

GLOSSARY OF TERMS

adult stem (AS) cells – stem cells derived from certain adult tissues (such as bone marrow, brain, skin, intestine, and blood cells of the umbilical cord at the time of birth). They are more differentiated than embryonic stem cells or embryonic germ cells.

assisted reproductive technology (ART) – all treatments or procedures that involve the handling of human eggs and sperm for the purpose of helping a woman become pregnant. Types of ART include *in vitro* fertilisation, gamete intrafallopian transfer, zygote intrafallopian transfer, embryo cryopreservation, egg or embryo donation, and surrogate birth.

blastocyst – a preimplantation embryo of 30-150 cells. The blastocyst consists of a sphere made up of an outer layer of cells (the trophoctoderm), a fluid filled cavity (the blastocoel), and a cluster of cells on the interior (the inner cell mass).

bone marrow – the soft, living tissue that fills most bone cavities and contains hematopoietic stem cells, from which all red and white blood cells evolve. The bone marrow also contains mesenchymal stem cells that a number of cells types come from, including chondrocytes, which produce cartilage.

cadaveric – of, pertaining to, or resembling, a corpse, or the changes produced by death; cadaverous; as, cadaveric rigidity.

chromosomes – nucleic acid-protein structures in the nucleus of a cell. Chromosomes are composed chiefly of DNA, the carrier of hereditary information. Chromosomes contain genes, working subunits of DNA that carry the genetic code for specific proteins, interspersed with large amounts of DNA of unknown function. A normal human body cell contains 46 chromosomes; a normal human gamete, 23 chromosomes.

clones – two or more organisms that have exactly the same DNA. Identical twins are naturally occurring human clones.

cloning – the production of an exact genetic copy of all the genetic material in a molecule (including DNA), cell, tissue, plant, animal, or human.

cloning technology – linked with human stem cell research. A distinction between reproductive cloning and therapeutic cloning is drawn. (See reproductive cloning and therapeutic cloning).

differentiation – the specialisation of characteristics or functions of cell types.

DNA – Deoxyribonucleic acid, a chemical found primarily in the nucleus of cells. DNA carries the instructions for making all the structures and materials the body needs to function.

embryo – the beginning of any organism in the early stages of development; a stage (between the ovum and the foetus) in the prenatal development of a mammal.

embryonic germ (EG) cells – stem cells which originate from primordial reproductive cells of developing foetuses, and can be derived from cadaveric foetal tissues.

embryonic stem (ES) cells – stem cells which originate from early human embryos and may be obtained from human embryos created by in vitro fertilisation (IVF), by cloning techniques, or from existing embryonic stem cells lines. ES cells are primitive (undifferentiated) cells from the embryo that have the potential to become a wide variety of specialised cells.

fertilisation – the process whereby male and female gametes unite.

gene – a functional unit of heredity that is a segment of DNA located in a specific site on a chromosome. A gene directs the formation of an enzyme or other protein.

genome – the complete genetic material of an organism.

germ cells – gametes (ova and sperm) or the cells that give rise directly to gametes.

immunogenic – relating to or producing an immune response.

in utero – in the uterus.

in vitro – in an artificial environment, such as a test tube or culture medium

in vitro fertilisation (IVF) – an assisted reproduction technique in which fertilisation is accomplished outside the body.

in vivo – in the natural environment (i.e., within the body)

neural tube – the embryological forerunner of the central nervous system.

pluripotent stem cell – a single stem cell that has the capability of developing cells of all germ layers (endoderm, ectoderm, and mesoderm).

pre-implantation embryo – the embryo before it has implanted in the uterus; term commonly used to refer to *in vitro* fertilised embryos before they are transferred to a woman's uterus.

primitive streak – the initial band of cells from which the embryo beings to develop. The primitive streak establishes and reveals the embryo's head-tail and left-right orientations.

reproductive cloning – refers to the application of cloning technology to animal or human cells that result in the creation of a complete animal or human being.

somatic cell nuclear transfer (SCNT) – the transfer of a cell nucleus from a somatic cell into an egg from which the nucleus has been removed.

somatic cells – [from *soma* – the body] 1) all cells of an organism with the exception of germ cells. 2) cells of the body which in mammals and flowering plants normally are made up of two sets of chromosomes, one derived from each parent.

stem cells – unspecialised cells that are able to differentiate into a range of cell types with specialised functions. A stem cell has the ability to divide for indefinite periods in culture and to give rise to specialised cells. There are three widely recognised types of stem cells- adult stem cells, embryonic stem cells, and embryonic germ cells.

stem cell line – a colony of stem cells, taken from a single embryo, that can reproduce themselves indefinitely.

therapeutic cloning – describes the use of cloning technology on stem cells for therapeutic or research purposes that do not result in the creation of a complete animal or human being. Therapeutic cloning is believed to hold potential for furthering the understanding and treatment of human diseases.

tissue culture – growth of tissue in vitro on an artificial medium for experimental research.

totipotent – having unlimited capacity. The totipotent cells of the very early embryo have the capacity to differentiate into extra-embryonic membranes and tissues, the embryo, and all postembryonic tissue and organs.

zygote – the cell resulting from the fusion of two gametes in sexual reproduction; a fertilized egg (ovum); the diploid cell resulting from the union of a sperm and an ovum; the developing organism during the first week after fertilisation.