

Objective: Understand what a stem cell is
(Scottish curriculum: S1-3, Biological Systems SCN 4-13c)

Stem cells in the news

Our bodies are made of millions of cells that work together to help you think, talk, laugh, run around and stay healthy. Stem cells are one of the most amazing types of cell in your body because they can (1) make copies of themselves and (2) make other types of cells like skin cells, nerve cells or blood cells.

1. Read the article.

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Award-winning researcher's stem cell study offers hope for Parkinson's cure

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Health Correspondent

A GROUND-BREAKING stem cell study being carried out in Scotland could finally lead to a cure for Parkinson's disease.

A researcher at Edinburgh University has been awarded £380,000 to create a special type of stem cell from patients with Parkinson's and their relatives.

It is hoped that cell lines created from just three families will help researchers around the world test new treatments for the disease.

And eventually the research could lead to patients receiving transplants of their own specially-treated cells to cure the condition.

Dr Tilo Kunath has been awarded a senior research fellowship by the Parkinson's Disease Society to push forward with his stem cell work.

In patients with Parkinson's, nerve cells in a particular part of the brain involved in coordinating movement die, leading to symptoms like tremors and problems walking.

In a UK first, Kunath and colleagues will create induced pluripotent stem cells (iPS cells) from people with Parkinson's to help understand why nerve cells die.

IPS cells are created by taking adult cells, such as from the skin, and reprogramming them in the lab to become cells which behave like embryonic stem cells – with the ability to transform into any type of cell, including nerve cells.

Glossary:

- cell line: cells that all originate from the same cell; they are grown and kept in the lab.
- condition: disease
- tremors: shaking
- reprogramming: change

In the UK around 120,000 people have Parkinson's disease. Most patients get the disease when they are over 50, but sometimes young people also get it.

2. What happens to patients with Parkinson's? Give two symptoms.

i. _____

ii. _____

3. Why does this happen?

4. Read the text before question 1 again. What's so special about stem cells?

Stem cells are special because they can (1) _____
and (2) _____

Dr Tilo Kunath is going to use patients' cells to make stem cells.

5. What can he do with these stem cells to understand the disease better?

6. Scientists hope that in the future stem cells can be used to help the patients. How?

i. _____

ii. _____

Extension

In 2006, scientists discovered a new technique. They can now take a cell from a body, for example a skin cell, and turn it into a cell that behaves like stem cells from an embryo.

7. What are these special types of stem cells called?

8. Scientists are very excited about this new technique. Why do you think that is?

