

Induced Pluripotent Stem Cells: Challenges and Opportunities

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Abstract:

Regenerative capacity of mammals is limited and can rarely regenerate a specific organ or tissue fully. Due to these limitations, regenerative medicine seeks efficient and safe cell sources for regeneration of damaged tissues and organs or treatment for incurable diseases. Human embryonic stem cells (HESCs) hold two important properties called self renewal and pluripotency. However, the use of embryonic pluripotent stem cells in cell therapy faces two major obstacles. First, immunological incompatibility of ES cells with the recipient, and the second, ethical concerns about the destruction of human embryos during the ES cells. Thus, induction of somatic cells of individuals can be a proper way to overcome these problems. So far, several methods have been utilized to induce Pluripotency in Somatic cells. One of these methods is the technology of induced pluripotent stem cells (iPS) in contribution with Pluripotency factors. Yet, the use of these cells in the clinic, owing to application of viral vectors to transfer Pluripotency inducing factors, is quite limited. Therefore, recognition of a combination of small molecules to be replaced with exogenous factors is the ultimate goal of the study for the purpose of generating iPS cells. Recent progresses in development of iPS cells will be discussed here.

Keywords: IPS, Plupotency, Repair, Regeneration, Stem Cell.

Oral Presentation

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