

Editorial

iPS-Cinderella Story in Cell Biology

Dear Friends

As we step through the frontiers of modern Science, we are all witnesses to the Cinderella story repeating itself in the form of the iPS. The process of re-programming adult somatic cells to derive Induced Pluripotent stem cells (iPS) with the wand of transcription factors and then differentiating them back to adult somatic cells resembles the transformation of Cinderella from a Cinder girl to princess and back to a Cinder girl after the ball; but the iPS-Cinderella is the most fascinating thing ever in cell biology!

iPS cells was the key to solve the problems of Immune rejection and Immunosuppression required when using other allogeneic Stem cell types which had baffled scientists previously. But the issues raised by scientists about the use of viruses and Oncogenes in producing iPS cells were made groundless when scientists in February 2008 published the discovery of a technique that could remove oncogenes after the induction of pluripotency and now it is possible to induce pluripotency using plasmid transfection, piggyback transposon system and piggyback transposon system combined with a non viral vector system. The word of the day is piPS which are protein-induced Pluripotent stem cells which are iPS cells that were generated without any genetic alteration of the adult cell. This research by the group of Sheng Ding in La Jolla, California made public in April 2009 showed that the generation of poly-arginine anchors was sufficient to induce pluripotency and thus paving the way for use of iPS in humans

In this issue of JSRM we have Dr.Yukio Nakamura writing about Disease specific iPS cells which could serve as tools for understanding the underlying mechanisms of diseases which are less understood so far or which could be used as study models for drug discovery for disease therapy. Adding another positive futuristic step to this is the paper by Kataoka et al., who have shown that the iPS cells could be grown in a three dimensional scaffold in which their earlier studies have shown feasibility of a 200 time passaging of mouse foteal epithelial stem cells and neural stem cells. The strengths of Nakamura et al and that of Kataoka et al combined virtually, we see a much brighter picture for the iPS cells which might be in future much cleaner, be grown in an undifferentiated manner and be stored for long; then instead of cord blood storage all I dream is whenever a child is born we may simply custom make iPS for that child and cryopreserve it; May the dreams come true!

Dr. Sheikh Riazuddin's article about lin-c-kit⁺ BM-derived stem cells repair Infarcted Heart and Dr.Pravin Potdar's article about Mesenchymal Stem Cells from adipose tissue give some basic understandings of the possible clinical translations.

Happy Reading!