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Therapeutic cloning andfFuture prospective of regenerative medicine

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Background: In biology, cloning refers to the process of producing similar populations of genetically identical individuals that occurs in nature. In biotechnology, it refers to the processes used to create copies of DNA fragments (molecular cloning), cells (cell cloning) or organisms.

Method: Somatic-cell nuclear transfer (SCNT) can also be used to create embryos for research or therapeutic purposes. The most likely purpose for this is to produce embryos for use in stem cell research. This process is also called research cloning or therapeutic cloning (TC). TC is cloning specific human cells, genes and other tissues that do not and cannot lead to a human being. The goal is to harvest stem cells that can be used to study human development and to potentially treat disease. TC techniques are integral to the production of breakthrough medicines, diagnostics and vaccines to treat many diseases. They could also produce replacement skin, cartilage, bone tissue, retinal and spinal cord tissue by the technology of regenerative medicine. The process begins by removing the nucleus from an egg cell and inserting a nucleus from the adult cell to be cloned. In the case of someone with spinal cord injury, the nucleus from a skin cell of that patient is placed into an empty egg. The reprogrammed cell begins to develop into an embryo because the egg reacts with the transferred nucleus. The embryo will become genetically identical to the patient. The embryo will then form a blastocyst which has the potential to become any cell in the body. In SCNT, not all of the donor cell's genetic information is transferred, as the donor cell's mitochondria that contain their own mitochondrial DNA are left behind. We should keep in mind that every 30 seconds, a patient dies from diseases that could be treated with tissue replacement.