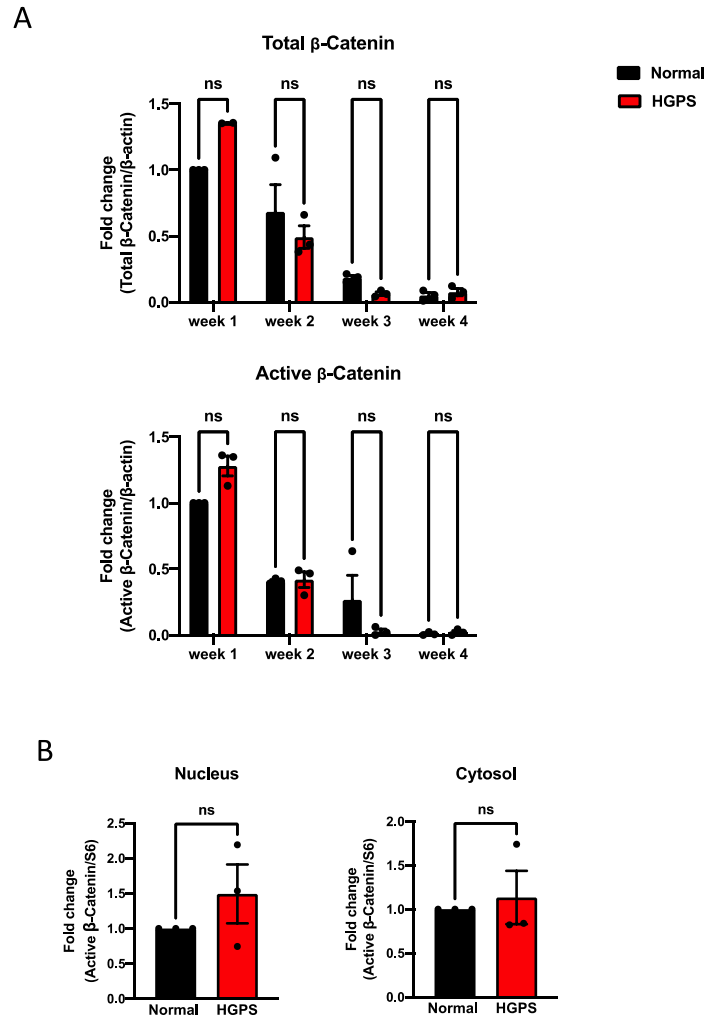
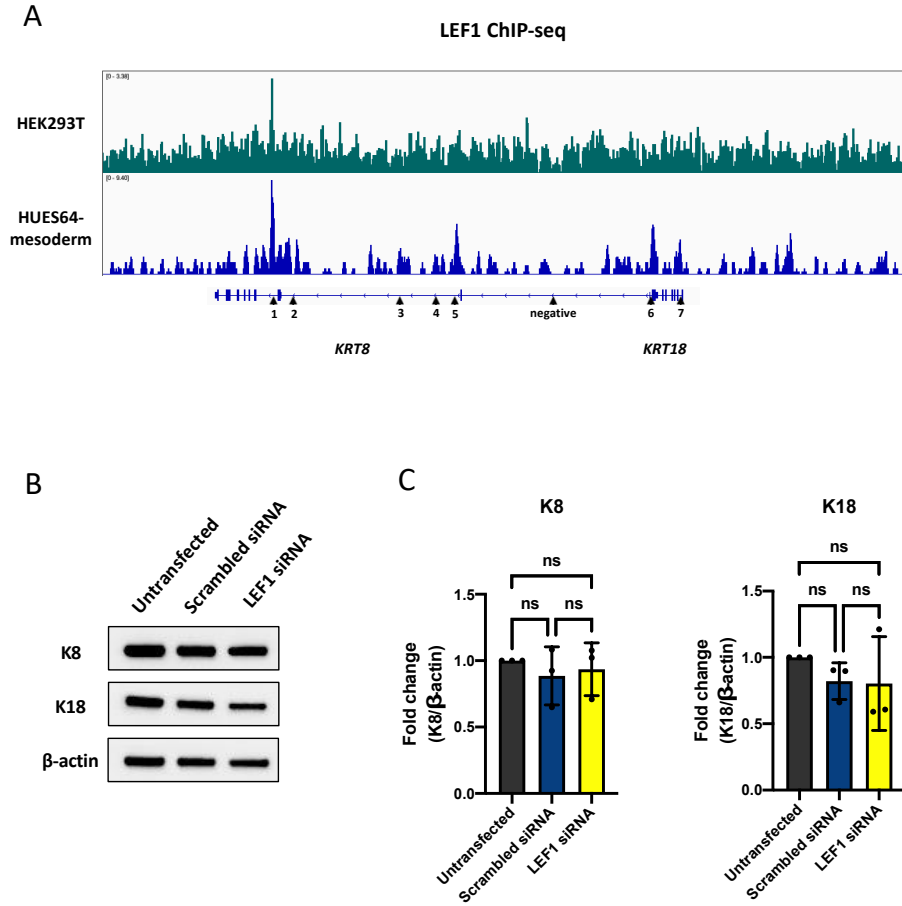


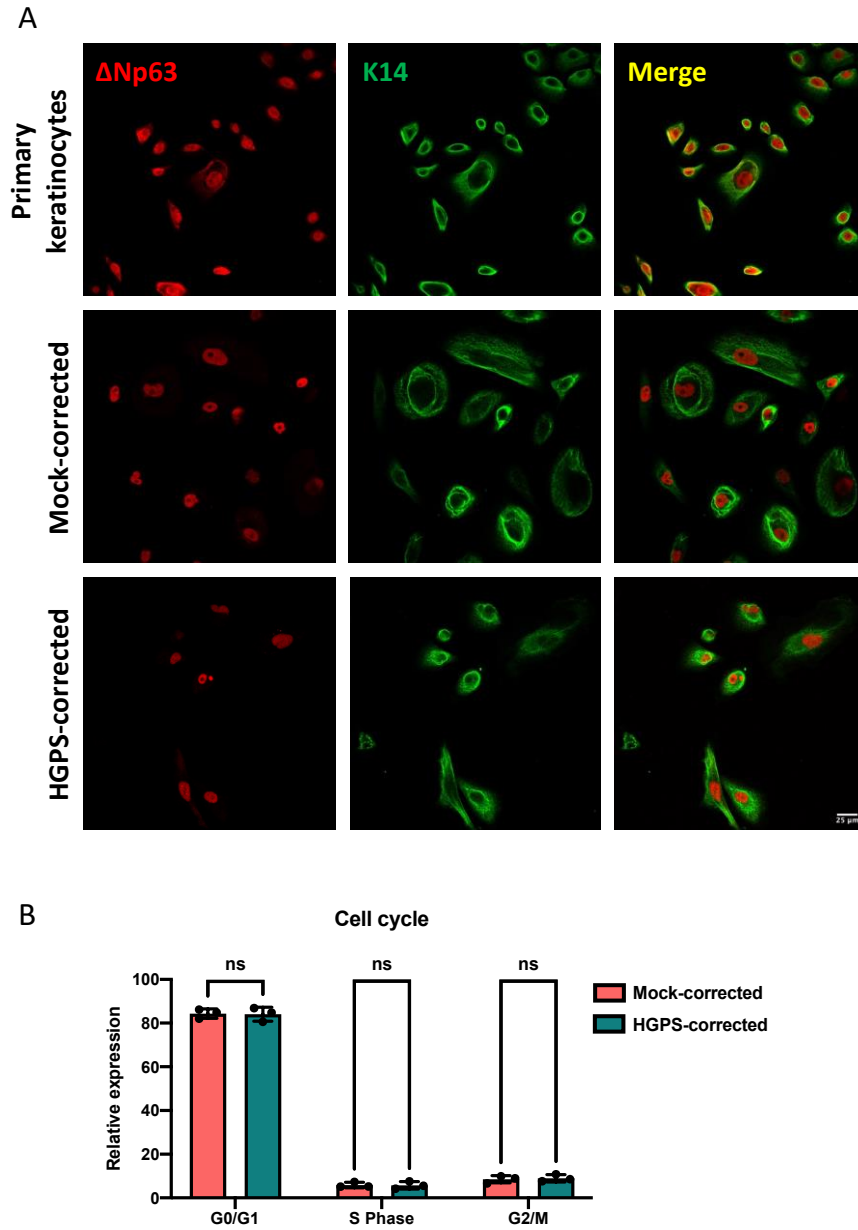
**Figure S1.** (A) Representative Western blot result showing progerin, p16 and K1 expression during normal and HGPS iPSCs-keratinocytes differentiation. (B) Representative flow cytometry plots showing BrdU-Pi cell cycle analysis during normal and HGPS iPSCs-keratinocytes induction. The distribution of cells at G0/G1, S, and G2/M phases were indicated within each plot. (C) Quantification of the cell cycle partitioning during normal and HGPS iPSCs-keratinocytes induction. Data were presented as mean  $\pm$  SD (n = 3).



**Figure S2. (A)** Quantification of total and active  $\beta$ -catenin expression during normal and HGPS iPSCs-keratinocytes induction. The Representative Western blot result is shown in Figure 4A. Data were presented as mean  $\pm$  SD ( $n = 3$ ). ns, not significant, Two-way ANOVA followed by Sidak's multiple comparisons test. **(B)** Quantification of nuclear and cytosolic active  $\beta$ -catenin expression in early-differentiating (week 1) normal and HGPS iPSCs. The Representative Western blot result is shown in Figure 4B. Data were presented as mean  $\pm$  SD ( $n = 3$ ). ns, not significant, unpaired two-tailed t-test.



**Figure S3.** (A) Genomic tracks display public available LEF1 ChIP-seq data. Shown are LEF1 enrichment profiles at K8/K18 locus in HEK293T (green) and human embryonic stem cell (HUES64) derived mesoderm (blue). The K8/K18 gene track with putative LEF1 binding sites was shown below the profiles. (B) Representative Western blot result showing K8 and K18 protein expression 48 hours after LEF1 siRNA knockdown in normal iPSCs differentiation. (C) Quantification of K8 and K18 protein expression after LEF1 siRNA knockdown in (B). Data were presented as mean  $\pm$  SD ( $n = 3$ ). ns, not significant, One-way ANOVA followed by Tukey's multiple comparisons test.



**Figure S4.** (A) Basal layer keratinocyte markers  $\Delta$ Np63 and K14 expression in mock-corrected and HGPS-corrected iPSCs-derived keratinocytes at week 4 as well as in primary keratinocytes indicated by immunofluorescence staining (scale bar = 25 $\mu$ m). (B) Quantification of the cell cycle partitioning in mock-corrected and HGPS-corrected iPSCs-derived keratinocytes at week 4. Data were presented as mean  $\pm$  SD (n = 3). ns, not significant, Two-way ANOVA followed by Sidak's multiple comparisons test.