

# Glossary

**adult stem cell** - An unspecialized or undifferentiated cell found among specialized cells in a tissue or organ, which can renew itself and differentiate into a specialized cell.

**autoimmune disease** – A disease where ones own body starts attacking itself and destroying ones own cells.

**β-cell** – A cell in the pancreas which is responsible for the production and regulation of insulin.

**blastocyst** – A preimplanted embryo of 30-150 cells that is 5-6 days-old.

**cell-based therapies** –Treatment in which stem cells are induced to differentiate into the specific cell type required to repair damaged or depleted adult cell populations or tissues.

**characterizing stem cells** – Determining how a cell grows, where the cell came from, how it was derived, and if there are any chromosomal abnormalities.

**cloning** – In biology, it is the act of producing an exact copy of a sequence of DNA, cell, tissue, or organism.

**Department of Human and Health Services (DHHS)** - The United States government's principal agency for protecting the health of all Americans. It provides essential human services, especially for those who are least able to help themselves.

**deriving** – The creation of a cell line from one original cell or set of cells.

**differentiation** – The process of unspecialized cells transforming into specialized cells.

**embryo** – In humans, the developing organism from the time of fertilization until the end of the eight week, when it become known as a fetus.

**embryonic stem cell** - An unspecialized or undifferentiated cell found in the inner cell mass of a blastocyst, which can renew itself and differentiate into a specialized cell.

**fetus** – A developing human from the eighth week after fertilization to birth.

**gamete** – a mature sexual reproductive cell (sperm or egg) having a single set of unpaired chromosomes.

**hematopoietic stem cell** – An adult stem cell from which all white and red blood cells evolve.

**Human Fertilisation and Embryology Authority (HFEA)** – The governmental authority in the United Kingdom that regulates in vitro fertilization and embryo research.

**inner cell mass** – A small group of about 30 cells in a blastocyst which will gives rise to the hundreds of highly specialized cells needed to make up an adult organism; embryonic stem cells are derived from this group.

**insulin** – A hormone in the body that balances blood sugar levels.

**in vitro** – From the Latin for “in glass”; in a laboratory dish, test tube, or artificial environment.

**in vitro fertilization (IVF)** – An assisted reproduction technique in which fertilization is accomplished outside the body.

**in vivo** – In the living subject; the natural environment.

**juvenile diabetes** – Also known as type 1 diabetes, it is an autoimmune disease where the β-cells in the pancreas are destroy and therefore the individual loses some or all of their ability to regulate and produce insulin. Left untreated it can have severe side effects such as kidney failure, blindness, stroke and even death.

**Medical Research Council (MRC)** - The national organization in the United Kingdom that promotes research in all areas of medical and related science.

**National Bioethics Advisory Council (NBAC)** - A committee of experts during the Clinton administration that was formed in 1995 to provide advice and make recommendation to appropriate government entities related to bioethical issues. Their charter expired in October 2001.

**National Institutes of Health (NIH)** – An agency of the Department of Human and Health Services, its mission is the pursuit of knowledge about nature and behavior of living systems. It provides leadership and direction to programs designed to improve the health by conducting and supporting research: in the causes, diagnosis, prevention, and cure of human diseases; in the processes of human growth and development; in the biological effects of environmental contaminants; in the understanding of mental, addictive and physical disorders; in directing programs for the collection, dissemination, and exchange of information in medicine and health, including the development and support of medical libraries and the training of medical librarians and other health information specialists.

**nucleus** – A structure within a living cell that contains the cell's DNA and controls its metabolism, growth, and reproduction.

**oocytes** – A female cell that develops into an ovum (egg) after meiosis; an egg before maturation.

**ovum** (plural is ova) – The female reproductive cell or egg.

**pluripotent** – The ability of a single cell to develop into many different cell types of the body.

**President's Council on Bioethics (PCB)** - A committee of experts during the Bush administration that was formed in 2001 (after the NBAC was disbanded) to provide the President with advice on bioethical issues that may emerge as a result of biomedical science and technology.

**proliferation** – Expansion of a population of cells by the continuous division of single cells into two identical cells.

**quiescent** – A cell that does not divide or replicate.

**reproductive cloning** - When an egg undergoes somatic cell nuclear transfer and the resulting cell is allowed to grow to an infant that is an exact copy of the donor.

**signals** – Internal and external factors that control the changes in cell structure and function.

**somatic cell** – Any cell of a plant or animal other than the germ (sperm or egg) or germ precursor cell.

**somatic cell nuclear transfer** - When the genetic material (nucleus) of an egg is removed and replaced with the genetic material of a normal cell.

**stem cell** - An unspecialized cell that can replicate itself for indefinite periods through cell division and under certain conditions become a specialized cell.

**therapeutic cloning** - When embryonic stem cells created by somatic cell nuclear transfer are studied *in vitro* and used for cell-based therapies, but never are implanted in a female or grown past 14 days.

**undifferentiated cell** – A primitive cell that does not have any tissue-specific structures that allows it to perform specialized functions. Not having changed to become a specialized cell.

**zygote** – The cell (and the organism that develops from the cell) resulting from the union of an ovum and spermatozoon (also referred to as a fertilized ovum).