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Glossary of Biotechnology Terms Relevant to Human Cloning

- Cell -** The smallest unit of life. All living organisms consist of cells.
- Prokaryotic Cells -** Bacterial cells
- Eukaryotic Cells -** Animal and plant cells
- Nucleus -** An oval structure in the inside of eukaryotic cells; it contains chromosomes and DNA
- DNA (deoxyribonucleic acid)-** The chemical substance that encodes genetic information. A major constituent of chromosomes. Organized into genes.
- RNA (ribonucleic acid) -** A chemical substance that can be made as a mirror image copy of the DNA; the RNA can carry the message of the genetic code out of the nucleus and into other parts of the cell. The RNA provides the instructions to make protein.
- Protein(s) -** Chemical substances that constitute the physical and mechanical working substances in the cell. Proteins are made following the instructions provided by RNA.
- Molecular Cloning/
Recombinant DNA
technology -** The experimental ability to make millions of identical copies of a single piece of DNA or a single gene and to then also produce the protein product of that gene, either inside or outside of the cell. This method is currently being used to make pharmaceuticals and vaccines and to produce products for correction of genetic abnormalities.

**Twinning/Cloning
by Egg Division -**

The process in which one early embryo (2,4 or 8 cell stage) is divided into single cells and the cells implanted each into a single foster mother for gestation of a whole newborn animal. The process produces genetically identical twins (from 2 to 8) and is used in agriculture to improve breeding stock. It has also been used, to a limited extent, to produce genetically identical higher organisms (such as rhesus monkeys) for use in research.

**Organism Cloning/
Dolly the Sheep/
"The Boys in Brazil"
Scenario -**

This type of clone is generated by taking an adult cell from an organism and somehow causing that cell to reproduce an entire, intact, genetically identical newborn animal. In the case of the "Dolly" experiment, a sheep egg had the nucleus removed; in the place of the removed nucleus, an adult cell nucleus from another sheep was transferred. The resulting hybrid cell was then implanted into a foster mother and gestation allowed to occur. Out of hundreds of attempts, only 1 sheep identical to the adult cell donor was produced.