

Scientists find 'key' to cell reprogramming

New finding by S'pore team can kickstart switch to stem cells, boosting fight against diseased cells

■ BY LIAW WY-CIN

SCIENTISTS here have found a new "key" which plays a vital role in turning the clock back for cells.

This key is one of only a handful which can change mature, specialised cells in the body back into general ones capable of becoming any type of cell.

In other words, it means a patient's cheek cells, for instance, can be coaxed into developing into cells known as pluripotent stem cells. Such cells, named for their potential to develop into other types of cells, can in turn be made to grow into, say, liver cells to replace the patient's own diseased liver cells.

Doctors are excited because, since the cells are the patient's own, his body will not reject the new tissue or organ made up from these "recycled" cells.

And if cells for new tissues or organs can come from the patient himself, doctors can circumvent the thorny ethical issue of harvesting similarly versatile stem

cells from human embryos, a process that involves destroying the embryos.

The cell-changing therapy, known as cell reprogramming, was discovered three years ago by Japanese scientists, who found that a combination of three proteins - Oct4, Sox2 and Klf4 - could activate cell reprogramming in mice. Since 2006, scientists have been able to create heart and liver cells from skin cells in mice.

The Singapore scientists' contribution to the field is their discovery of a fourth protein, Esrrb, which can kickstart such changes in cells. The researchers, hailing from the Genome Institute of Singapore (GIS) and the National University of Singapore (NUS), spent the past year screening about 10 proteins to make the find.

The team's findings were published yesterday in the esteemed science journal, *Nature Cell Biology*.

A scientist not involved in the project, NUS' Associate Professor Herbert Schwarz, said the finding implied many other genes can reprogramme mature cells into stem cells, "not just the ones found by the Japanese group in 2006".

GIS' Dr Ng Huck Hui said his team will continue to look for more cell reprogramming keys. "The more keys we have, the more we can understand what's happening during cell reprogramming," he said.

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