An historical overview on the development of pluripotent stem cell technology [1]

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Abstract

Recently, various techniques for establishment of pluripotent stem cells has been developed, such as embryonic stem cells (ESCs), single blastomere-derived embryonic stem cells, somatic cell nuclear transferred embryonic stem cells, parthenogenetic embryonic stem cells, and induced pluripotent stem cells (iPSCs). Among these techniques, the success of iPSC technology in 2006 was more than a decade which had been widely used for biomedical research, such as disease modeling, drug screening, and cell therapy. This technique had opened an avenue for stem cell technology and regenerative medicine. Thanks to the previous studies that verified the mechanism for reprogramming somatic cells, discovered transcription factors, and optimized culture conditions of ESCs, foundations established from these basic researches promote the development of iPSCs. However, many issues, such as production efficiency, and quality of iPSCs, should be improved. In this review, we discussed in detail and looked back the history of pluripotent stem cells, stem cell development in farm animals, and the future perspectives for better understanding of this new technology.

Key words: Induced pluripotent stem cells, Embryonic stem cells, Farm animals.

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