

Human skin cells morphed into embryonic stem cell-like cells

A simple growth factor cocktail (Oct3/4, Sox2, Klf4, and c-Myc) can transform adult human skin cells into cells that resemble embryonic stem cells, researchers reported in *Cell*. The converted cells have many of the physical, growth, and genetic features typically found in embryonic stem cells and can differentiate to produce other tissue types, including neurons and heart tissue, according to the researchers. However, a comprehensive screen of the activity of more than 30,000 genes showed that the so-called “induced pluripotent stem (iPS) cells” are similar, but not identical, to embryonic stem cells. The findings might sidestep the ethical stumbling blocks of stem cells obtained from human embryos. In a related study published in *Science*, workers analyzed a variety of human genes known to be involved in establishing or maintaining pluripotency and whose expression is enriched in embryonic cells. Narrowing the list, they identified four core genes—OCT4, NANOG, SOX2, and LIN28—that were most likely to be capable of reprogramming human cells. They inserted these genes into differentiated embryonic stem cells, fetal fibroblasts, or postnatal foreskin fibroblasts. The resulting cells had many features of embryonic stem cells, including the expression of key genes and cell surface markers. (*Cell*, published online 20 November 2007, doi:10.1016/j.cell.2007.11.019, and *Science*, published online 20 November 2007; doi:10.1126/science.1151526)