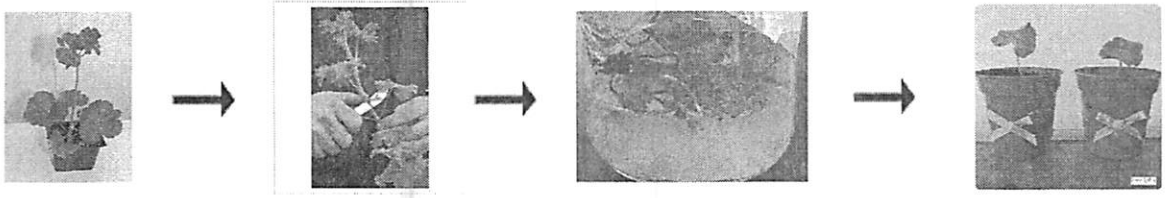
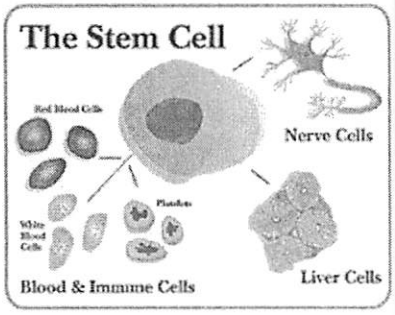
CLONING

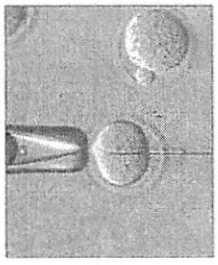
Cloning is the process by which an individual organism is produced that is genetically identical to the original organism. This can be performed with plants, animals, and all other living things.

Cloning can be as simple as using cuttings from plants... resulting in plants that are genetically identical to the original plant.



Cloning can also be very complex like when cloning animals and can involve cells and nuclear transfer. There is therapeutic cloning that creates new _____, _____ or organs while reproductive cloning creates an entire _____





_____ _____

_____ CELLS

-Like little kids that can grow up to _____ in whatever they want.

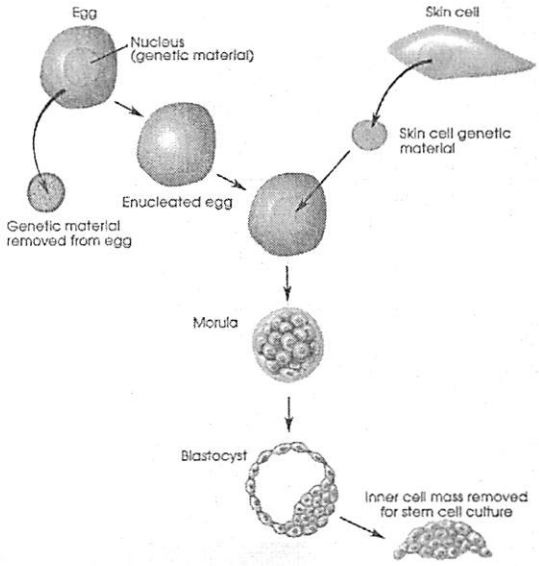
-Can develop into any type of cell (skin, lung, heart, muscle, etc.).

-First cells to form from _____ in developing embryos and are also found in the umbilical cord.

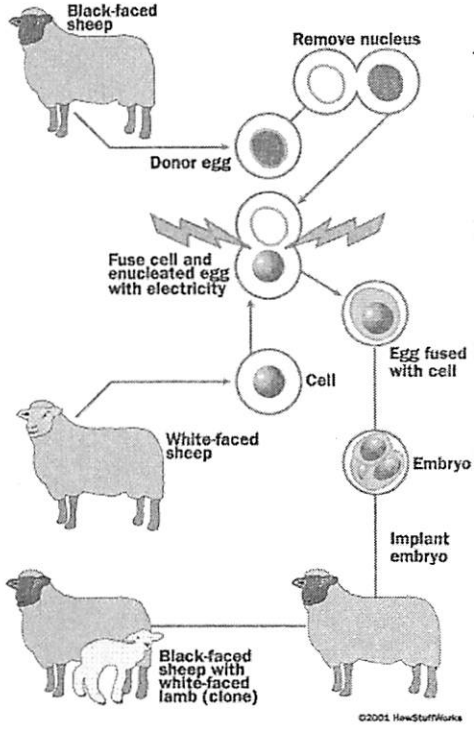
-Found in the bone marrow, brain, heart, blood vessels, skeletal muscle, and many other organs and tissues in adults

Nuclear Transfer Therapeutic Cloning

1. _____ removed from a donor egg
2. Somatic (skin cell) removed from organism to be cloned
3. Donor egg _____ somatic cell nucleus
4. Cell is pulsed with electricity
5. Cell begins to _____ (mitosis) and develops into an embryo
6. _____ cells removed from the embryo
7. Stem cells used to _____ needed cells, tissue, or organ



Nuclear Transfer Reproductive Cloning



1. _____ removed from a donor egg (black faced sheep)
2. Somatic (body cell) removed from organism to be cloned
3. _____ egg receives somatic cell nucleus
4. Cell is pulsed with electricity
5. Cell begins to divide (mitosis) and develops into an embryo
6. Embryo _____ into egg donor black-faced sheep
7. Embryo develops and white-faced sheep is born