



BEDFORD RESEARCH FOUNDATION

WHAT IS A STEM CELL?

A reserve cell with the capacity to multiply when needed to replace dead or damaged adult cells. Reserve stem cells are lacking, however, in many vital tissues, including: heart, spinal cord, brain and pancreas. Scientists are developing new sources of stem cells for these tissues.

WHAT IS A PARTHENOGENIC STEM CELL?

Parthenotes are eggs that have been artificially activated without sperm. This happens spontaneously in nature in all mammals, the egg undergoes early cell divisions similar to fertilized eggs, but cannot give rise to an offspring. Parthenotes can, however, give rise to potentially valuable pluripotent stem cells, as has been demonstrated for monkey parthenotes. Human parthenote stem cell research cannot be funded by the National Institutes of Health because of the Wicker amendment.

WHAT IS AN EMBRYONIC STEM CELL?

A stem cell derived from eggs fertilized by sperm; embryonic stem cells are pluripotent – they have the capacity to become any cell in the body. Embryonic stem cells were first isolated from mouse embryos in 1982, and from human embryos in 1998.

WHAT IS AN ADULT STEM CELL?

Unlike embryonic stem cells, adult stem cells are stored in the body to replace dead or damaged cells in a specific tissue. For example: skin has a large reserve supply of skin stem cells, as does bone marrow.

WHAT ARE CORD BLOOD STEM CELLS?

Cells in the umbilical cord are "multipotent" and can give rise to many types of cells. Scientists are working to discover if cord blood stem cells can multiply and become other types of stem cells.

WHAT ARE BONE MARROW STEM CELLS?

The stem cell that gives rise to every type of blood cell, and the first used in stem cell therapy, i.e. bone marrow transplantation, in the 1970's.

WHAT IS THE BEST TYPE OF STEM CELL TO USE FOR THERAPY?

The answer to that is being researched by scientists all over the world, and may depend upon the disease.