Supplementary information, Fig.S8
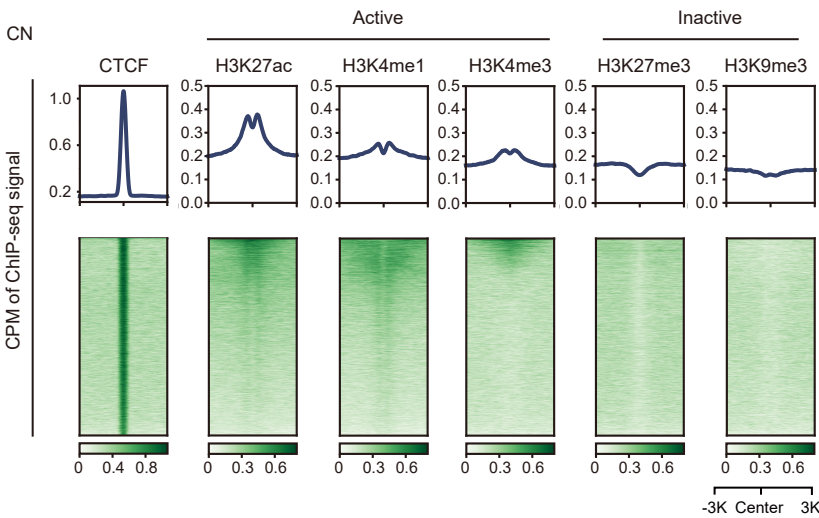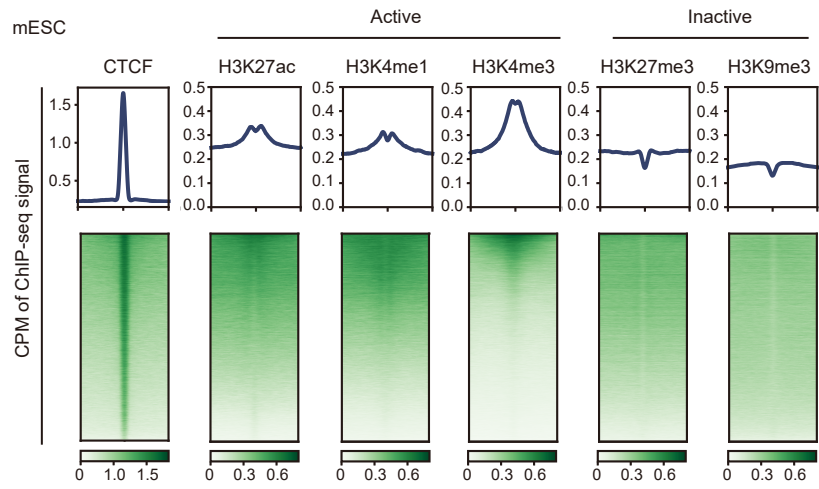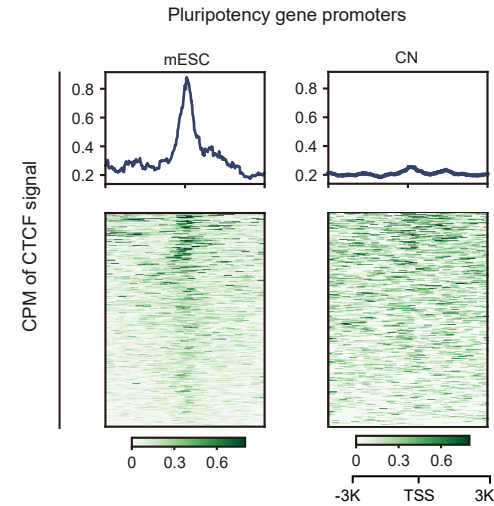
a

mESC

CTCF | Active (H3K27ac, H3K4me1, H3K4me3) | Inactive (H3K27me3, H3K9me3)

CPM of ChIP-seq signal

CN

CTCF | Active (H3K27ac, H3K4me1, H3K4me3) | Inactive (H3K27me3, H3K9me3)

CPM of ChIP-seq signal

-3K Center 3K

b

Pluripotency gene promoters

mESC | CN

CPM of CTCF signal

-3K TSS 3K

c

ESC (H3K4me3, H3K27me3, RYBP) | Mesoderm precursor cells (H3K4me3, H3K27me3, RYBP) | Epidermal progenitor cells (H3K4me3, H3K27me3, RYBP)

-3K Center 3K

d

RYBP, RING1B, CTCF, H2AK119ub1, H3K27ac, H3K27me3, H3K4me3

-3K Center 3K

e

Distance from RYBP-CTCF co-enriched peaks to the nearest TAD boundary

Frequency vs Distance (kb)

f

Distance from RYBP-CTCF co-enriched peaks to the nearest promoter
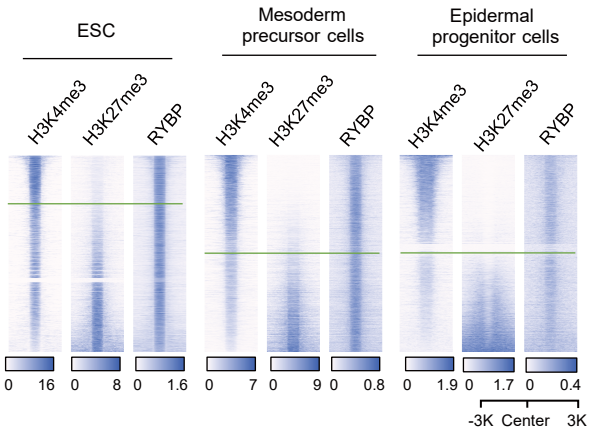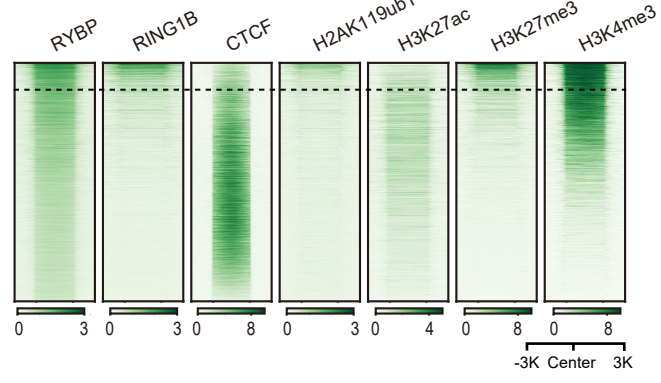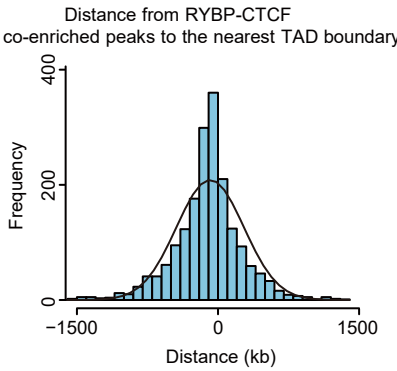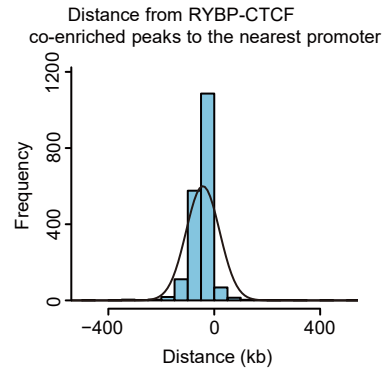
Frequency vs Distance (kb)

Supplementary information, Fig.S8 RYBP-mediated CTCF phase separation involves in transcription activation. a Heatmaps showing the enrichment of H3K27ac, H3K4me1, H3K4me3, H3K27me3 and H3K9me3 at CTCF binding loci in mESCs (top) and cortical neuron cells (bottom). **b** Heatmaps showing the enrichment of CTCF at promoters of pluripotency-associated genes in mESCs and CN cells. **c** Heatmaps of RYBP binding loci are sorted by the H3K4me3 (GSM1059001) and H3K27me3 (GSM1058999) in ESCs, mesoderm precursor cells (GSE67868) and epidermal progenitor cells (GSE112460). **d** Distribution of RING1B (GSM4593063), CTCF (GSE29218), H2AK119ub1 (GSM850471), H3K27ac (GSM851278), H3K27me3 (GSM1058999) and H3K4me3 (GSM1059001) peaks in RYBP peaks. **e** Density plot showing the distance from each RYBP-CTCF co-enriched peaks (see methods) to its nearest TAD boundary. **f** Density plot showing the distance from each RYBP-CTCF co-enriched peaks to its nearest gene promoters.