

**Supplementary information, Figure S11** The diagram of AP2 $\gamma$  functional analysis in ESCs.

- (A) Lentivirus was packaged from  $AP2\gamma$  overexpression or shRNA expressing contructs as described (Tiscornia et al., 2006) and was used to transfect ESCs. Some of ESCs were transfected and expressing GFP.
- (B-C) GFP positive cells were sorted by FACS and proliferated under the normal culture condition (B) and then were induced as EBs in DMEM containing 10% FBS medium or DMEM containing 8% KSR medium according to the experimental requirement (C).
- (D-E) The EBs were cultured to different days as indicated and then subjected to qRT-PCR (D) or immunostaining analysis (E).
- (F-G) The EBs were replated to the coated dish in N2 medium or DMEM containing 10% FBS medium for staining (F) or were directly seeded on the matrigel coated dish for morphology observation.