| mug93as\_44 | tgtaacgtttctaaccctca | n.a. | smRNA-FISH |
| mug93as\_45 | cactagaggtatgctctact | n.a. | smRNA-FISH |
| mug93as\_46 | ccatctgatttgaaccatct | n.a. | smRNA-FISH |
| mug93as\_47 | tccaatattgttctaccaca | n.a. | smRNA-FISH |
| mug93as\_48 | cacatggttatgatatgcct | n.a. | smRNA-FISH |

n.a. : not applicable