Advancements in reprogramming strategies for the generation of induced pluripotent stem cells.

ABSTRACT

Direct reprogramming of somatic cells into induced pluripotent stem (iPS) cells has emerged as an invaluable method for generating patient-specific stem cells of any lineage without the use of embryonic materials. Following the first reported generation of iPS cells from murine fibroblasts using retroviral transduction of a defined set of transcription factors, various new strategies have been developed to improve and refine the reprogramming technology. Recent developments provide optimism that the generation of safe iPS cells without any genomic modification could be derived in the near future for the use in clinical settings. This review summarizes current and evolving strategies in the generation of iPS cells, including types of somatic cells for reprogramming, variations of reprogramming genes, reprogramming methods, and how the advancement iPS cells technology can lead to the future success of reproductive medicine.

Keyword: Induced pluripotent stem cell; Reprogramming strategies.