Supplementary Table 1 Animal numbers by experimental purpose

Purpose	Strain	Sex	Age at use	Animals, n
Oocyte donors	BDF1	Female	8–10 wk	48
Sperm donors for IVF	BDF1	Male	10–14 wk	6
Cumulus cell donors	BDF1	Female	8–10 wk	9
Embryo transfer recipients	ICR	Female	10–14 wk	27
Vasectomized males	ICR	Male	12–20 wk	14
Total				104

Supplementary Table 2 Primer sequences, amplicon sizes and amplification efficiencies used for reverse-transcription quantitative polymerase chain reaction.

Name	Sequence (5′→3′)	Amplicon size, bp	Efficiency, %	R^2	Single melt peak
Cdx2-RT-F	TATGGACCTCAGGGGAAGACAT	118	98.4	0.997	Yes
Cdx2-RT-R	ATCACTTCGTTTGTCGTTGCTG	118	98.4	0.997	Yes
Cpe-RT-F	AGCAGCTTTGTAGATGGAACGA	142	101.2	0.996	Yes
Cpe-RT-R	GGGAACTTCTCACAGCTAAGCT	142	101.2	0.996	Yes
Dcn-RT-F	TCAACAGCATCACCGTTATGGA	131	97.6	0.997	Yes
Dcn-RT-R	ACCCTGAGGAGTTTGTTGTTGT	131	97.6	0.997	Yes
Dlk1-RT-F	CCCGAGAAGATTGACATGACCA	109	103.4	0.996	Yes
Dlk1-RT-R	GCGTAGAGAGCTCTAAGGAACC	109	103.4	0.996	Yes
Elf5-RT-F	TCTGTGGGGAGTACCTGTACTT	126	99.1	0.998	Yes
Elf5-RT-R	CCAGTCTTGGTCTCTTCAGCAT	126	99.1	0.998	Yes
Eomes-RT-F	TGTAGGGGTCCTGAGAGGTTAG	154	95.8	0.996	Yes
Eomes-RT-R	CCTTCCTTCCTTCCTTCCTTCC	154	95.8	0.996	Yes
Esrrb-RT-F	AATGCGAGTACATGCTTAACGC	112	102.7	0.996	Yes
Esrrb-RT-R	CTCTTGAAGAACGCCTTGCAAG	112	102.7	0.996	Yes
Esx1-RT-F	TTTCAGAACAGAAGGGCCAAGT	137	96.9	0.994	Yes
Esx1-RT-R	GGGATGGGGCCATAATGATCAT	137	96.9	0.994	Yes

Fgfr2-RT-F	ATCACGGCTTCCCCAGATTATC	148	100.5	0.999	Yes
Fgfr2-RT-R	GCAAAAGATGACTGTCACCACC	148	100.5	0.999	Yes
Gata3-RT-F	CAAGGAATCAGTGTGCAGTGTG	121	98.8	0.997	Yes
Gata3-RT-R	CACGGAGGAATAAAGGGGTCAA	121	98.8	0.997	Yes
Gcm1-RT-F	AGACAGAAGCAGCAGAGGAAAA	115	104.1	0.995	Yes
Gcm1-RT-R	CTCGCCTTTGGACTGGAAAAAG	115	104.1	0.995	Yes
Igf2-RT-F	ATCGTGGAAGAGTGCTGCTTC	133	97.2	0.996	Yes
Igf2-RT-R	GAAGTACGGCCTGAGAGGTAGA	133	97.2	0.996	Yes
Igf2r-RT-F	ATGTTTGTGGCCCTGTATCCAT	159	101.8	0.994	Yes
Igf2r-RT-R	AGCTTAGTACTACTCAGCCCCA	159	101.8	0.994	Yes
Igfbp2-RT-F	CATCTCTACTCCCTGCACATCC	127	99.6	0.998	Yes
Igfbp2-RT-R	TCAGAGACATCTTGCACTGCTT	127	99.6	0.998	Yes
Meg3-RT-F	AAAGAGGATCATCAGTGGCCAG	144	96.4	0.995	Yes
Meg3-RT-R	CACAGATGTACAGGAAAGGGCT	144	96.4	0.995	Yes
Nanog-RT-F	AACCAAAGGATGAAGTGCAAGC	106	103.0	0.995	Yes
Nanog-RT-R	TCCAGATGCGTTCACCAGATAG	106	103.0	0.995	Yes
Oct4-RT-F	GGAGTTCCAGCACCCTTTATCA	119	98.0	0.997	Yes
Oct4-RT-R	AAATGCCCTCATCGTCCTTCTT	119	98.0	0.997	Yes
Prl3d1-RT-F	TTATCTTGGCCGCAGATGTGTA	152	95.5	0.993	Yes
Prl3d1-RT-R	AAGCAGTATGACACAGGGGAAG	152	95.5	0.993	Yes
Sox2-RT-F	ATGAACGCCTTCATGGTATGGT	124	100.9	0.998	Yes
Sox2-RT-R	TCTCGGTCTCGGACAAAAGTTT	124	100.9	0.998	Yes
Tpbpa-RT-F	GACGGAAGGCTCCAACATAGAA	139	102.2	0.997	Yes
Tpbpa-RT-R	GCTGTGGTTTGTTTTCCTCCTC	139	102.2	0.997	Yes
Vegfr2-RT-F	TCGACGTGATCAAGTGTCCAAT	146	97.8	0.996	Yes
Vegfr2-RT-R	TTCTAGGTTCACCACGTTCAGG	146	97.8	0.996	Yes

Supplementary Table 3 Antibodies, key reagents and instruments

Item	Supplier	Catalogue No.
Anti-CDX2	abcam	ab303009
Anti-ELF5	Santa cruz	sc-376737
Anti-TFAP2C	Santa cruz	sc-53162
Anti-EOMES	Santa cruz	sc-293481
TRIzol	Thermo Fisher	15596018
DNase I, RNase-free	Takara	2270A
PrimeScript RT Master Mix	Takara	RR036A
TB Green Premix Ex Taq II	Takara	RR820A
Real-time PCR system	Bio-Rad	CFX96 Touch
pLVX-IRES-Puro	Takara Bio	632183
TruePrep DNA Library Prep Kit V2	Vazyme	TD501

Supplementary Table 4 Provenance, derivation and quality control of every cell line

Line	Origin	Source blastocyst	Passage used	Euploid metaphases, %
ntTSC-1	SCNT	[NT-B03]	P10	87.0
ntTSC-2	SCNT	[NT-B11]	P10	86.1
ntTSC-3	SCNT	[NT-B19]	P10	86.1
TSC-1	IVF	[IVF-B05]	P10	89.8
TSC-2	IVF	[IVF-B12]	P10	91.9
TSC-3	IVF	[IVF-B21]	P10	88.9