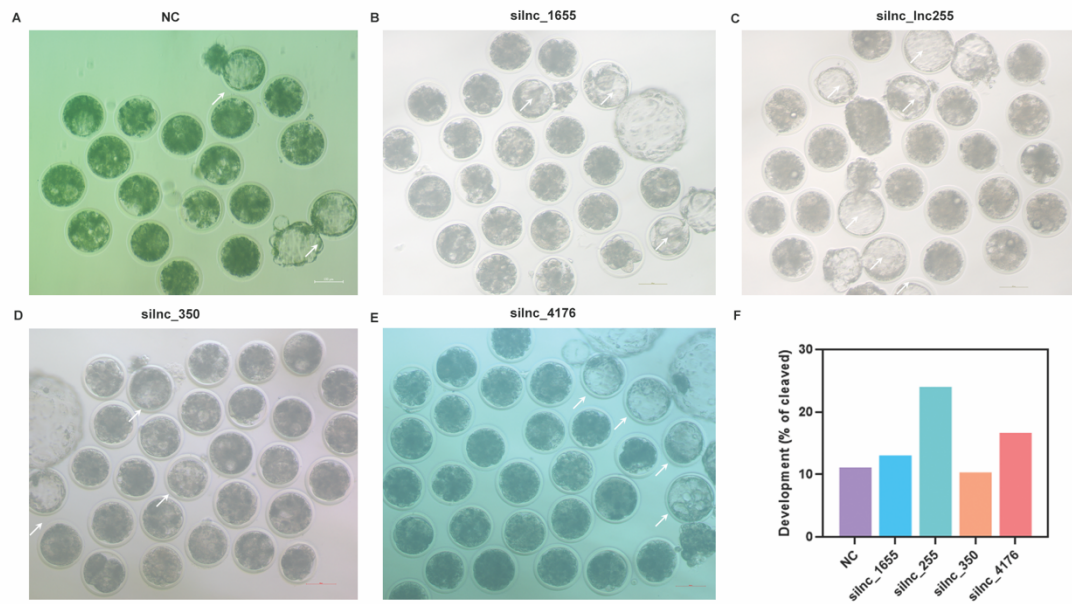


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Supplemental information

**Long non-coding RNA Inc_3712 impedes
nuclear reprogramming via repressing Kdm5b**

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Supplementary Figure S1. *lnc_1655*, *lnc_255*, *lnc_350*, and *lnc_4176* showed no effect on nuclear reprogramming.

(A-C) Representative images of NC and *lnc_1655*, *lnc_255*, *lnc_350*, and *lnc_4176* knocked down SCNT embryos. (F) Percentage of blastocysts in NC and *lnc_1655*, *lnc_255*, *lnc_350*, and *lnc_4176* knocked down SCNT embryos.

Supplementary Table S1. FPKM of all lncRNA in 4- and 8-cell IVF and SCNT embryos.

Supplementary Table S2. FPKM of the differentially expressed lncRNAs in 4- and 8-cell IVF and SCNT embryos.

Supplementary Table S3. Average FPKM of the differentially expressed lncRNAs in 4- and 8-cell IVF and SCNT embryos.

Supplementary Table S4. Details of connection between lncRNAs and their predicted targets.

Supplementary Table S5. Full sequence of the five lncRNAs.

lnc_1655:aagacagctaacggtgccactgcagacaaagaaatcagggcagattaagacttgatgcaaagacttgta
cctgagacttcagaggtcacagagcctcagcaaatgggatcggaccagaaggaaaaacacacaataacctacaag
tgggataagaacttaattctttcaggatTTTTGAGACGTGGTGTGGGCAGATCTTCTCAGCTCAATGTCAGTGAGACTT
GTCTTAAGTCATTCATATTTAATCCACTGTGCTTCAAGAAAAGGATATCATGTGCATCTTGTCTAGTGTGAGGATTATCAGGAT
TGAGGATAATGTTAAGGATAGTCTATCAAGAAAGAGTCCCTGGATTGCAAGATCAAACCAGTCAACCGAAAAGGAAATCA
GCCCTGAATATTCATTGGCAAGACTGATGCTAAACCTGAGGCTCCAATACTTTGGCCACTTGATGCAAAGAGCTGACTCATTG
GAAAGTATCTTGATGCTGGGAAAGGTGGAAGGCAGGAGGAGAAGGGGGTGACAGAGGATGAGGTGGTTTGAATGGCAT
CGTCGACAAATGGACGTGAATTTGAACAACTCCCGAGACCCTAACGGACAGGGGAGCCTGGTGTGCTGAGTCCATG
GGGTCACAAAGAGTTGGATGCGACTTAGCAACTAACAGCAACCAGGGACCCGGCCATGGGACCTGAGAAGTGGAAAG
GGGCATCAAATCATGGACTGTGAGGGCTGGCAGCCACTGAAGATTACCGGGTCCACTCATCTTCTCAGCTCAAGAGG
GATGTGACTTCTCAAGTCCGTCAGTCACTCATTGAACCAGAAGTGGATCAGCCTCTGCATCTTCTGACTGTTCTGGACAT
TAACATGGCAGGTCAATAGTGAAGGGGAGGAGCTTCCACCCCAACCAGAGCAGCCAGCCACCAGCAAGA
AACTCCCAAAACCTCATGGATACAAATATTGCCTC

lnc_255:gaatttagtctaattggggcctcagccccattgatgtgataaggggtggggagcacctggctccattctctttg
gtggcttaagctctggcccctgcccctcctccagtgagcatggaagaagagaaggcaggaaaatctgaacgctgggaa
gcatggaggttgggtggcaaggtgaaaaagacatcctaccctcatccccTTGGCAGAGCTTCTCAAAGTCCAGTGTGTCAG
GAGCTTGTAAAAGGAGCTGATTGCTGGGGCCCTACATGGACTCGGTGGGAATCACTGAGGGCAACCCGCTTTGTGTGTG
GTTTTGTTTTGTTTTTCCAAAGGATGCTTGTCTTAGTCCCTGACCAGGAATCAGACCAAGCAGGGATTGAAGTCTGCCT
CGGCAGTGGAAAGCGCAGAGTCTAACCAGACCATCGGGATTCCCAAGAATCGCATTTTAAGTCTGTTAAAGAGGCAAG
GAAGGAAATAGAGGACACTCTCAGTTGCCCCCTCTACTCTGCCAAAGTGTGAGGCAAGAACCTGGGATTTGGGGCTA
AGATTCTAGAAACTCGTTGGAGGCTGCAAGGAATGGGAAACAATTAGGAGGCAGAGGCAGCTGGGGCTGGGACTTCTG
GTGAGAGGTGAGAGGCCCCATGAAGGGGCCCGCCTCAGGATAACAAGCTTCTCCTCCAGCATCTGTCTTCTCCACACT
CTGCCCATCCAGCTGCCTCCAGAGTCTTCTTCCCTCCAGCACAGGATGATTCACTCTGTCTGAATCTCCCGGTGACA
GAGAAGTCAAACTCGAGACACCCCTGCATTATGAAAGCTTACAAAGAACAACAATCTGTGGGTAGAGCTTTGGCC
CCTACCACATCTCCAGTGTGTGAGAAATCATCTCTGAGTGGGGAGGCCTTACAAGCCAGGGCTTCTCCCTAAAATC
CCTGTCCTGGCATTATGATGCCAGGACTTCCAATGGACTTCTGCCTGGGAGGCTGGATGTTCTCCACAGGCACCA
GTTTCTTAATTGCTATGTGTTAATCTCTCAACTGCAGCAAAGTGGTTATTATGACGTCTCTTGCATTAGATCTTCAATA
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GCCTGCTCAGGGCAGTGAAGTGGCAGCTCATGACCTAATGCATAGGGACTCTCCCTCCACACCAATGCCATCCT
ACTAGCTGCAGCTCCCTGAGCTCCACCATCAGGTATAGGCTTAGAGTCACTCCTCCAGCAGCCATGTGGTCCGTGCC
CAGTGTCTTCTCTGCTGGATTGCTGTCCAGCCTCAGAGTCTCATCTTCTGTGCACTCCTCCCTCCTGCTAGAGGGGG
TATGAAGAATAATGAAAGATGTGCGTGAGATGCAAGATGGGGCTGGTGTAGGCTGCTTCTAGCATTGATAGTTATCACGAT
TTCAAGTCTTTGGCCAACCACTCCATGCATTAGCACTCTCACTGGTATTCTAACTGTGATTTACGTGCAGGTTAG
AGGCTGCATAGCTTATGTGTCGAGTAGCCTGTGCGTCCCTGGAGGACGTGAAATATTAGTCATCTTGACTTTTCAGAGCCCA
AGAAACAGTGCCTGTTCACTCACTCACTCACTTATTCAACTAATAAATTATTGCTATCCTCTAATATTGGCCTCTGTCCAGTG
CTGGGGATACACTGGTGAATGGAATACACAACTCCACTCTTGGAGCTAATAACTTAGTGGGAAAGAGCTGACAAATCAAG
AAGTCAAGTAAAGGACTTCCCTGGTGGTCCAGTGGCTAAGACTCTATGCTCCAGAGCAGGGGTCTGGCTCAATCCCTGGT
TGGGGAAGTGGATCTGCATGCTGCAACTAAGTTCACATGCCACAATAAGATCCAGTGTGCTCAACTAAGACCCGGA

gcagccaaatgaatacataaataaataatTTTTAAAAAGAAA

lnc_350:gtctggtgtgttttctcaacacctcgggtggaacaagaaggaccgagcctgccagaatcaagggagtgtttcaacattatcatgacagctgtaaaaactgctaataatcacacagaaccaaaggggaagagagaaaagacttctctgggacaagtgtggggagaggagacagaccctgcaattcttctgacatcctaggaagttacaggaaccacacctgtttccacctcggggcccaagcagcagagacacatgtcctaccaagggtcgtgggaccagggtcaggatctggggaggtggtgtcatcttgagactggaagtgtgtccccagggtctggggttgtgtgggtctcagccatccacgtgggtcaggatcctgtgcacacagagaccacacgtctgtcctgcctgcagtgtgtcctgtcccctcggagattcccagtgtctgaaagtgagggtgttgcctggtaacctgcggctcttttctcacttgtggcattcactgagcggctggctcctctctgtgagcgaaacctctggaggcgtcacattaacacagcgtatcatgtgcatcgcctgcactctcattctgtgtagatcttttgatgatgggactgtgaccagtgtgaggaatcctcacagtgtcctccagagtgggtgttaccattacatccaagcatcgggtggaggaggattccttgtgtgcacacctctctgcacttatgtttgatgataattggcaatggc

lnc_3712:cctgtgggcaagaagcaggatgtgaaggctacatatgaaccacttttagggaaaaggaaggatgactcaatgtgaagaaccgagagcccgaaggcagagcctaagctacaggaatccctccccggaagcaggcgtgcttgagcactcagctactcttgcaccctgtggactgtaacctgccaggatcctgtccacaggaattttcagacaagaatactggagcgggtgccatttccactccacagaagcaggaactgggtcccaaaaggaatggaagcatgtactgattgggattgagaactgctatggaactgttacgcactcctgtttctccctttgaaacagaagttgtttgttttaaacagaagtatttattgcattgtctatccccataacaccactgtccgctgtgtttgtctgcagacaactgattatttttcatagatattcagatgaagaggaacctatgctatagctacactcattgatcatgagatcctgagctttgagctaatgccatcatgagatgagattggggaatcgtgggaagaggattcacattcaatggacgtgaactgtgttgcctaaagggtagggtgtggaagagggcctaggagagccttggaggagaagctgctttcctaaagctgtgtggaagaggtgatccttgagctgtgaaaggaacagactatgtcagcaagggatggactgttccatgacctctcagttcagttcagttcagttcagtt

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Supplementary Table S6. FPKM of the differentially expressed genes in the 8-cell

IVF and SCNT embryos.

Supplementary Table S7. FPKM of the differentially expressed genes in lnc_3712

knockdown embryos.

Supplementary Table S8. List of genes that enriched in translational initiation and nuclear-transcribed mRNA catabolic process.

Supplementary Table S9. Details of primer sequences used for cDNA cloning and in vitro transcription.

| Gene | Primer sequence (5'-3') | Product size (bp) | Tm (°C) | Purpose |
|----------|---|-------------------|---------|-------------------------------|
| Kdm5b-P1 | F-CTTGGTACCGAGCTCGGATCCATGGAGGCCCCCG R-GTTCATGATGGTGACAAGCTGGTGGAGAAGG | 1682 | 60 | |
| Kdm5b-P2 | F-AGCTTGTCACCATCATGAACCCCAACACCCTG R-GTCACATCGAGGACACAGCACCTCAAGGAG | 1643 | 60 | cDNA cloning |
| Kdm5b-P3 | F-TGCTGTGTCCTCGATGTGACGTTGGCCTTTTGG R-TTCGGCCAGTAACGTTATTATCTCCGGCCCGGCG | 1387 | 60 | |
| Kdm5b-T7 | F-TAATACGACTCACTATAGGATGAAGACGAAGTCC ACATGTGCTC R-TTACTTTCGGCTTGGTGCGTC | 191 | 56 | <i>in vitro</i> transcription |

Abbreviations: F, forward; R, reverse; bp, base pair; Tm, annealing temperature.

Supplementary Table S10. Details of siRNAs against lnc_1655, lnc_255, lnc_350, lnc_3712, and lnc_4176.

| Target gene | Sense (5' to 3') | Anti-sense (5' to 3') |
|-------------|------------------------|-----------------------|
| lnc_3712-1 | CCCAAACAAGGAAAUGGAATT | UCCAUUUCCUUGUUUGGTT |
| lnc_3712-2 | GCUGCAGACAACUUGAUUATT | UAAUCAAGUUGUCUGCAGCTT |
| lnc_1655-1 | GGAUAGUCUAUCAAGAAATT | UUUCUUUGAUAGACUAUCCTT |
| lnc_1655-2 | GAUGCGACUUAGCAACUAATT | UUAGUUGCUAAGUCGCAUCTT |
| lnc_255-1 | GCACUUAGAUCUCAAUAATT | UUAUUGAAGAUCUAAGUGCTT |
| lnc_255-1 | GGAAAGAGCUGACAAUCAATT | UUGAUUGUCAGCUCUUUCCTT |
| lnc_350-1 | GGGAGUGUGUUCAACAUAUATT | UAAUGUUGAACACACUCCCTT |
| lnc_350-2 | ACUUAUUGUUUGUAUGAUATT | UAUCAUACAAACAAUAAGUTT |
| lnc_4176-1 | CACUUUCAGUGUUCAUAUATT | UAUAUGAACACUGAAAGUGTT |
| lnc_4176-2 | GACACGACUUAGCAACUAATT | UUAGUUGCUAAGUCGUGUCTT |
| Kdm5b-1 | GCCACCAUUUGCAUGUGAUTT | AUCACAUGCAAUGGUGGCTT |
| Kdm5b-2 | GCGACUAGUGAGCACUAUUTT | AAUAGUGCUCACUAGUCGCTT |

Supplementary Table S11. Details of antibodies used in immunofluorescence staining and western blot.

| Name | Code | Host | Dilution |
|--|-----------------------|--------|-------------------------|
| anti-Kdm5b | ab181089, Abcam | Rabbit | IF (1:200), WB (1:5000) |
| anti-H3K4me1 | ab176877, Abcam | Rabbit | IF (1:200) |
| anti-H3K4me3 | ab8580, Abcam | Rabbit | IF (1:200), WB (1:1000) |
| donkey anti-rabbit IgG (H+L), alexa fluor 488 | R37118, Thermo Fisher | Donkey | IF (1:500) |
| anti-beta Actin antibody | bs-0061R, Bioss | Rabbit | WB (1:5000) |
| goat anti-rabbit IgG (H+L) secondary antibody, HRP | 31460, Thermo Fisher | Goat | WB (1:10000) |

Abbreviations: IF, immunofluorescence staining; WB, western blot.