**Supplementary Table 1. Porcine-specific primer and siRNA sequences used in this study.**

**Primers of circRNAs in cumulus cell**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Gene** | **Primer sequences (5'－3')** | **Product size** | | **GenBank**  **accession no.** |
| *circCORO1C* | F: ACAAGTCCTACCCTACAGTATG | 94 bp | XM\_005670752.3 | |
| R: TCTGAACCGCTGGCAATG |
| *circVCAN* | F: CTCCGTGTCATTGGCTGTG | 114 bp | NM\_001206429.1 | |
| R: GGTGGTAAGGTAGGCATAGTTG |
| *circAPTM4B* | F: GCTACCGATACATCAATGG | 160 bp | XM\_005655356.3 | |
| R: AAGTCACCTCCTAGTTCAG |
| *circANXA2* | F: AGCACTCCACACCCGCAAG | 88 bp | NM\_001005726.1 | |
| R: GCCGTCTCAATGTTCAGAGCATC |
| *circSCARB1* | F: GCTCAACAACTCCGATTC | 125 bp | NM\_213967.1 | |
| R: GCCTATCCTCCATCATCAC |
| *circ RICTOR* | F: TCCGTCTTCCTCTACCTGTTG | 144 bp | XM\_005672429.3 | |
| R: CCTTGCTTCTCTGTCTTCTTTAAG |

**Primers of circRNAs in oocyte**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Gene** | **Primer sequences (5'－3')** | **Product size** | | **GenBank**  **accession no.** |
| *circZP4* | F: CTATCCGTCACCGAACAG | 135 bp | NM\_214045.1 | |
| R: CCGAAGCAATTTCACCAC |
| *circPRKCH* | F: CCTTTCCTCACCCAGTTG | 158 bp | XM\_021062478.1 | |
| R: AGTCCTTGTCGCATTATCC |
| *circCHL1* | F: CTGTTCAGTGGAAGAAGAGTAATC | 169 bp | XM\_021069242.1 | |
| R: GAAGGAGGCAGCCCAGAAAGAATG |
| *circARMC4* | F: GCATCACCATGCACGAGAAC | 132 bp | XM\_021064726.1 | |
| R: CAGCACACACACTTGCCAAA |
| *circOVCH1* | F: TGGCATTTGAAGACTTTAGTATTG | 189 bp | XM\_021092126.1 | |
| R: CCAGGGAAGCAAGGTTCG |
| *circESRP1* | F: TGAACTACACAGCATATTATC | 187bp | XM\_021089092.1 | |
| R: CAGAAAGTCCAGGATGTC |

**Primers of linear mRNAs in cumulus cell**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Gene** | **Primer sequences (5'－3')** | **Product size** | | **GenBank accession no.** |
| *Linear CORO1C* | F: TTGTCGCCATAATCATAGAAGC | 101 bp | XM\_005670752.3 | |
| R: GCCACATACTGTAGGGTAGG |
| *Linear VCAN* | F: CCTTACCACCCAGTTACAACAC | 166 bp | NM\_001206429.1 | |
| R: GTAGGCACCGACACTCTTCC |
| *Linear LAPTM4B* | F: GTGCTGTTGATTCTGCTGAG | 181bp | XM\_005655356.3 | |
| R: CTGCGTGTTGCTTGTATGC |
| *Linear ANXA2* | F: GAGGTCACCATCGTCAAC | 132 bp | NM\_001005726.1 | |
| R: CGGAAGCGTCATACTGAG |
| *Linear SCARB1* | F: CCCTCATACATCTCATCAATAAG | 112 bp | NM\_213967.1 | |
| R: GTGAACACGGTGAAGAGC |
| *Linear RICTOR* | F: AAATATGGAAATAAGGCGAGGTC | 80 bp | XM\_005672429.3 | |
| R: ACTCTTCAGTCACAACAGGTAG |
| *Linear HAS2* | F: GAAGTCATGGGCAGGGACAATTC | 407bp | NM\_214053 | |
| R: TGGCAGGCCCTTTCTATGTTA |
| *Linear PTGS2* | F: ATGATCTACCCGCCTCACAC | 279bp | AF\_207824 | |
| R: GCAGCTCTGGGTCAAACTTC |
| *Linear PTGX3* | F: TCAGTGCCTGCATTTGGGTC | 225bp | GQ\_412351 | |
| R: CTACATGCCCTTGTTCAGAA |
| *Linear TNFAIP6* | F: TCATAACTCCATATGGCTTGAAC | 396bp | NM\_001159607.1 | |
| R: TCTTCGTACTCATTTGGGAAGCC |
| *Linear EF1α1* | F: ATTGTTGCTGCTGGTGTTG | 161 bp | NM\_001097418.2 | |
| R: TCATATCTCTTCTGGCTGTAGG |

**Primers of linear mRNAs in oocyte**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Gene** | **Primer sequences (5'－3')** | **Product size** | | **GenBank accession no.** |
| *Linear ZP4* | F: ACGCTATGGCTCCTACAATG | 95 bp | NM\_214045.1 | |
| R: CTGTTCGGTGACGGATAGAGAC |
| *Linear PRKCH* | F: AACACTGGCTTAGAGTCTTC | 195 bp | XM\_021062478.1 | |
| R: TCCTTCTTTGGTGCTTTCC |
| *Linear CHL1* | F: CCAAAAGTAAGAGGAGACATTAAG | 89 bp | XM\_021069242.1 | |
| R: CTTCTTCCACTGAACAGCATC |
| *Linear ARMC4* | F: GAAATGGTTCGTTCCTTTGTTG | 102 bp | XM\_021064726.1 | |
| R: ATTGGTAATAGCAGCACACAC |
| *Linear OVCH1* | F: ATGCTCAAGAGTACGAACC | 168 bp | XM\_021092126.1 | |
| R: TTCAATACTAAAGTCTTCAAATGC |
| *Linear ESRP1* | F: GCTGAGGAGATGAACTTTGTG | 129 bp | XM\_021089092.1 | |
| R: AGGAATAACTGCTGCTGGAG |
| *Linear EF1α1* | F: ATTGTTGCTGCTGGTGTTG | 161 bp | NM\_001097418.2 | |
| R: TCATATCTCTTCTGGCTGTAGG |

**Information of *circARMC4* siRNA sequence**

|  |  |  |
| --- | --- | --- |
| ***circARMC4* siRNA** | **Sense (5'－3')** | **Antisense (5'－3')** |
| *circARMC4 siRNA 1* | CGGCGCUGUGAAGGAUGCUTT | AGCAUCCUUCACAGCGCCGTT |
| *circARMC4 siRNA 2* | GCUGUGAAGGAUGCUGGAGTT | CUCCAGCAUCCUUCACAGCTT |
| *circARMC4 siRNA 3* | GUGAAGGAUGCUGGAGAAATT | UUUCUCCAGCAUCCUUCACTT |

**Information of *circRICTOR* recombinant lentivirus sequences**

|  |  |  |
| --- | --- | --- |
| ***CircRICTOR*** | **Sense (5'－3')** | **Antisense (5'－3')** |
| *circRICTOR* | ACTACTCAGTGTAGCGAATTT | TTCTCCGAACGTGTCACGT |