

Altered Nuclear Transfer: Improvement of Somatic Cell Nuclear Transfer Technique to Resolve Ethical Problems

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Cloned embryos generated by Somatic Cell Nuclear Transfer (SCNT) technique are good resources for Embryonic Stem Cell (ESC) with pluripotent characteristics. SCNT becomes a potential method used in therapeutic and regenerative medicine with the aim to produce cells for autologous transplantation. An advanced method recently developed to generate inner cell mass lacking intact trophectoderm function by targeting Cdx2 gene by RNAi (RNA interference) is known as Altered Nuclear Transfer (ANT). Through ANT technique ethical problems encountered in SCNT could be resolved for the reason that the cells created are not intact embryos. This review covers briefly the latest methods used in SCNT including the ANT technique.

Keywords: ANT, SCNT, Trophectoderm, RNAi, Cdx2

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Biological Characteristic and Differentiation of Stem Cell: Focus on Mesenchymal Stem Cell

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Stem cell has been an interesting and controversial focus among researchers and public because of their potential on cell based therapy. Regarding ethical issues surrounding the embryonic stem cell source, adult stem cell becomes a promising alternative choice. Mesenchymal stem cell derived from umbilical cord blood has been a preference for researchers as recognized for its high plasticity and low immunogenicity.

With proper treatment, mesenchymal stem cell can be grown into different kind of cells, ready to be used for cell based therapy. For that purpose, there has been many attempts in establishing culture protocol for mesenchymal stem cell in xeno-free culture condition to reduce potential animal pathogen transfer to human.

Keywords : Stem cell, adult stem cell, mesenchymal stem cell, cell based therapy.

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Ekspansi Endothelial Progenitor Cell

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The discovery of endothelial progenitor cells (EPC) has major implications in angiogenic therapy. The limited numbers of EPC found in adult blood circulation has been the main obstacle for the usage of EPC. Various attempts have been made to expand EPC in vitro in order to get sufficient numbers of EPC required for human therapy. This review summarizes the characteristics and different methods used in the expansion of EPC. Several methods for EPC quantification and surface markers used for EPC identification will also briefly covered.

Key words : EPC, stem cell, expansion, Endothelial Progenitor Cell.

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