Stem cell creation technique changes their usability

In the process of converting a somatic cell to a stem cell, researchers have questioned whether the resulting cells retain characteristics of their prior, non-stem-cell states. Applying two pioneering approaches to create human pluripotent stem cells from somatic cells—by inducing pluripotent stem cells (iPSCs) or using a process called somatic cell nuclear transfer (SCNT)—researchers from Oregon Health & Science University (OHSU) and their colleagues have compared the genomic and epigenomic landscapes of the resulting cell types. They found that the genomes of stem cells created through SCNT more closely match those of embryonic stem cells (ESCs) derived from early human embryos. The team's comparative analysis was published July 2 in Nature.

Both iPSCs and SCNT-derived cells showed similar numbers of acquired genomic deletions and duplications. But while the iPSCs retained some of the epigenetic and gene expression patterns of their parental somatic counterparts, the SCNT-derived cells had transcriptional and epigenetic patterns that were more like in vitro fertilized (IVF) ESCs, which are considered the most authentic form of ESCs, as they are directly isolated from human embryos.

Unlike IVF ESCs, however, patient-derived somatic cells reprogrammed into pluripotent stem cells present a better opportunity for patient-tailored therapies—they overcome the issue of donor-recipient matching.

Read the full, original story: Not All Stem Cells Created Equal