

## Stem cells replicate, but not the way we think: Study

New findings have shed light on the little known process of embryonic stem cell replication and would help scientists control tumour cell growth more effectively.

"Our study suggests that what we believe about how embryonic stem cell self-renewal is controlled is wrong. Our findings will likely change the research direction of many stem cell laboratories," said Qi-Long Ying, of University of Southern California and co-author of the paper.

This study presents a completely new paradigm for understanding how to grow embryonic stem cells in the lab," said Martin Pera, also a co-author.

"The discovery has major implications for large scale production of specialised cells, such as brain, heart muscle and insulin producing cells, for future therapeutic use," he added.

The findings, while negating current understanding of stem cell self-renewal and differentiation, also suggest that they will remain unchanged if shielded from differentiation signals.

Small molecules can be applied to block the chemicals from activating the differentiation process, enabling the cell is to self-renew or multiply, as generic stem cells.

Embryonic stem cells have only been derived from a very small number of species.

"We believe the process we discovered in mice may facilitate the derivation of embryonic stem cells from species like pigs, cows or other large animals, which have not been done before," added Ying.

With better understanding of this process of embryonic stem cells multiplication, researchers have additional insight on tumour cell growth as these cells share similar qualities.

"Our study reveals part of the little known process of how embryonic stem cells multiplication is regulated. This is important for us in understanding how to control tumour cell growth moving forward in cancer research," said Ying.

The findings of the study have been published in the latest issue of the journal Nature.

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