

【Noteworthy Patent Introduction #2】

Methods of efficiently establishing iPSCs under hypoxic conditions

Abstract

Invented is a method for improving the efficiency of establishing iPS cells under a **low oxygen concentration of 1–5%**.

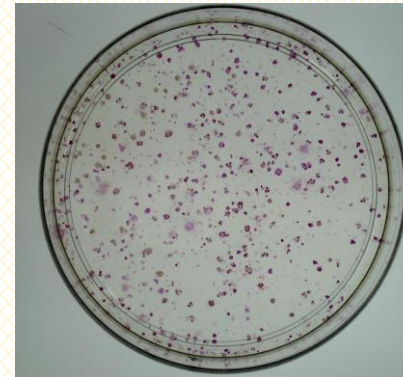
Advantage

- The number of iPS cell colonies obtained drastically increased when mouse fibroblasts or adult human dermal fibroblasts were transfected with 4 factors or 3 factors followed by culturing **under 5% oxygen atmosphere**.
- Hypoxic conditions exert similar effects on the iPS cell induction by plasmid method and piggyback transfection system as well.

Background

The efficiency of iPS cell establishment by 4 factors (Oct3/4, Sox2, Klf4 and c-Myc) is low at less than 1%, and even more extremely low efficiency is achieved by 3 factors excluding c-Myc which has a risk of tumorigenesis.

Alkaline phosphatase positive colonies derived from mouse embryonic fibroblasts at 28 days after transfection with three factors



under 5% oxygen



under 21% oxygen

Issued Patent : JP5562231, US9528092, EP2307539 invented by Shinya YAMANAKA et al.

Publication : *Cell Stem Cell* Volume 5, Issue 3, p237–241, 4 September 2009 **Our Ref. Number** : AJ007