

## **Nobel Prize for Physiology and Medicine**

2012 Prize went to Dr.S.Yamanaka and Dr.J.Gurdon for Discovery that mature cell can be reprogrammed to become pluripotent.

The classical John Gurdon's cloning experiments which led to Nobel Prize was published in 1960 and showed that all the information needed to regenerate all of the animal's cells is preserved during cell development and specialization of cells is reversible. He replaced nucleus of an egg cell of frog with nucleus of intestinal cell. This modified egg cell developed in to a normal tadpole. This was the first cloning of vertebrate. His findings were confirmed later which saw the birth of Dolly, the world's first cloned mammal – a sheep that was produced according to the principle that Gurdon had used in his frog experiments.

More than 40 years after Gurdon's discovery, Shinya Yamanaka performed experiments which showed that specialized mature cells could get back to immature state without the help of an egg cell. He first discovered in mice that this reprogramming could be accomplished by just four specific gene control agents (Transcription factors) in the egg. By injecting the four agents into an adult cell, the cells were able to walk back to its primitive, or stem cell form. Stem cells generated by this method, known as induced pluripotent cells, or iPS cells, could then be made to mature into any type of adult cell in the body, such as the liver, lungs and brain,a finding with obvious potential for medical benefits.

Source of this information

[http://www.nobelprize.org/nobel\\_prizes/medicine/laureates/2012/presentation-speech.html](http://www.nobelprize.org/nobel_prizes/medicine/laureates/2012/presentation-speech.html)