Cells derived from different stem cells: Same or different?

May 2 2011

There are two types of stem cell considered promising sources of cells for regenerative therapies: ES and iPS cells. Recent data indicate these cells are molecularly different, raising the possibility that cells derived from the two sources could be distinct. New research, however, has determined that there is considerable overlap in the genetic programs of thyroid, lung, liver, and pancreas progenitors derived from ES and iPS cells and these progenitors isolated from mouse embryos.

Stem cells are considered by many to be promising candidate sources of cells for therapies to regenerate and repair diseased tissues. There are two types of stem cell considered in this context: embryonic stem (ES) cells, which are derived from early embryos; and induced pluripotent stem (iPS) cells, which are derived by reprogramming cells of the body such that they have the ability to generate any cell type. Recent data indicate that ES and iPS cells are molecularly different, raising the possibility that cells derived from these two sources could be distinct.

A team of researchers, led by Darrell Kotton and Gustavo Mostoslavsky, at Boston University School of Medicine, Boston, has now, however, determined that mouse iPS and parental ES cells show highly similar capacity to be differentiated in vitro into definitive endoderm progenitors — the cells from which thyroid, lung, liver, and pancreas are derived. Importantly, there was considerable overlap between the genetic programs of definitive endoderm derived from ES and iPS cells in vitro and definitive endoderm isolated from mouse embryos. The authors therefore conclude that their data support the notion that iPS cells could

be used for the development of cell-based therapies for diseased endoderm-derived tissues.

More information: View this article at: www.jci.org/articles/view/4385 … 1acccf69de7b78a41298

Provided by Journal of Clinical Investigation