

# Stem cell reprogramming essay



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Along with the trials and tribulations scientists had to go through generating iPSCs like the protesting and strict laws against using ES Cells due to the fact that the ES Cells are derived from the inner cell masses (ICM) of blastocysts also known as Embryonic Stem (ES) Cells and the embryos possibility of one day being born. To help with this problem a unique experiment was conducted and the Embryonic Stem (ES) cells by introducing four genes (Oct4, Sox2, Klf4, c-MYC) into mice dermal fibroblast cells. These cells are called embryonic germ (EG) Thus making the use of stem cell factors no longer needed. Direct reprogramming Of a patient's somatic cells into pluripotent stem cells can sweep away the dilemma of ES cells.

To make things a bit more understandable, stem cells our bodies Master Cells, from these cells all of our other cells with specialized functions are generated. Our stem cells divide and form other cells and the new cells are called daughter cells. These Daughter Cells have the ability to become new cells (this is called self-renewal) or they will become specialized cells that will have a more specific function (known as differentiation) like brain cells, blood cells, or bone. Humans have two types of stem cells, one is Adult Stem Cells these make cells within their own tissues and are dedicated to repairing and maintaining particular tissue like the blood cells make blood and so on. The other is the Embryonic Stem Cell this is performed in the womb: (pluripotent) these cells don't just make copies of themselves they also can become any of the different types of cells that make up our body. The Embryonic stem cells are the earliest possible stages of development, at this stage there is no blood or bone or muscle, just the stem cells. This is when advancement starts it is very restricted and channeled as one could imagine it would have

to be, one cell becomes two, and two become four, and four become eight than they multiply into a ball of many cells, a beautiful sphere of human in the makings transforming into all the 200 or so kinds of cells that create the human body ND all its parts the, Skin, bone, nerve, and the Brain cells, and the organs.

These cells are called Proteins or Factors and they are what give these cells their different identities to make each of these specific parts. All of these specific genes get turned off and tightly wrapped up and locked away. Scientists have always fantasized about collecting those new cells from a human embryo and coaxing them to live, in sterile isolation.

And that is exactly what one Scientist did. Analysis: This article focuses on the fact that the Plenteous (pips) stem cell were covered and can be used to produce any cell in the human body from skin cells being converted back to the embryonic state. Stem cells can be made into pips by adding 3 or 4 factors to the skin tissue. Dry. Shinnu Yamaha is the scientist who discovered how to succeed in generating induced plenteous stem cells that had the ability to differentiate into any kind of tissue. These pips cells are obtained from already specialized adult cells than they are reprogrammed to plenipotentiary, so once again are able to transform into any other tissue.

Dry. Yamaha took 100 possibilities and with a computer aerogram narrowed then down to 24 and then found that 4 Coot, Sox, Skiff, Snick, of those 24 were the essential ones that act together only in the embryonic stem cell stage and inserted then into a skin cell and the chromosomes began to unwind, this process still is not fully understood? But it happened and the

Cell also called Proteins or Factors could now factor to the genes which could make the embryonic stem cells. They essentially fool the cells into thinking they were in the embryonic stages. As stated earlier, these can be turned into any cell in the body.

So the Skin along with the 4 genes act, sox, kill, snick were the secret. pips cells now have raised completely new issues and concerns one issue that came with this Were that Embryos were used and had to be destroyed for this to happen and the ethical issue that the destruction of embryos is completely unavoidable to establish SE cells. Even though most of the human SE cells come from surplus embryos provided by fertility clinics, the issue is mostly on the use of the embryos that would have the likelihood or the possibility to eventually developing into a human being and to fix this problem Dry. Yamaha discovered that he could aka SE like stem cells from skin cells.

This discovery was made from mouse induced Plenteous Stem (pips) cells generated by introducing the combination of Scotland, Sox, Kerr; peel-like factor 4 (Skiff) and melodramatics nosecone (c-NYC) With improved selection methods these reprogrammed cells can contribute to germ lines in chimer mice pips cells derived from Mouse Embryonic Fibroblasts (NEFF) this made the use of stem cell factors no longer needed. Induced Plenteous pips stem cells are a whole new type of cell and can also be generated from individual patients, meaning hey are genetically identical to the patient so if this patient needs a transplant the cells generated will not be rejected by this patient's immune system. All though reprogramming is still mysterious and technically easy for these scientist now, the other issue is it does not always

work. There can be cells that produce cells with unexpected changes in the genes that could likely form tumors or be cancerous in this article Direct reprogramming 101 the author Dashiki states that the “ SE cells can form tumors called Dermatomes consisting of various tissue mixtures when they are injected into immune- efficient or generic animals. Residual undifferentiated cells can be a risk of tumor formation after in videoconferencing Of SE cells for therapeutic use. Therefore, although more than 10 years have passed since human SE cells were first established, clinical trials have never been conducted. On another front, these troubling aspects for clinical application provided more hints to researchers.

Not only SE cell-specific molecules such as Coot/4, Sox and Mango, but also some genes known as nosecones, play important roles in the circuitry of plutocracy. Despite this the discovery of the Plenteous pips Cells is still one of the most amazing discoveries in history and technologies will still expand far beyond our existing knowledge. Researchers believe that the potential to dramatically change the treatment of human disease due to the number of adult stem cell therapies that already exist like bone marrow transplant used to treat Leukemia that in the future this will contribute to a wider variety of treatments for diseases that are now considered to be incurable including cancer, and Parkinson disease, Spinal Cord injuries, ultimate sclerosis as well as type one diabetes, and osteoporosis and as many other diseases that have a dramatic effect it has on the person life with the disease as well at the family members who will take care of them.