

**Supplementary Table 1 Gene expression of markers during gastrulation**

Gene Name	Gene Abb.	Expression domains – gastrulation stage							Refs	Primers (Forward/Reverse; 5'-to-3')
		ICM ESC	PS	Ecto	Meso	DE	PrE/ VE / PE	TE		
nodal	NODAL	-/+	+	-	+	-	+	-	7, 62, 63	CCGAGGGCAGACATCATCC CCATCCACTGCCACATCTTCT
fibroblast growth factor 8	FGF8	-	+	+	+	-	+	-	32, 64	CGACCCCTTCGCAAAGCT GGACTCGAACTCTGCTTCCAAA
wingless 3	WNT3	-	+	-	+	-	+	-	5	ABI Taqman assay# Hs00229135_m1
brachyury	BRACH	-	+	-	+	-	-	-	22	TGCTTCCTGAGACCCAGTT GATCACTTCTTTCCTTTGCATCAAG
fibroblast growth factor 4	FGF4	+	+	-	-	-	-	-	35, 36	GACACCCGCGACAGCCT TCACCACGCCCGCT
snail homolog 1	SNAI1	-	+	-	+	+	+	+	65	ABI Taqman assay# Hs00195591_m1
Mix1 homeobox-like 1	MIXL1	-	+	-	+	-	+	-	20, 21	CCGAGTCCAGGATCCAGGTA CTCTGACGCGGAGACTTGG
LIM homeobox 1	LHX1	-	+	-	+	-	+	-	33, 34, 35	TCCCAATGGTCCCTTCTC CGTAGTACTCGCTCTGGTAATCTCC
gooseoid	GSC	-	+	-	+	+	+	-	19	GAGGAGAAAGTGGAGGTCTGGTT CTCTGATGAGGACCGCTTCTG
cerberus 1	CER	-	-	-	+	+	+	-	37-40	ACAGTCCCTTCAGCCAGACT ACAACACTTTTTTACAGCCTTCGT
SRY (sex determining region Y)-box 17	SOX17	-	-	-	-	+	+	-	18	GGCGCAGCAGAATCCAGA CCACGACTTGCCAGCAT
chemokine (C-X-C motif) receptor 4	CXCR4	-	-	-	+	+	-	-	16	CACCGCATCTGGAGAACCA GCCCATTTCTCGGTGTAGTT
hepatocyte nuclear factor 3, beta	FOXA2	-	+	-	+	+	+	-	13-15	GGGAGCGGTGAAGATGGA TCATGTTGCTCACGGAGGAGTA
SRY (sex determining region Y)-box 7	SOX7	-	-	-	-	-	+	-	18	ACGCCGAGCTCAGCAAGAT TCCAGTACGGCCTCTTCTG
caudal homeobox domain 1	CDX1	-	-	+	+	-	+	-	46, 47	TCAGAGCTGGCTGCCAATC TGGAACCAGATCTTCACCTGC
E-cadherin (epithelial)	ECAD	+	-	+	-	+/-	+	+	66	AGGAATCTTGTCTTGTAAATCTG CGAAGAAACAGCAAGAGCAGC
N-cadherin (neuronal)	NCAD	-	+	-	+	+	-	-	3, 51, 52	CCCACACCTGGAGACATTTG GCCGCTTTAAGGCCCTCA
SRY (sex determining region Y)-box 1	SOX1	-	-	+	-	-	-	-	25	ATGCACCGCTACGACATGG CTCATGTAGCCCTGCGAGTTG
zinc finger protein of the cerebellum 1	ZIC1	-	-	+	+	-	-	-	26, 27	CTGGCTGTGGCAAGGTCTTC CAGCCCTCAAACCTCGCACT
POU domain, class 5, transcription factor 1	OCT4	+	-	-	-	-	+	-	67, 68	TGGGCTCGAGAAGGATGTG GCATAGTCGTGCTTGATCG
SRY (sex determining region Y)-box 2	SOX2	+	-	+	-	-	-	-	69	ABI Taqman assay # Hs00602736_s1
forkhead box F1	FOXF1	-	-	-	+	-	-	-	41, 42	GCCGAGCTGCAAGGCA AACTCCTTTCGGTCACACATGC
mesenchyme homeo box 1	MEOX1	-	-	-	+	-	-	-	23, 24	AGGCGGAGAAAGGAGAGTTTCAG CTCCGGCTTCCCTCTGTTC
VEGFR, kinase insert domain receptor	FLK1	-	-	-	+	-	-	-	43	ACTTTGGAAGACAGAACCAAATTATCTC TGGCACCATTTCCACCA
bone morphogenetic protein 4	BMP4	-	-	-	+	-	-	+	44	GTGAGGAGCTTCCACCACGA ACTGGTCCCTGGGATGTCTC
stromal cell-derived factor 1	SDF1	unk	-	-	+	-	+	+	16	TGACCCGAAGCTAAAGTGGATT CCTCTCACATCTTGAACTCTTGTT
caudal homeobox domain 2	CDX2	-	-	-	-	-	-	+	48	GGGCTCTCTGAGAGGCAGGT CCTTTGCTCTGCGGTCTCTG
chorionic gonadotropin, beta polypeptide 5	HCG	-	-	-	-	-	-	+	49	AAGGATGGAGATGTTCCAGGG CCATGTCCCGCCCATG
cyclophilin G	CYCG	N/A – housekeeping gene								CTTGTC AATGGCCAACAGAGG GCCCATCTAAATGAGGAGTTGGT
glucuronidase beta	GUSB	N/A – housekeeping gene								ACGCAGAAAATATGTGGTTGGA GCACTCTCGTGGTACTGTT
TATA binding protein	TBP	N/A – housekeeping gene								TGTGCACAGGACCAAGAGT ATTTTCTTGCTGCCAGTCTGG

Supplementary Table 1 - Additional references.

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