

Stem Cell and Cloning Glossary

Adult Stem Cell: A stem cell from organs and tissues, usually after birth (including umbilical cord and placenta), that can renew itself and transform into other specialized cell types.

Assisted reproductive technology: Fertility treatments that involve a laboratory handling eggs or embryos, such as in vitro fertilization.

Blastocyst: Early stage of embryo, approximately 5-7 days after conception (50-250 cells.)

Cloning: Creation of an animal or person that derives its genes from a single other individual; “asexual reproduction”. Creating a copy that is virtually identical to the original (can be done with molecules, cells, and whole organisms.)

Chromosomes: Contain genes, working stretches of DNA that carry the genetic code for specific proteins. Normal human cells contain 46 chromosomes; mature normal human gametes have 23 chromosomes.

Differentiation: The process by which early unspecified cells become specialized cells such as heart, liver, muscle, or brain tissue.

DNA: DeoxyriboNucleic Acid. The genetic material that contains the instructions for making an entire organism.

Embryo: The earliest stage of human development, from the single cell zygote up to about 8 weeks.

Embryonic germ cell: A cell in the embryo/fetus that normally develops into mature gametes.

Embryonic stem cell: A cell from the inner mass of cells of a blastocyst, with the potential to become most or all of the body tissues.

Fetus: The human being from 8 weeks after conception to birth.

Gamete: A mature germ cell (egg or sperm), which unites with another in sexual reproduction.

Gene: A unit of heredity that is a segment of DNA located on a specific site on a chromosome.

In vitro: Done outside of the body.

In vivo: Done within the living body.

Multipotent: Capable of giving rise to several specialized cells or tissues of an organism.

Nucleus: The core of a cell that contains the chromosomes (genetic material.)

Pluripotent: Capable of giving rise to most tissues of the adult body.

“Reproductive Cloning” (Live-Birth Cloning): All cloning is reproductive in that it creates – reproduces – a new developing human intended to be virtually identical to the cloned subject. The term “reproductive cloning” has been used to signify the implantation into a womb of a cloned embryo, in hopes of a live birth.

Somatic cell: Cell of the body other than a gamete (other than an egg or sperm.)

Somatic cell nuclear transfer: Cloning. The transfer of a cell nucleus from a body cell into an egg from which the chromosomes have been removed or inactivated; the method used for cloning of an organism. Once the transferred genome is within the egg cell and a one-cell embryo is created, the process of cloning is complete and further development of the clone can occur.

Stem cells: Unspecialized cells with the capacity to self-renew and to transform into other mature cell types

“Therapeutic Cloning” (Experimental Cloning): Creating a cloned embryo for the purpose of destroying it to harvest embryonic stem cells or tissues, or for other experimental studies.

Tissue culture or cell culture: Growth of cells or tissues in a laboratory dish for experimental research.

Totipotent: Capable of giving rise to all tissues and organs, including placenta.

Zygote: A one-cell embryo. Even at this stage the embryo is a human being (species *Homo sapiens*).

