THE STRAITS TIMES
Print Article

>> Back to the article

Oct 16, 2009

NUS team makes cloning breakthrough

The manipulation of cells took five years to complete and cost $1.5 million

SCIENTISTS in Singapore have become the first to 'semi-clone' an animal by fertilising an egg with an embryonic stem cell that mimics sperm.

Holly, a 4cm-long medaka fish, is now 15 months old and a great-grandmother, with a family of more than 100 fish which are able to reproduce normally and healthily.

The success by the scientists from the National University of Singapore may spell promise in future for infertile couples.

The key to the discovery is that scientists managed to generate a haploid DNA cell which mimics sperm. The isolation and manipulation of these cells took five years to complete, and cost $1.5 million.

The work by Associate Professor Hong Yunhan of the National University of Singapore's Department of Biological Sciences came through persistence - he continued his work to create haploid cells even when Nobel Prize winners had given up.

In essence, what the scientists did was to take eggs from one fish, and sperm from another.

The sperm cells were then zapped with UV rays to strip them of their DNA code, and these were then used to 'fertilise' the eggs.

As only one set of DNA was contained in the eggs, the resulting division created haploid cells. These cells were then combined with eggs from another fish, and Holly was born.

This method opens up the possibility of obtaining a haploid cell from a man, enabling him to pass on his DNA even if he is infertile.

That will be some time in the future, however, as further tests will still need to be carried out.

There will also be ethical hurdles to cross: Scientists and others have long debated the issue of whether it is right to clone humans.

For now, though, scientists here are celebrating what they say is akin to turning science fiction into reality.

'Eight years ago, semi-cloning was science fiction. Our work with the fish as a first model has revealed the possibility of carrying it out on vertebrates, to which humans belong,' said Prof Hong.

Holly is quite different from animals like Dolly, the world's first cloned sheep, and the myriad of others that came after her.

Instead of a clone, which is an exact genetic replica of an organism, Holly is a semi-clone with a unpredictable genetic code - similar to how it occurs in nature.

Dr Alan Colman, a principal investigator at the Agency for Science, Technology and Research's Institute of Medical Biology, executive director of the Singapore Stem Cell Consortium, as well as one of the creators of Dolly, said the isolation of a haploid cell was interesting and valuable to science.

He said: 'The reason haploid cells are desirable is that all of us have two copies of each gene.'

He explained that being able to look at a human haploid cell, if one day possible, will allow scientists to study and treat genes that cause diseases such as cancer, Alzheimer's and Parkinson's.

The next step for Prof Hong's team is to seek international collaboration to try and carry out its work on mice. Such a study will take about five years and, if successful, will proceed to trials with monkeys and, finally, humans.

Dr Benjamin Capps of the Centre for Biomedical Ethics at NUS' Yong Loo Lin School of Medicine said: 'The

results of this study are closer to IVF - replacing the role of sperm with that of an artificially created haploid cell - and so raise little immediate ethical concern as a technique.'

Prof Hong, however, noted: 'It will be interesting to see whether human society would accept these semi-cloned children once the technology is established in humans.'

S	M	T	W	T	F	S
04	05	06	07	08	09	10
11	12	13	14	15	16	17

Take Our Poll Site Map FAQ About U
RSS News Alert STI Widgets Newsli
Best viewed at 1152x864 resolution
Copyright © 2008 Singapore Press H
198402868E | Privacy Statement | T