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ASIA EDITION

Japan uses Dolly sheep's method to clone mouse

11 March 2013 | News | By BioSpectrum Bureau

Singapore: Researchers from the RIKEN Center for Developmental Biology in Kobe, Japan, have used the same technique that was used to create Dolly the sheep, and have identified a way to produce healthy mouse clones that live a normal lifespan and can be sequentially cloned indefinitely. Their study is published in the journal *Cell Stem Cell*.

In an experiment that started in 2005, the team led by Dr Teruhiko Wakayama used a technique called somatic cell nuclear transfer (SCNT) to produce 581 clones of one original 'donor' mouse, through 25 consecutive rounds of cloning. SCNT is a widely used cloning technique whereby a cell nucleus containing the genetic information of the individual to be cloned is inserted into a living egg that has had its own nucleus removed. It has been used successfully in laboratory animals as well as farm animals.

However, until now, scientists hadn't been able to overcome the limitations of SNCT that resulted in low success rates and restricted the number of times mammals could be recloned. Attempts at recloning cats, pigs and mice more than two to six times had failed. To prevent possible epigenetic changes, or modifications to DNA function that do not involve a change in the DNA itself, Wakayama and his team added trichostatin, a histone deacetylase inhibitor, to the cell culture medium.

Using this technique, they increased cloning efficiency by up to six-fold. By improving each step of the SCNT procedure, they were able to clone the mice repeatedly 25 times without seeing a reduction in the success rate. The 581 healthy mice obtained in this way were all fertile, they gave birth to healthy pups and lived a normal lifespan of about two years, similar to normally conceived mice. Dr Wakayama's work made the news in 2008 when his team created clones from the bodies of mice that had been frozen for 16 years, using SCNT.

Dr Wakayama, said that, "One possible explanation for this limit on the number of recloning attempts is an accumulation of genetic or epigenetic abnormalities over successive generations. Our results show that there were no accumulations of

epigenetic or genetic abnormalities in the mice, even after repeated cloning. This technique could be very useful for the large-scale production of superior-quality animals, for farming or conservation purposes."