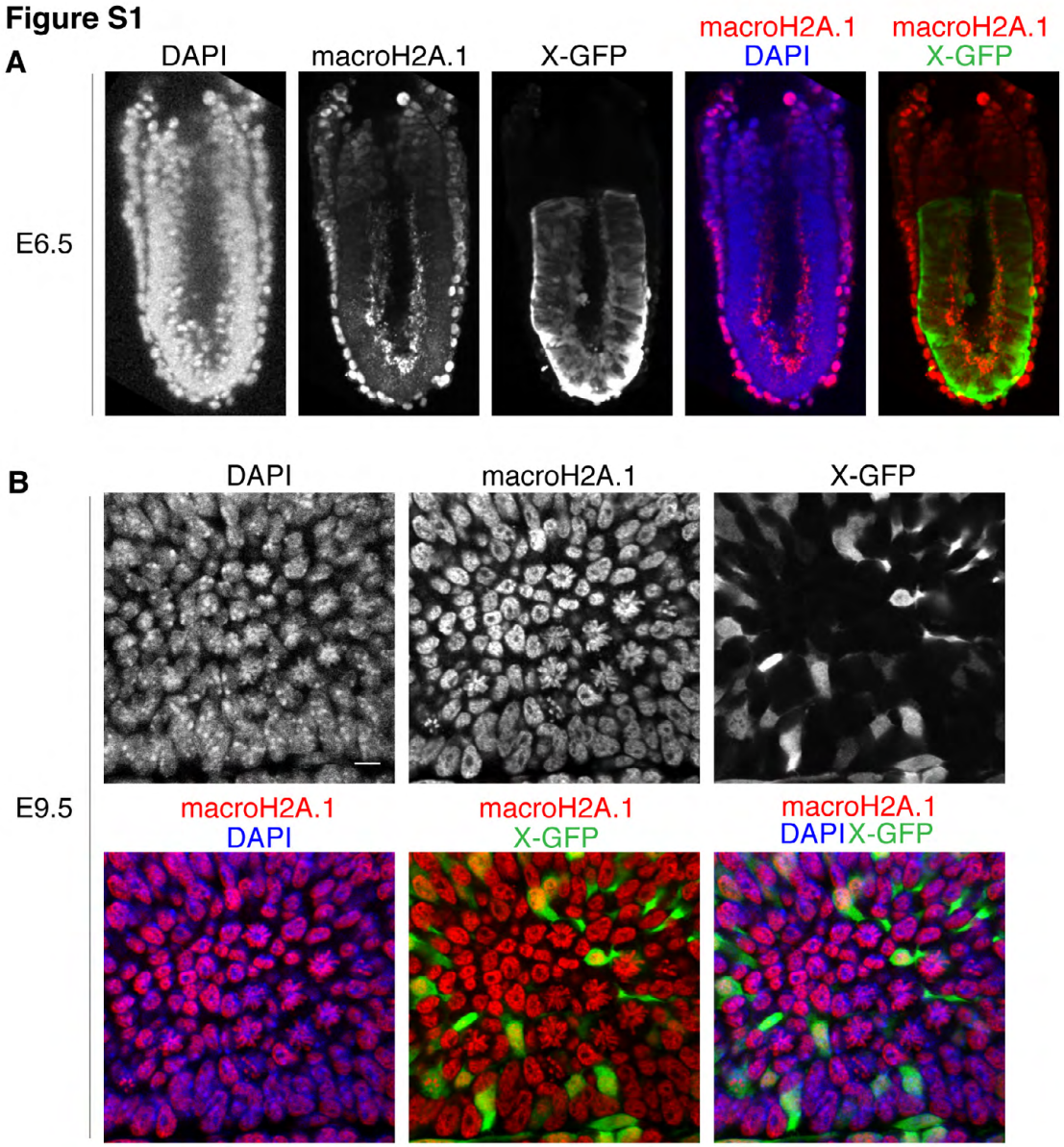

Fig. S1. (A) Example of E6.5 female *X-GFP* mouse conceptus wholemount immunofluorescence against macroH2A.1 (red) and GFP (green). MacroH2A.1 is highly expressed in the visceral endoderm and to some extent in the extra embryonic ectoderm but is not detected in the epiblast, precursor of all somatic lineages (mosaic *X-GFP* expression due to random X chromosome inactivation). DAPI is in blue. Images are projected confocal Z-sections. **(B)** E9.5 *X-GFP* mouse embryo immunofluorescence against macroH2A.1 (red) and GFP (green) showing cells of a somite. Nuclear macroH2A.1 is detected in all cells. DAPI is in blue. Images are projected confocal Z-sections. Scale bar = 5 µm.

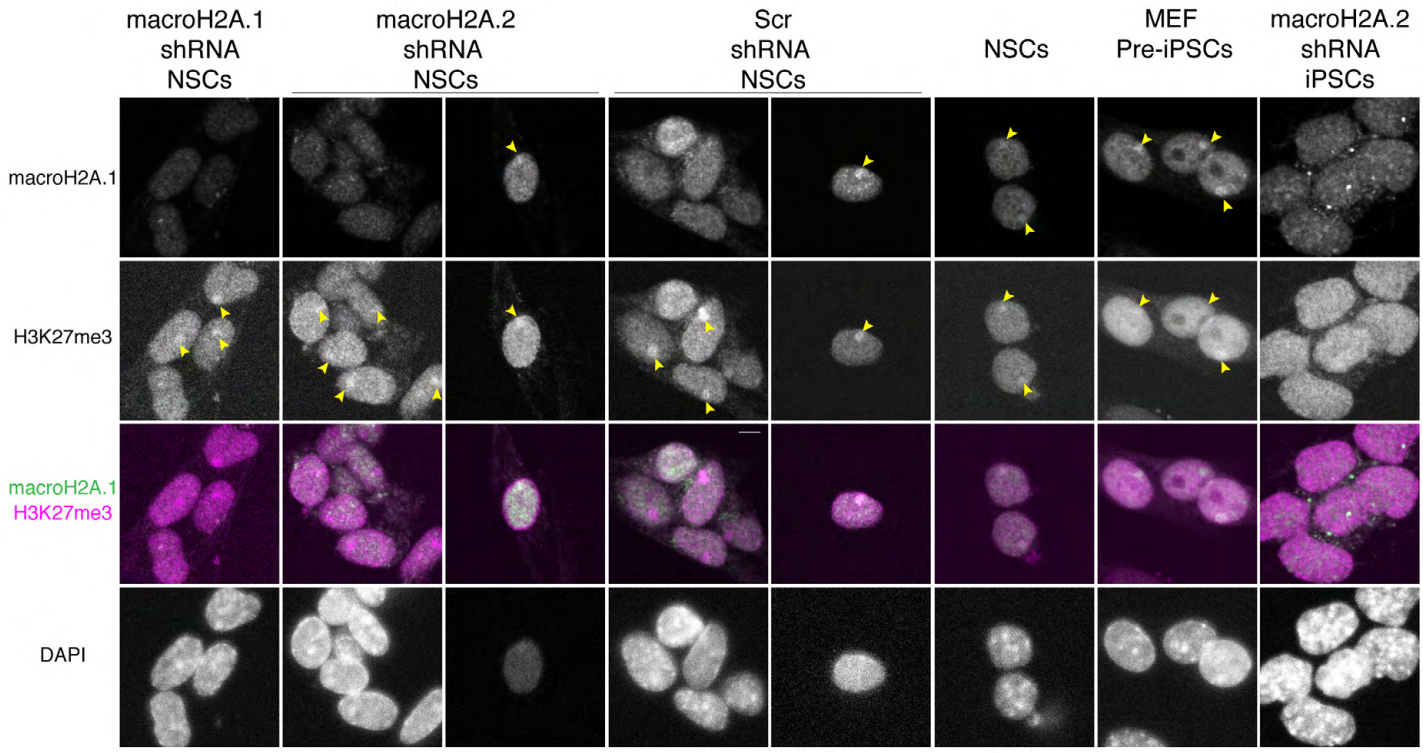

Fig. S2. Immunofluorescence analysis of macroH2A.1 and H3K27me3 in NSCs, pre-iPSCs and iPSCs. Yellow arrowheads indicate the inactive X chromosome. MacroH2A.1 is in green and H3K27me3 in magenta in merge panels. Scale bar = 5 μm.

Figure S3

macroH2A.1+.2 shRNA iPSCs chimeras

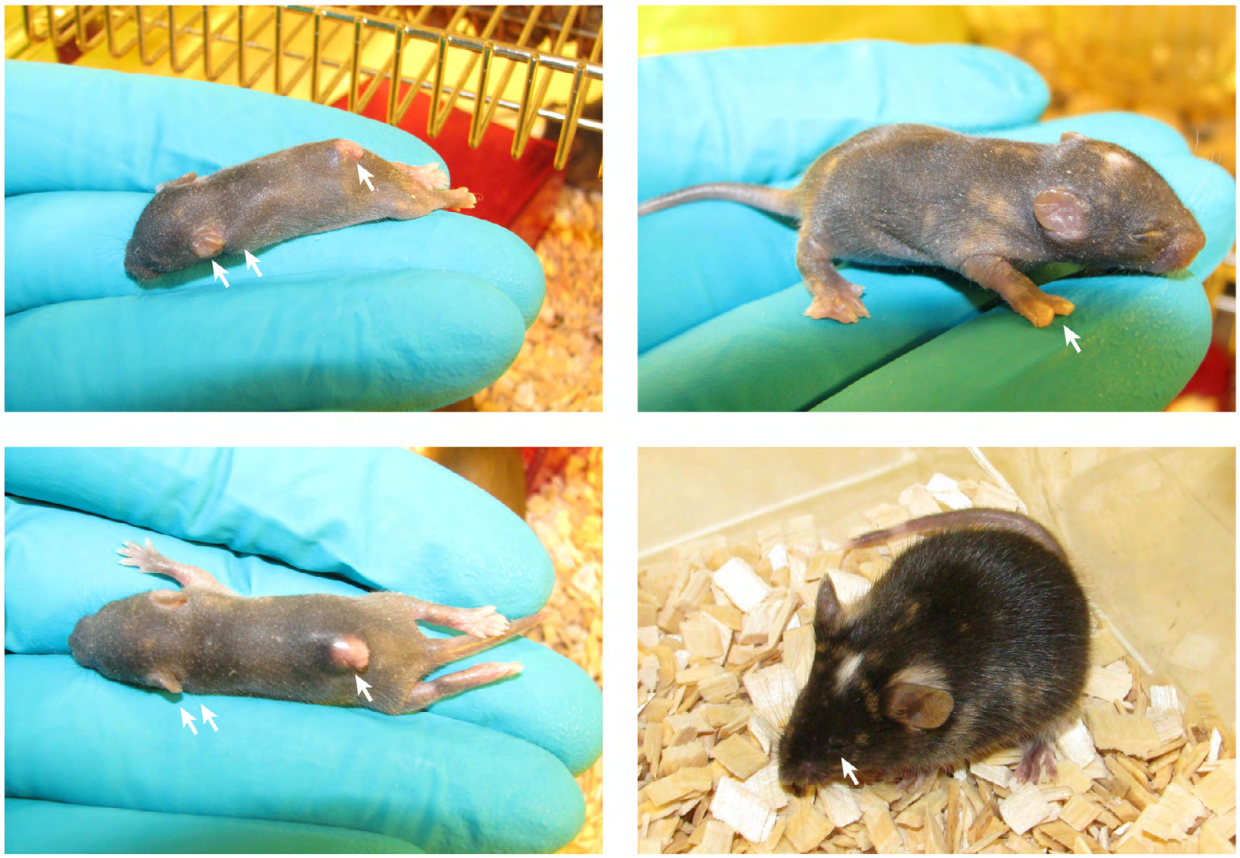

Fig. S3. Examples of developmental defects seen in macroH2A.1 + .2 shRNA iPSCs chimeras.

Table S1

Applied Biosystems Custom Taqman probes	
Gene name	**Probe**
Oct4 DE	AATCTGCTATTGAGGAAGC
Oct4 PE	AAGCAGGGTATCTCC
Oct4 PP	TGTCCGGTGACCCAAG
Sox2 RR1	AGCAATGCTGAGAAAT
Sox2 PP	ACAGGCGTGCGCCGT
Sox2 RR2	AGACTCTAAAAGAATTTCCCG
G3PDH PP	AGCCCACACGCTTG
C-Jun Promoter	CCAATGGGAAAGCC
B-globin PP	CGTAGAGCCACACCCT
Thy1 PP	TTCCCTGGAGACCTGT
Primers	
Gene name	**Sequence**
Oct4 DE-F	CCTCTCGTCCTAGCCCTTCCT
Oct4 DE-R	GAAGCCGCCAAGTTCACAA
Oct4 PE-F	CCGGAGTCCCTGGAGGAA
Oct4 PE-R	CTCCTCAAAGACAGAGCCTCAGA
Oct4 PP-F	TCCGAGCAACTGGTTTGTGA
Oct4 PP-R	TTTCAACCTTCAAGGTCCTCTCA
Sox2 RR1-F	GGTGGTCGTCAAACTCTGCTAAT
Sox2 RR1-R	CCTCCTCTCCTAATCTCCTTATGGA
Sox2 PP-F	TGGTGCTGTTTACCCACTTCCT
Sox2 PP-R	CGCCCCCCGTTTTCAG
Sox2 RR2-F	CAGGTTCCCCTCTAATTAATGCA
Sox2 RR2-R	CATTACCACGTGAATAATCCTATATGC
G3PDH PP-F	TCCCCTCCCCCTATCAGTTC
G3PDH PP-R	GACCCGCCTCATTTTTGAAA
B-globin PP-F	TGTCATCACCGAAGCCTGATT
B-globin PP-R	TGTGAGCAGATTGGCCCTTAC
C-Jun Promoter-F	CCGCCCCCCTGAGAAC
C-Jun Promoter-R	CAATCCCTAAAAATAGCCCATGAT

Thy1 PP-F	GGCTGCTTCTGATTATTTAGTTTGTTC
Thy1 PP-R	ACCCACCATACGCCCTTATG

Table S2

Applied Biosystems Taqman probe/assays	
Gene name	**Probe ID**
GAPDH	4352339E
Nanog	Mm02384862_g1
Rex1	Mm03053975_g1
Klf4	Mm00516104_m1
Oct4	Mm00658129_gH
T / Brachyury	Mm01318252_m1
Gata4	Mm00484689_m1
Primers and custom probes	
Gene name	**Sequence**
Retroviral Oct4-F	TGGTACGGGAAATCACAAGTTTGTA
Retroviral Oct4-R	GGTGAGAAGGCGAAGTCTGAAG
Retroviral Oct4-probe	FAM-CACCTTCCCCATGGCTG-MGB
Retroviral Klf4-F	TGGTACGGGAAATCACAAGTTTGTA
Retroviral Klf4-R	GAGCAGAGCGTCGCTGA
Retroviral Klf4-probe	FAM-CCCCTTCACCATGGCTG-MGB
Endogenous Oct4-F	TTCCACCAGGCCCCC
Endogenous Oct4-R	GGTGAGAAGGCGAAGTCTGAAG
Endogenous Oct4-probe	FAM-CCCACCTTCCCCATGGCT-MGB
Primers used with SYBR green	
Gene name	**Primer sequence**
GAPDH-F	CCCACTAACATCAAATGGGG
GAPDH-R	CCTTCCACAATGCCAAAGTT
mH2A1-F	CACCATGTCGAGCCGCGGCGGGAAG (Kapoor et al., 2010)
mH2A1-R	GTTGGCGTCCAGCTTGGCCA (Kapoor et al., 2010)
mH2A2-F	GGACCAAAGGCAAGTCAGAG (Kapoor et al., 2010)
mH2A2-R	TCCGAGGTGGAATTTGATGT (Kapoor et al., 2010)