

Table S1. Primer sets for RT-PCR and CHIP-QPCR.

Primer sets for QRT-PCR

Markers		Sequences(5'→3')
GAPDH	Forward	GGAGCGAGATCCCTCCAAAAT
	Reverse	GGCTGTTGTCATACTTCTCATGG
OCT4	Forward	CCTCACTTCACTGCACTGTA
	Reverse	CAGGTTTTCTTTCCCTAGCT
NANOG	Forward	TGAACCTCAGCTACAAACAG
	Reverse	TGGTGGTAGGAAGAGTAAAG
PAX6	Forward	TGGGCAGGTATTACGAGACTG
	Reverse	ACTCCCGCTTATACTGGGCTA
SOX2	Forward	GCCGAGTGAAACTTTTGTCG
	Reverse	GGCAGCGTGTACTTATCCTTCT
SOX1	Forward	CAGTACAGCCCCATCTCCAAC
	Reverse	GCGGGCAAGTACATGCTGA
NESTIN	Forward	CTGCTACCCTTGAGACACCTG
	Reverse	GGGCTCTGATCTCTGCATCTAC
FOXG1	Forward	GAGCGACGACGTGTTTCATC
	Reverse	GCCGTTGTAAC TCAAAGTGCTG
OTX2	Forward	CAAAGTGAGACCTGCCAAAAAGA
	Reverse	TGGACAAGGGATCTGACAGTG
EMX2	Forward	CGGCACTCAGCTACGCTAAC
	Reverse	CAAGTCCGGGTTGGAGTAGAC
Lmx1b	Forward	CGGACTGCGCCAAGATGTT
	Reverse	TTGACTCGCATCAGGAAGCG
En1	Forward	GAGCGCAGGGCACCAAATA
	Reverse	CGAGTCAGTTTTGACCACGG
GBX2	Forward	CCGCCTTCAGCATAGACTCG
	Reverse	GGTAGCCGGTGTAGACGAAAT
HOXB2	Forward	CGCCAGGATTCACCTTTCCTT
	Reverse	CCCTGTAGGCTAGGGGAGAG
HOXA2	Forward	ATAACGGAGGGGAGCCTAAG
	Reverse	GCTCAGACAAACAGAGCGTG
WNT3A	Forward	GCTTCTGCAGGAACTACGTG
	Reverse	GACTCCCTGGTAGCTTTGTCC
MIXL1	Forward	GGCGTCAGAGTGGGAAATCC
	Reverse	GGCAGGCAGTTCACATCTACC
EOMES	Forward	CAGGCGCATGTTTTCTTT
	Reverse	CCCTGCATGTTATTGTCCG

Primer sets for CHIP-QPCR

		Sequences(5'→3')
OTX2 +500	Forward	GCAGTCCCAGGGCATTACTGAC
	Reverse	GGTCATTGAGATATGGGTAGGGGTC
OTX2 +1	Forward	GTCTTATCTTAAGCAACCGCCTTAC
	Reverse	ATACCCGAAGTGGTCAGACTCAG
OTX2 -1	Forward	CTTTAAAAGCCTCTGCCTCGCC
	Reverse	GGGTACCCAGCTGGAAGATCTTG
OTX2 -2	Forward	TAATTTAAAATCTCTGCCATGGAAAG
	Reverse	CTGGCACTAGCTAATTGTCTCAAAC
OTX2 -3	Forward	TTTGTTTAGCTTTCGTTCCCTTAGAC
	Reverse	ACCAACTCACTAAACCACAAACTTG
OTX2 -4	Forward	GGACCCAAATGTCTGAAAATTTG
	Reverse	AAAAAGTCTTCAAGATTGGCACAG

Table S2. Information for antibodies.

## Antibodies used in FACS

Name	Company	Cat. #	Host	Dilution
PAX6	BD	561664	Mouse	1:200
T	R&D	IC2085A	Goat	1:200

## Antibodies used in western blot

Name	Company	Cat. #	Host	Dilution
PAX6	Abcam	Ab5790	Rabbit	1:1000
GSK3 $\beta$	CST	9832	Mouse	1:1000
Phos-GSK3 $\beta$ (Ser9)	CST	5558	Rabbit	1:1000
NANOG	R&D	Af1997	Goat	1:500
OTX2	Abcam	Ab21990	Rabbit	1:500
OCT4	Santa cruze	sc-5279	Mouse	1:500
GAPDH	Kangchen Bio-tech	KG-5G5	Mouse	1:1000

## Antibodies used in immunofluorescence

Name	Company	Cat. #	Host	Dilution
SOX2	R&D	MAB2018	Mouse	1:500
NESTIN	Millipore	ABD69	Rabbit	1:1000
Ki67	BD	556003	Mouse	1:200
GFAP	Sigma	SAB4501162	Mouse	1:1000
Tuj1	Convance	PRB-435P	Rabbit	1:1000
MAP2	Millipore	MAB3418	Mouse	1:1000
NeuN	Millipore	ABN78	Rabbit	1:400
Synapsin	Calbiochem	574777	Rabbit	1:1000
ISLET	DSHB	39.4D5	Mouse	1:500
TH	Millipore	MAB318	Mouse	1:500
GABA	Sigma	A2052	Rabbit	1:2000
NANOG	R&D	Af1997	Goat	1:200
OTX2	Abcam	Ab21990	Rabbit	1:200
OCT4	Santa cruze	sc-5279	Mouse	1:200

## Antibody used in CHIP

Name	Company	Cat. #	Host	Dilution
NANOG	R&D	Af1997	Goat	1:1000

Table S3 Selected genes relating regional formation and regualting pathway.

GeneSymbol	H1-SD-1	H1-SDC-1	H1-SD-2	H1-SDC-2	H1-SD-3	H1-SDC-3
OTX1	9.24	0.1	6.31	0.09	2.17	0.23
OTX2	325.26	1.16	285.2	1.1	399.18	0.65
PAX6	319.61	375.82	113.34	700.5	135.21	463.11
FOXC1	493.14	0	293.71	0.1	472.92	0.26
EMX1	0.98	0.13	0.14	0.12	6	0
EMX2	33.89	0	29.53	0.21	90.45	0
EN1	0	1.59	0	2.31	0	0.81
EN2	0.08	1.69	0	2.54	0.08	0
SOX1	110.57	83.65	64.21	92.09	100.46	74.38
LMX1B	0.4	9.46	22.99	10.46	0.7	3.57
GBX2	0	79.26	0.3	121.61	0	44.36
HOXA1	0	4.93	0	7.73	0	3.71
HOXA2	0	108.27	0	103.72	0.14	88.21
HOXA3	0	2.6	0	6.96	0	1.11
HOXA4	0	0	0	0	0	0
HOXA5	0	0	0	1.51	0	0
HOXA6	0	0	0	0.3	0	0
HOXA7	0	0	0	0.77	0	0
HOXA9	0	0	0	0.48	0.21	0
HOXA10	0	0	0	0	0	0
HOXB1	0	28.83	0	12.36	0	2.33
HOXB2	0	205.35	0	132.88	0	28.21
HOXB3	0	28.08	0	18.11	0	2.18
HOXB4	0	0.29	0	0.55	0	0.17
HOXB5	0	0.14	0	0.53	0	0.16
HOXB6	0	0.23	0	2.29	0	0
HOXB8	0	1.52	0	2.82	0.31	1.09
HOXB9	0	2.86	0	7.45	0	0
HOXB13	0	0	0	0	0	0
HOXC4	0	0	0	0.71	0	0
HOXC9	0	0	0	0.18	0	0
HOXC10	0	0	0	0	0	0
HOXC5	0	0	0	0.15	0	0
HOXC6	0	0.33	0	1.28	0	0
HOXD1	0	0	0	0	0	0
HOXD3	0	0.06	0	0.12	0	0
HOXD4	0	0	0	0.19	0	0
HOXD8	0	0	0	0	0	0
HOXD9	0	0	0	0	0	0.27
HOXD10	0	0	0	0	0	0
HOXD11	0	0	0	0	0	0
HOXD12	0	0	0	0	0	0
HOXD13	0	0	0	0.12	0.13	0.15
SMAD1	40.2	31.67	41.31	37.83	41.92	47.77
SMAD2	66.34	50.95	74.66	60.87	57.65	59.64
SMAD3	45.69	69.8	36.27	59.84	43.33	57.38
SMAD4	179.52	163.23	168.03	193.96	138.24	163.36
SMAD5	47.12	37.89	44.77	63.29	37.54	35.03
SMAD6	3.39	4.27	1.44	6.83	2.37	8.67
SMAD7	5.22	6.74	6.53	8.92	2.85	7.36
SMAD9	1.43	2.21	2.69	1.83	1.79	1.82
WLS	8.14	333.77	8.26	236.23	1.51	130.42
WNT1	0.5	0.77	0.57	0.49	0	0.61
WNT3	12.08	22.58	7.47	18.91	11.95	9.71
WNT3A	0	1.6	0	1.02	0.09	1.34

WNT4	1.08	1.87	2.15	1.56	32.51	0.9
WNT5A	3.95	7.77	4.45	13.86	2.21	8.65
WNT5B	112.75	19.29	93.78	25.27	152.62	28.73
WNT7A	24.29	17.54	4.12	45.14	6.77	37.04
WNT8B	0.39	1.6	0.15	3.46	0	0.63
WNT10A	0	0	0	0	0	0
WNT10B	1	0.93	1.6	0.99	0.82	0.59
WNT11	1.57	0.44	0	0.71	0	0
WNT16	0.25	0.21	0.1	0	0	0
SALL1	41.31	95.06	23.35	115.67	46.91	155.21
SALL4	93.62	68.89	61.42	134.89	96.53	112.83
STAT3	69.84	56.58	58.68	35.78	40.03	36.21
ESRRB	0.8	4.02	0.55	1.2	0.99	3.03
FGF2	16.41	12.05	16.89	9.45	9.42	7.48
AXIN1	33.25	36.32	33.96	28.41	32.41	24.56
AXIN2	25.5	30.27	14.28	23.68	22.21	35.79
LRP5	42.4	19.27	34.7	37.56	35.47	27.31
LRP6	45.11	31.91	46.05	43.97	26.82	24.2
AKT1	141.71	192.76	151.62	186.87	147.7	153.15
AKT2	253.66	173.94	172.34	208.59	183.46	151.61
AKT3	60.22	40.01	43.77	62.65	49.98	51.01