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Researchers find safer way to make stem cells

By: *BEN HIRSCHLER*

LONDON (Reuters) - Researchers said on Sunday they had found a safer way to transform ordinary skin cells into powerful stem cells in a move that could eventually remove the need to use human embryos.

It is the first time that scientists have turned skin cells into induced pluripotent stem cells or iPS cells -- which look and act like embryonic stem cells -- without having to use viruses in the process.

The new method also allows for genes that are inserted to trigger cell reprogramming to be removed afterwards.

Stem cells are the body's master cells, producing all the body's tissues and organs.

Embryonic stem cells are the most powerful kind, as they have the potential to give rise to any tissue type. However, many people object to their use, making iPS cells an attractive alternative, provided they can be made safely.

Researchers have known for some time that ordinary skin cells can be transformed into iPS cells using a handful of genes.

But to get these genes into the cells they have had to use viruses, which integrate their own genetic material into the cells they infect. This can cause cancer.

The alternative approach, described in the online edition of the journal *Nature* by two teams of researchers from Britain and Canada, appears to avoid the risk of such abnormalities.

"PIGGYBAC" RIDE

The researchers harnessed a little piece of DNA called a transposon -- sometimes known as a "jumping gene" because of its ability to move around inside the genetic code -- to carry four genes.

The version used is dubbed "piggyBac" and has been used by researchers to genetically modify a range of organisms.

"It is a step towards the practical use of reprogrammed cells in medicine, perhaps even eliminating the need for human embryos as a source of stem cells," said Keisuke Kaji from the Medical Research Council (MRC) Centre for Regenerative Medicine in Edinburgh.

He and Andras Nagy from the University of Toronto used the technique in both mouse and human skin cells and found the reprogrammed cells behaved just like embryonic stem cells.

Ian Wilmut, head of the MRC centre and one of the scientists who cloned the first mammal, Dolly the sheep, said it would take time before the new iPS cells could be given to patients, but the new technique was an important step forward.

"Combining this work with that of other scientists working on stem cell differentiation, there is hope that the promise of regenerative medicine could soon be met," he said.

Doctors hope one day to use stem cells to treat diseases such as Parkinson's, diabetes, cancer and spinal cord injuries.