

Establishment of new murine embryonic stem cell lines from Balb/c strain

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Abstract

Embryonic stem cells are pluripotent cells with self renewal ability that are derived from inner cell mass of blastocysts. It is possible to differentiate the cells under appropriate culture conditions into specific cells. Moreover, manipulation of their genome in-vitro allows the creation of transgenic and knockout mice. Owing to the significance of ES cells, this study was conducted to produce new lines of mice-blastocysts aged 3.5 days were recovered from BALB/c mouse strain and cultured on mouse embryonic fibroblasts in ES media supplemented with 1000IU/ml or 5000IU/ml leukemia inhibitory factor (LIF). Established lines were analyzed for simple karyotype, C-banding, polymerase chain reaction of SRY gene (PCR-SRY), alkaline phosphates, and Oct-4 expression (RT-PCR). Three ES cell lines were produced morphologically. These lines were isolated in 5000 IU/ml LIF only. All three lines were male. Two lines had normal karyotype (40 chromosomes) and one line was tetraploid. C-banding and SRY-PCR showed that all lines had XY sex chromosome composition. Also, all lines had alkaline phosphates activity and expressed Oct-4. These results indicated that two male murine ES cell lines with normal karyotype, alkaline phosphates and Oct-4 positive properties were established from BALB/c strain.

Keywords: Embryonic stem cell, Mouse, Balb/c strain, and Pluripotency.

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