

Establishment of induced pluripotent stem cell lines in chicken ⁽¹⁾

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Abstract

The purpose of this study was to establish chicken induced pluripotent stem cells (ciPSC) line and to study their cellular characters including pluripotency, embryoid body formation efficiency, and *in vitro* differentiation capability. The results showed that the morphology of chicken embryo fibroblasts (cEF) transformed into colony type from spindle type 6-7 days after being infected with lentivirus, which was constructed with reprogramming transcription factors of *LIN28*, *NANOG*, *SOX2*, *OCT3/4*, *KLF4* and *c-MYC*. The transformed cells have been maintained *in vitro* for more than 35 passages (300 days). These ciPSCs continuously expressed pluripotent markers of stem cells including Oct-4, AP, and PAS antigens. Morphologically, ciPSC colonies were highly refractive, and at the single-cell level they showed clear cell boundary, high nuclear-to-cytoplasm ratio, and prominent nucleoli. The efficiency of embryoid body formation ($92.6 \pm 2.2\%$) was excellent induced by handing-drop culture. These results demonstrated that the ciPSC line established in this study was pluripotent.

Key words: Chicken, Embryonic fibroblasts, Induced pluripotent stem cells.

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