

Biology only - KS4  
Homeostasis and Response

# The Brain

Miss Ray



**OAK**  
NATIONAL  
ACADEMY

# Match the structure to the function

| <b><u>Structure</u></b> | <b><u>Function</u></b>                                 |
|-------------------------|--|
| Cerebrum                | Monitors temperature and water levels inside the body  |
| Cerebellum              | Intelligence, conscious decisions, language and memory |
| Medulla oblongata       | Muscle coordination                                    |
| Hypothalamus            | Controls unconscious activities e.g. heart rate        |



# Answers - Match the structure to the function

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**Using the information from the lesson, fill out the table**

| <b>Procedures</b> | <b>Benefits</b> | <b>Risks</b> |
|-------------------|-----------------|--------------|
| Brain surgery     |                 |              |
| Stem cell therapy |                 |              |



# Using clonal stem cells in treatments for paralysis

## Pros

- Could differentiate into replacement neurones and treat paralysis
- Could increase quality of life
- Stem cells from the patient/cloned stem cells are less likely to be rejected

## Cons

- May not differentiate into the desired cell
- May continue to divide and form a tumour
- Ethical views surrounding embryos as they may be damaged



# Exam Style Question

**Evaluate** the use of clonal stem cells to treat paralysis due to brain damage. [6]



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**Evaluate** the use of clonal stem cells to treat paralysis due to brain damage. [6]

Clonal stem cells are highly **versatile** and have the potential to **differentiate** into a wide range of cells, including **brain and nerve cells**. These differentiated cells can then **replace** the damaged cells and treat the condition. As clonal cells contain the same DNA as the patient's cells, they are **less likely to be rejected**. If this treatment was a success it would **improve the patients quality of life** immensely.

However, stem cell therapy can be dangerous as sometimes the stem cells continue to divide and **form a tumour**. In addition to this, there are many ethical issues surrounding the use of embryonic stem cells as they may **damage the embryo**.

In conclusion, .....

