

Stem Cells

Qura-Tul-Ann Shadid

About Stem Cells

A stem cell is a unique type of cell which can replicate an unlimited number of times and also produce any cell type in the body. There are two main types of stem cells: embryonic and adult stem cells. Embryonic cells have caused controversy over the years because of when it is thought that life begins. The embryonic stem cells have been taken from embryos that are less than 6 weeks old. However because adult stem cells are very specific for instance they come from bone marrow, skin or hair cells embryonic stem cells are used in research.

Researchers are interested in stem cells because of their abilities currently there is work in different areas.

- **Renewal**- ageing and to investigate if stem cells change as they age.
- **Reproduction**- uterine (womb) stem cells to investigate cancer.
- **Tissue Engineering**- biomaterial scaffolds which integrate with actual tissue to restore function, cardiac repair for congenital abnormalities (birth defects), neural repair for spinal cord injury, bone repair & skeletal muscle repair.
- **Therapeutic**- epidermal stem cells to generate new skin for burn patients / genetic skin disease, hematopoietic stem cells using cord blood for leukaemias & mesenchymal stromal cells as drug delivery mechanisms.
- **Immunology**- targeting cancer stem cell & human embryonic stem cells to prevent transplant rejections.

It is hoped that stem cells may be able to do a variety of things especially to do with organs for transplants and efficient repair mechanisms. Researchers have already cultured heart cells in a petri dish which can beat on their own accord.

Possible Plot Scenario

A stem cell can divide many an unlimited amount of times and can produce any cell type in the body. They can be one of two types embryonic or adult. If a stem cell is grown in a controlled way, scientists can make them become a specific type of cell.

It's Manchester but not as we know it. It's the year 2021 and science has finally managed to achieve all the things that everyone wished for. The stem cell research has taken off and incredible advances have been made over the last ten years. Now it is possible for everyone to have their own stem cells taken from them to produce organs grown in the lab as a back up. On the plus side there's no waiting lists for transplants operations and people can also have new skin grown for them in case of severe burns.

But then disaster struck!! A few reports emerged that some labs (where the organs are grown) became contaminated. Everyone is fearful for their organs and if they are now safe to use. At least 20 people have suffered from severe organ failure from recent transplant operations and have died. Their families are angry and want answers.

The company *Geneca*, who own all the labs, are covering the scare up and they are taking organs from dead people and then cloning them for the labs. No-one knows about this. Even the scientists who work there are not allowed to say anything and are keeping quiet about the matter in case they lose their jobs.

What happens now?

Imagine you are either one of the scientists working in the labs and know about the contamination of organs. What would you do?

Imagine you are one of the people who have had a transplant and your body is rejecting your own organs grown in the labs. How would you feel? Or you know somebody who had a recent transplant and they suffered severe organ failure and have died. How would you get answers and get the justice that they deserve?

About Qura-Tul-Ann Shadid

Qura-Tul-Ann Shahid is a Masters student studying Biomedical Science which is about disease and how it affects the body also the tests used to diagnose each disorder. For her undergraduate research project she reviewed the literature on stem cells for cutaneous (skin) wound healing in particular for burn patients. The work is very promising and has helped many patients survive by grafting new skin cultured from dermal stem cells over the area where the skin had been badly burnt.