

Advanced Cell Technology

<http://www.advancedcell.com/patients/human%2Dembryonic%2Dstem%2Dcells/>

## **Human Embryonic Stem Cells**

Human embryonic stem cells (hESCs) are derived from pre-implantation embryos by transferring cells from the embryo into a culture dish and then growing these cells under specific conditions. Most embryonic stem cells are derived from embryos that are used as part of in vitro fertilizations at fertility clinics, and are then donated for research.

Stem cells are self-renewing, “primitive” cells that have the ability to develop into functional, differentiated cells. In general, there are two broad categories of stem cells: adult stem cells and embryonic stem cells. Adult stem cells, also known as multipotent stem cells, are derived from various tissues of the human body. Multipotent means these cells can develop into multiple, but not all, types of cells in the body. Embryonic stem cells, referred to as ES cells, are derived from pre-implantation embryos. These cells are pluripotent, which means that they can develop into all cells and tissues in the body. They also self-renew indefinitely in their undifferentiated state. This ability of ES cells to continue cell division indefinitely without losing pluripotency is a unique characteristic that distinguishes them from all other stem cells discovered to date in humans.

Since the discovery of the human embryonic stem cell (hESC), medical researchers worldwide have generally recognized the significance of this new technology and many have begun to focus their research on the translation of this discovery into important new therapies for degenerative human disease.