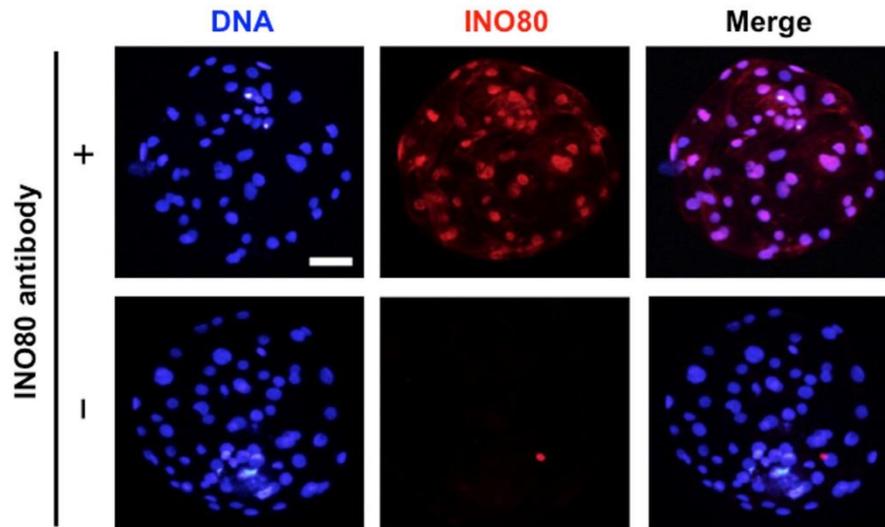
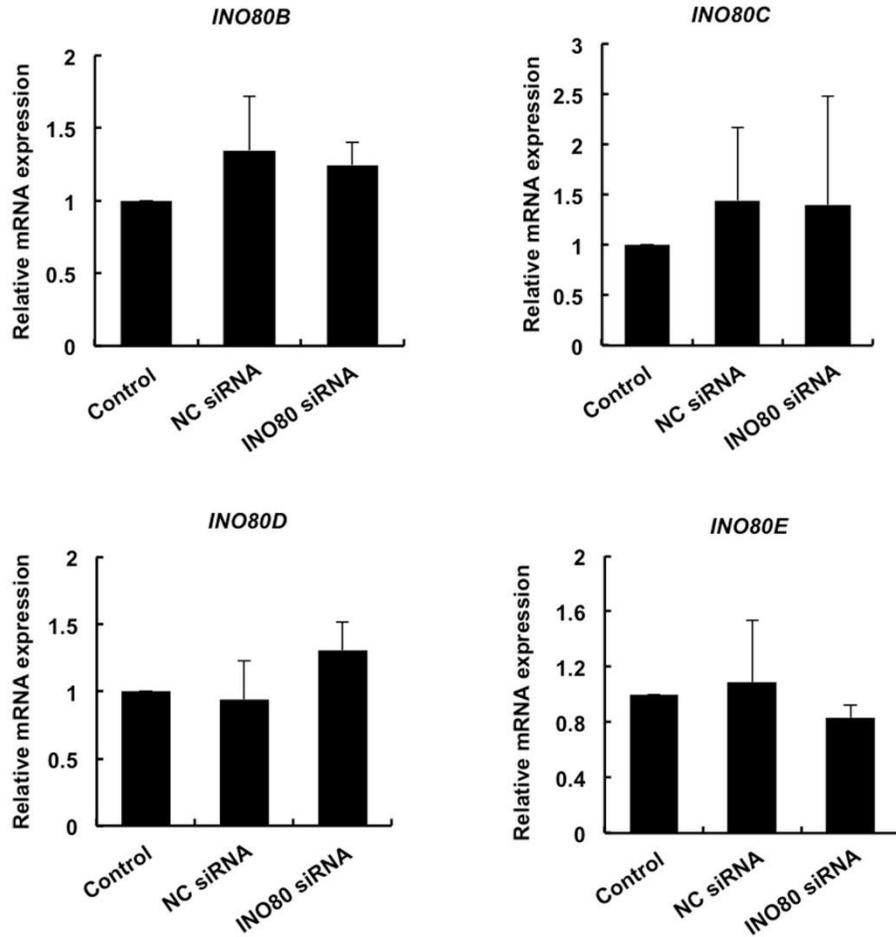


Supplementary Materials



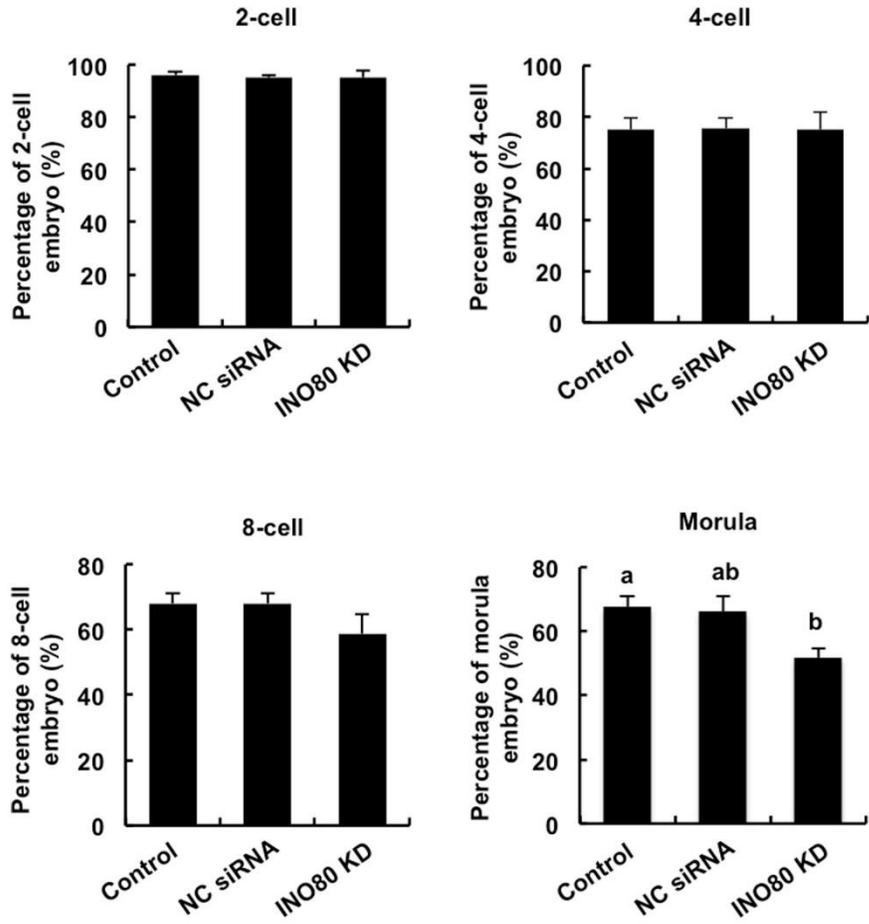
Supplementary Figure S1 Verification of INO80 antibody specificity

INO80 antibody was tested on porcine blastocysts. Primary antibody was replaced with blocking buffer to serve as a negative control. Representative images obtained by confocal microscopy are shown. Scale bar: 50 μm .



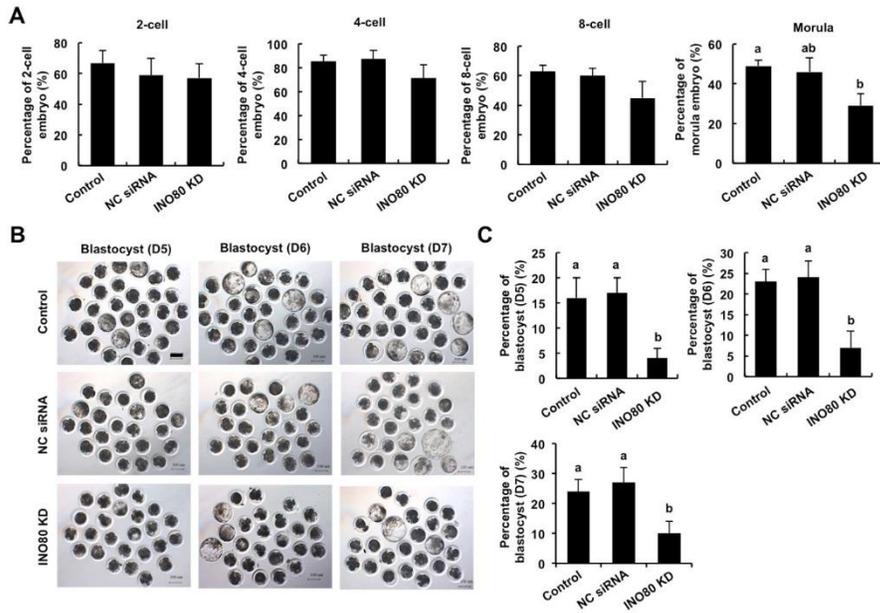
Supplementary Figure S2 Effect of siRNA injection on expression of genes encoding other subunits of INO80 complexes

Expression levels of *INO80B* (A), *INO80C* (B), *INO80D* (C), and *INO80E* (D) mRNA were determined by qPCR. Data were normalized against endogenous reference gene (*EF1a1*) and control group data were set to 1. Data are expressed as mean±SEM.



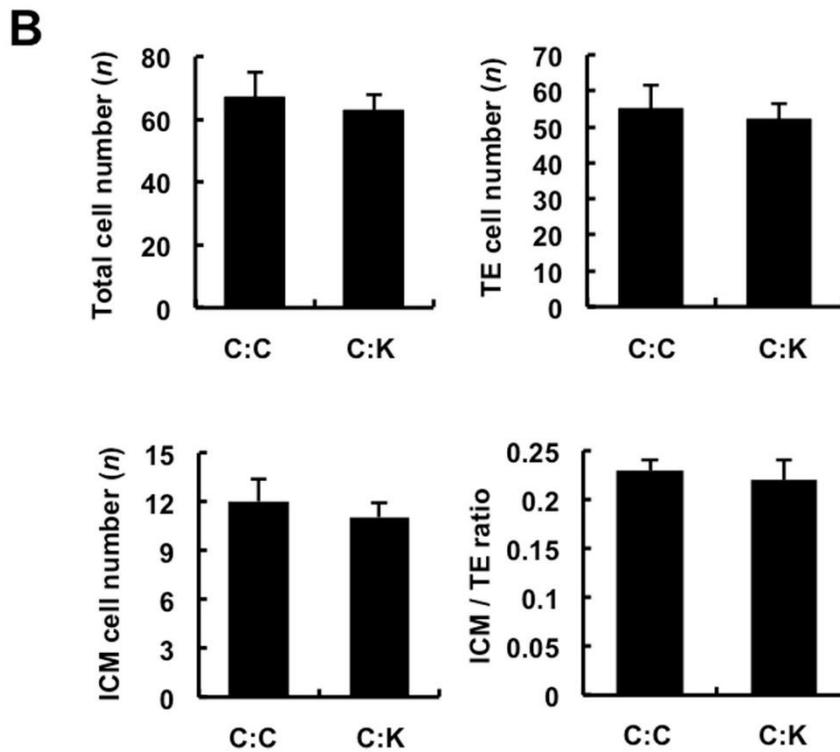
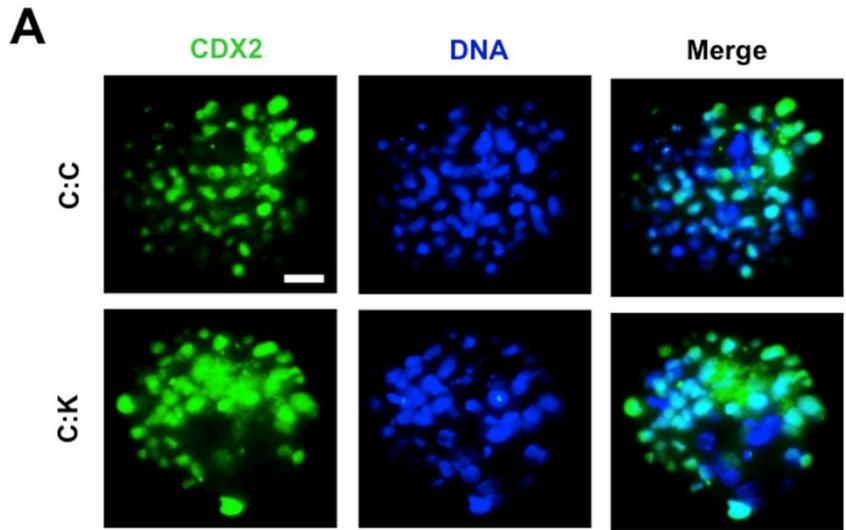
Supplementary Figure S3 Effect of *INO80* knockdown on development of cleavage-stage PA embryos

Developmental rates of 2-cell (A), 4-cell (B), 8-cell (C), and morula stages (D) in control and *INO80* KD groups. Data are mean±SEM and different letters on bars indicate significant differences ($P < 0.05$).



Supplementary Figure S4 Effect of *INO80* knockdown on early development of IVF embryos

A: Developmental rates of 2-cell, 4-cell, 8-cell, and morula stages in control and *INO80* KD groups. B: Representative images of blastocysts on days 5, 6, and 7. Scale bar: 100 μ m. C: Developmental rates of blastocysts on days 5, 6, and 7. Data are mean \pm SEM and different letters on bars indicate significant differences ($P<0.05$).



Supplementary Figure S5 Aggregation of control and *INO80* KD embryos restores lineage allocation

A: Representative fluorescence images of blastocysts. Blastocysts from C:C and C:K chimeras were stained for CDX2 (green) and DNA (red). Experiments were independently repeated three times with at least 15 blastocysts per group. Scale

bar: 100 μm . B: Lineage allocation analysis of blastocysts from C:C and C:K chimeras. Total, ICM, and TE cell numbers and ICM to TE cell ratio were separately recorded and analyzed. ICM: inner cell mass; TE: trophectoderm. Data are mean \pm SEM.

Supplementary Tables

Supplementary Table S1. Porcine-specific primer sequences used in this study

Gene symbol	Primer sequences (5'-3')	Product size (bp)	GenBank accession number
<i>INO80</i>	F: GGTGGGCCAGCCTCTAATTT R: CACAGGAGTCTGGGTTTGGG	130	XM_003121588.4
<i>INO80B</i>	F: GGCCCTCGCTCACCTTCT R: CGGACAGGTCCCGAAGTG	136	XM_003124991.5
<i>INO80C</i>	F: GATACCCCGGAACAGCAAGA R: CTGATCCCCTGCGCAAAG	120	XM_003356408.1
<i>INO80D</i>	F: CCCGTCCAGGAGTTGTCAGA R: CCCAGGTCCGTGTTTACC	102	XM_021076040.1
<i>INO80E</i>	F: GGCGAAGTGGACTACAAGAAGAA R: CGGGACACCTTCAACAATTTTC GCAATGCCTGTACCACC	125	XM_021088006.1
<i>OCT4</i>	F: CGAGAACCGAGTGAGAGG R: GGAAAGGAGACCCAGCAG	206	NM_001113060.1
<i>SOX2</i>	F: CGCAGACCTACATGAACG R: TCGGACTTGACCACTGAG	103	NM_001123197.1
<i>CDX2</i>	F: AGTCGCTACATCACCATTTCGGAG R: GCTGCTGTTGCTGCAACTTCTTC	139	NM_001278769.1
<i>NANOG</i>	F: CTCTCCTCTTCCTTCCTC R: CTTCTGCTTCTTGACTGG	139	NM_001129971.1
<i>TEAD4</i>	F: CATTACTCCTACCGCATCC R: CCTGTGTGTCTCTGTTGG	151	NM_001142666.1
<i>GATA3</i>	F: CACGACACGCTGGAGGAC R: GGCTGGAGTGGCTGAAGG	106	NM_001044567.1
<i>YAP</i>	F: CAGGATGGCGGGACTCAAAA R: CTGCTCATGCTTAGTCCGCT	149	XM_021062706.1
<i>CDH1</i>	F: GAACCCACAGCCTCATGTCA R: TCGGTCGTTGAACTCGATGG	121	NM_001163060.1
<i>ACTA2</i>	F: AGAAGATGACCCAGATTATGTTTG R: CGTCCAGAGGCGTAGAGG	91	NM_001164650.1
<i>ADAM19</i>	F: CAAAGCCTGCCTCCAAGAGTA R: GCTTTTCTCTCACGGGGCT	132	XM_013984891.2
<i>ADAM21</i>	F: AGAATGCTTGACCCACCCAA R: ACCAGGCCCATTTGACTACG	145	XM_021099414.1
<i>ATP1A1</i>	F: CTATGGGGAAGGGGGTTGGAC R: GCTCGAGCAGGTGTTAAGCC	199	NM_214249.1
<i>ATP1A3</i>	F: GCCAAGATGGGGGACAAGAA R: GCAGACCTCTTCCACTGACAT	135	NM_001171753.1
<i>AQP3</i>	F: AGCTTATAGTCTCAGGCCCCA R: GCCGATGAACTGGTCTGAAGA	101	NM_001110172.1
<i>AQP9</i>	F: GGTGCTATTGGAGGCCTTGT	88	NM_001112684.1

<i>AQP11</i>	R: CCTCCGATTGTTTCGACCTCA F: CCACGCTTTTCGTCTTGGAGT	116	NM_001112682.1
<i>SGK1</i>	R: AGATTAGTGTCAGCGGCCAG F: CAGTGAAAACCGAGGCTGCT	100	NM_001244459.1
<i>PRKCA</i>	R: AGGCCATCCTTCTCTGTTTC F: GGGCGCTGAGACAGAAGAAT	139	XM_021066740.1
<i>PRKCD</i>	R: CAAACTTGGCACTGGAAGCC F: AGAAGCTCTTGGCAGAAGCC	140	XM_021068961.1
<i>PRKCI</i>	R: AGTGCCTGAGACATCATCTCC F: GAGTAAGGAGATGCCGACCC	109	XM_021069795.1
<i>PRKCZ</i>	R: GCGGTAGTAGGCTTTCACCC F: CACTGACAACCCGGACATGA	116	NM_001204374.1
<i>PHOA</i>	R: AGAACCTTTCAGGACGTGG F: GTCGCCTTAGTGCCTTTCATCT	115	XM_013154059.2
<i>FN1</i>	R: CAGTTTCTTCTGATGGCAGC F: TGAGCACATGGGTGGAAGAC	132	XM_003133642.5
<i>KRT8</i>	R: GGGCTTTCCTCTCTGCCATT F: GTCGCACGAAGACGGAGATT	149	NM_001159615.1
<i>KRT18</i>	R: CTGAGCATCCTTGACAGCCA F: TTGCGAACCTAACACCCTCC	102	XM_005652579.3
<i>KRT23</i>	R: GGAGAAAGAGGACTGGGTGC F: CGCTGAGGGATTGACCAAGA	142	XM_003131459.6
<i>ANXA7</i>	R: CTGACACCGCAAACTGAGC F: GGATTATAGCAGTGAACCTTGCCAC	125	XM_005671100.2
<i>EF1α1</i>	R: CCTGCTCGTCTGTCCCAAAA F: ATTGTTGCTGCTGGTGTTG	161	NM_001097418-2
	R: TCATATCTCTTCTGGCTGTAGG		

F: forward, R: reverse.

Supplementary Table S2. Primary antibodies used in this study

Primary antibody	Species	Vendor	Cat.no.and dilution
INO80	Rabbit	Abcam	Ab105451 (IF 1:200) (WB 1:1000)
CDX2	Mouse	Biogenex	AM392 (ready to use)
OCT4	Rabbit	Abcam	Ab18976 (IF 1:200)
YAP	Rabbit	Cellsignal	14074 (IF 1:200)
OCCLUDIN	Mouse	Thermo Fisher	33-1500 (IF 1:100)
E-CADHERIN	Mouse	BD Biosciences	610182 (IF 1:200)
α -TUBULIN	Mouse	Tianjin Sungene Biotech	KM9007 (WB 1:4000)

Supplementary Table S3. Secondary antibodies used in this study

Secondary antibody	Species	Vendor	Cat.no.and dilution
Alexa Fluor 488 anti-mouse IgG	Goat	Invitrogen	A11029 (IF 1:200)
Alexa Fluor 594 anti-mouse IgG	Goat	Invitrogen	A11005 (IF 1:200)
Alexa Fluor 488 anti-rabbit IgG	Goat	Invitrogen	A11008 (IF 1:200)
Alexa Fluor 594 anti-rabbit IgG	Goat	Invitrogen	A11012 (IF 1:200)
HRP-labeled Goat Anti-Mouse IgG(H+L)	Goat	Beyotime	A0216 (WB 1:4000)
HRP-labeled Goat Anti-Rabbit IgG(H+L)	Goat	Beyotime	A0208 (WB 1:4000)

Supplementary Table S4. Information on INO80 siRNA sequences

No. siRNA	Sequence(5'-3')	
	Sense	Antisense
1	GCUCGUAACCGUUUCUATT	UAAGAAACAGGUUACGAGCTT
2	GCAUGAAUUGGUUGGCAAATT	UUUGCCAACCAAUUCAUGCTT
3	CCAGGAGUUUACUAGAUUUTT	AAAUCUAGUAAACUCCUGGTT

Supplementary Table S5. Differentially expressed genes in embryos

Supplementary Table S6. GO analysis of differentially expressed genes in embryos

Supplementary Table S5, S6 are listed as separate files due to their large size.