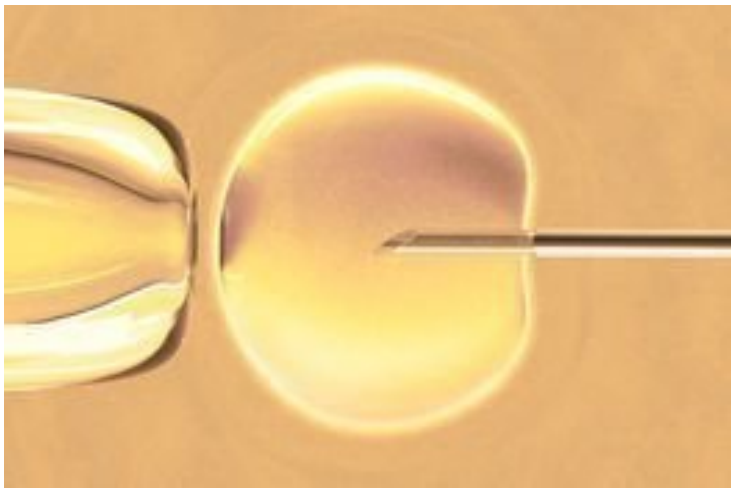
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Embryonic stem cells remain a sticky wicket

January 31, 2013 | Analysis | By Piyusha Chatterjee



Dr Shinya Yamanaka and Sir John Gurdon's discovery of induced pluripotent stem cells (iPS) has given the world an alternative to using human embryonic stem cells for many purposes, a lot of work is still required to be done in order to understand the true nature of iPS cells and whether they are totally replaceable. Meanwhile, research on human embryonic stem (ES) cells is witnessing its ups and downs.

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Professor Martin Pera, program leader, Stem Cells Australia, says that, "Although there are encouraging signs that some of the goals of embryonic stem cell research, particularly the use of pluripotent stem cells as research and discovery tools, will be met by iPS cells, it is still too early to assume that iPS and ES cells are essentially equivalent in all properties."

He further says, "In particular, it remains to be seen whether iPS cells will be as suitable a platform for cell therapy as ES cells. The answer may take some time to emerge." Stem Cells Australia is a collaboration between Australia's leading research universities and research organizations in stem cell science, who are trying to find the answer to this very fundamental question.

Recently, the US Supreme Court decided to drop a lawsuit that would have blocked federal funding of all research on human embryonic stem cells. The decision cleared the gloom over the field for more than three years since the lawsuit was filed. Different countries have different sets of dos and don'ts regarding human ES cell research and scientists have to make their way through myriad sets of rules and regulations to even start working on their proposals.

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Dr Deepak Srivastava, who directs cardiovascular and stem cell research at Gladstone Institutes in the US, agrees. He says that since iPS technology is so new, it is still critical to fund and conduct human embryonic stem cell research.

"Knowledge gained from research with embryonic stem cells, in part, helped Dr Yamanaka discover iPS technology. Researchers are still learning many important things about the safest and most efficient ways to create iPS cells for drug discovery, personalized medicine and tissue regeneration," he points out. "To further refine iPS technology for such promising purposes, scientists still need to measure iPS cells against the 'gold standard' of actual human embryonic stem cells."