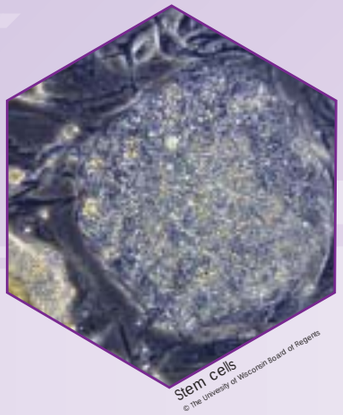
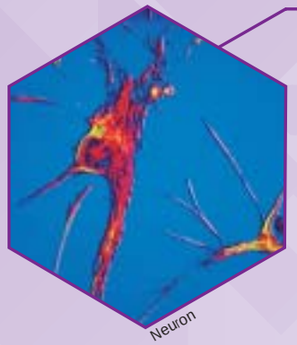
stem cell research

new horizons in medicine

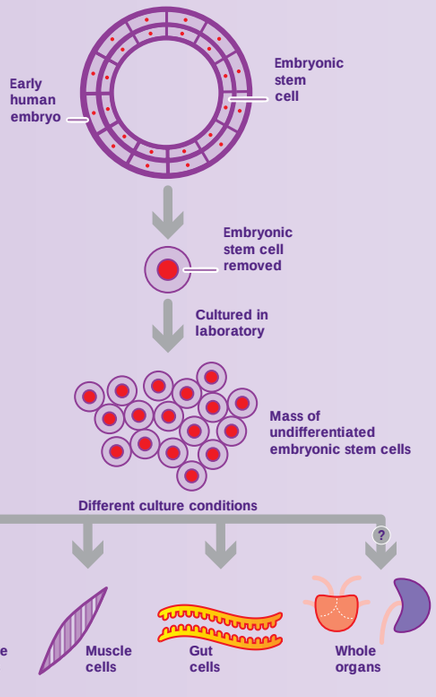
In the late 1990s, American scientists developed a method of culturing embryonic stem cells – cells with the potential to develop into any of the specialised tissues the body needs. This raised hopes of a major medical breakthrough – the ability to replace diseased or worn out body parts with new, healthy tissue. Although there are still many technical and ethical issues to be resolved, the new techniques have the potential to revolutionise medicine.


Stem Cells

Embryonic stem cells


Neuron

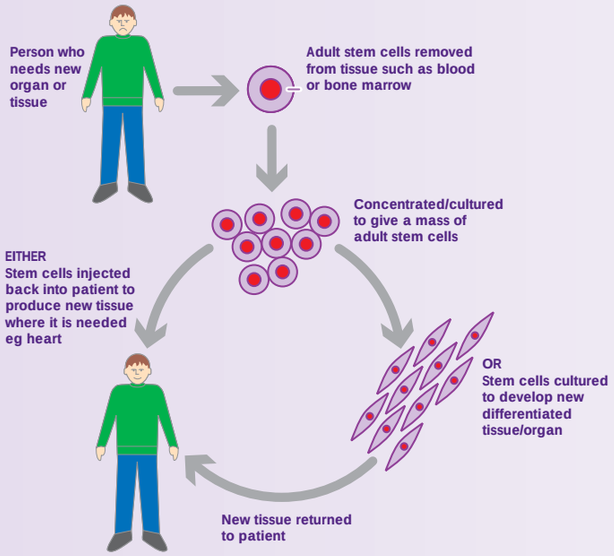
The early human embryo contains many stem cells which can be harvested and cultured in the laboratory to produce huge numbers of undifferentiated cells. By changing the culture conditions scientists have persuaded some of the stem cells to differentiate into new tissues including cartilage, bone, nerve and intestine. Whole organs for transplants will be the ultimate challenge!



Adult stem cells

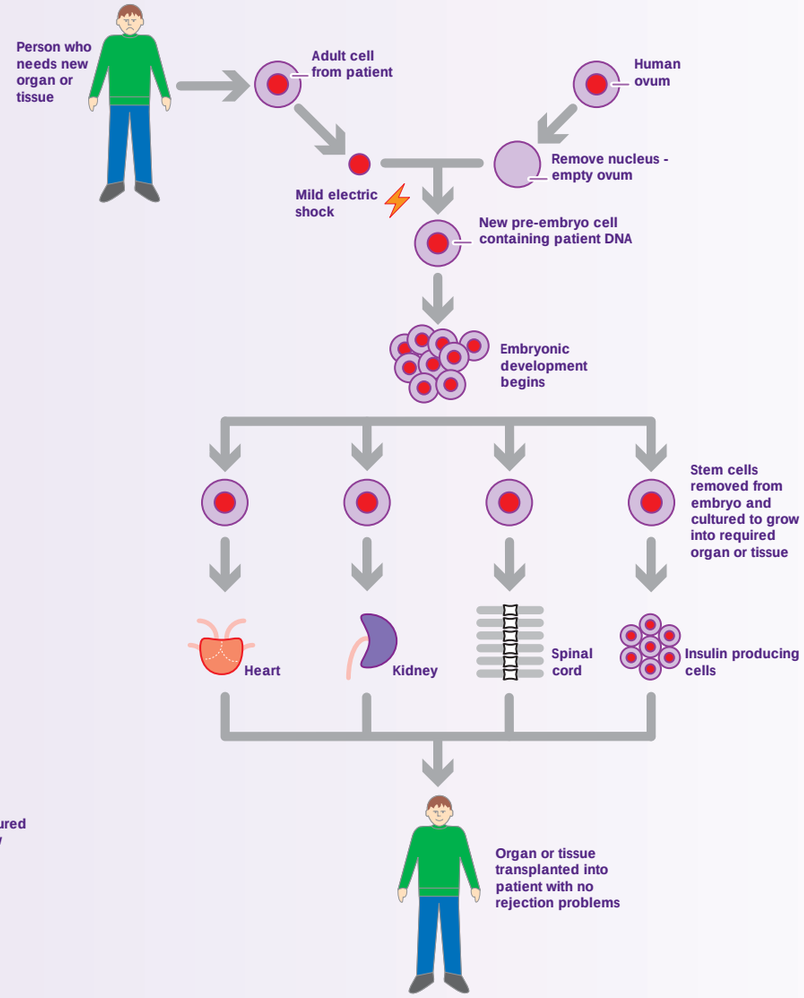

Bone marrow

Adults have stem cells in their bodies – but not very many of them. What's more, they can be difficult to extract and to use, and most can only form a limited range of different cell types. However, they are already used successfully in bone marrow transplants and there is some promising work on using them to repair damaged heart muscle and to reverse Parkinson's disease. Interest in the future of this technology is growing steadily.



Therapeutic stem cell cloning

In this technique, DNA is taken from the cells of a person and used to produce embryonic stem cells, which may then be differentiated into new tissues or organs. The hope is that this technology will help people who are seriously ill with problems ranging from diabetes and Parkinson's disease to heart attacks and spinal injuries. The technique still needs a lot of development, but its medical potential is enormous.



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