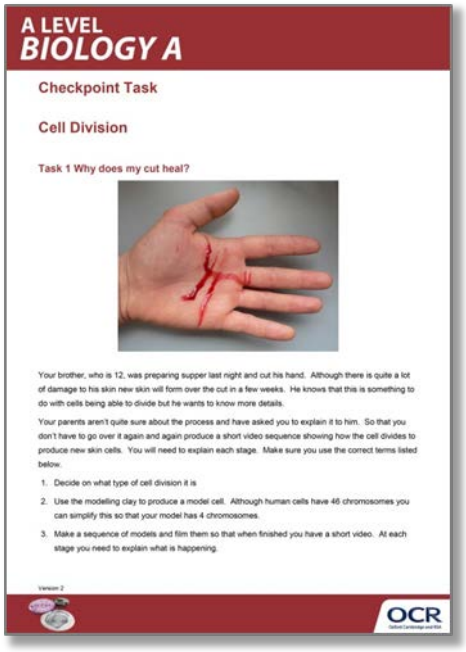
This Checkpoint Task should be used in conjunction with the KS4-KS5 Transition Guide – Cell Division

Lesson Element

Cell Division

Instructions and answers for teachers

These instructions should accompany the OCR resource 'Cells' activity *which supports OCR A Level Biology*


A LEVEL
BIOLOGY A

Checkpoint Task

Cell Division

Task 1 Why does my cut heal?

Your brother, who is 12, was preparing supper last night and cut his hand. Although there is quite a lot of damage to his skin new skin will form over the cut in a few weeks. He knows that this is something to do with cells being able to divide but he wants to know more details.

Your parents aren't quite sure about the process and have asked you to explain it to him. So that you don't have to go over it again and again produce a short video sequence showing how the cell divides to produce new skin cells. You will need to explain each stage. Make sure you use the correct terms listed below.

1. Decide on what type of cell division it is
2. Use the modelling clay to produce a model cell. Although human cells have 46 chromosomes you can simplify this so that your model has 4 chromosomes.
3. Make a sequence of models and film them so that when finished you have a short video. At each stage you need to explain what is happening.

Version 2

OCR

The Activity:

This resource comprises of 2 tasks.

This activity provides a check to see if the concepts of mitosis and meiosis taught at KS4 have been fully understood by students. It gives them the opportunity to show their understanding of the processes and use of terms. There is an opportunity for peer assessment by sharing the task evaluation sheet. The task evaluation sheet includes ideas not required at KS4 but which may be taught to students showing the level of detail to which they have appreciated the content.

Associated materials:

'Cells Division' Checkpoint Task learner activity sheet

This activity offers an opportunity for English skills development.

Version 2

Working in pairs, half of the learners in the class could be given one of the two scenarios and the other half the other scenario. Each pair should be provided with modelling clay (plasticine) so that they can make a model cell. They should then use it to produce a short video with voice over explaining what is happening to the cell.

If the resources are not available to produce a video then learners could produce a series of photos, diagrams or models and write a short commentary or swap with another group and explain to the other learner what each model/diagram shows. There is an opportunity for peer assessment by sharing the task evaluation sheet.

Task 1 Why does my cut heal?

Learner Instructions:

Your brother, who is 12, was preparing supper last night and cut his hand. Although there is quite a lot of damage to his skin new skin will form over the cut in a few weeks. He knows that this is something to do with cells being able to divide but he wants to know more details.

Your parents aren't quite sure about the process and have asked you to explain it to him. So that you don't have to go over it again and again produce a short video sequence showing how the cell divides to produce new skin cells. You will need to explain each stage. Make sure you use the correct terms listed below.

1. Decide on what type of cell division it is
2. Use the modelling clay to produce a model cell. Although human cells have 46 chromosomes you can simplify this so that your model has 4 chromosomes.
3. Make a sequence of models and film them so that when finished you have a short video. At each stage you need to explain what is happening.

Terms to use:

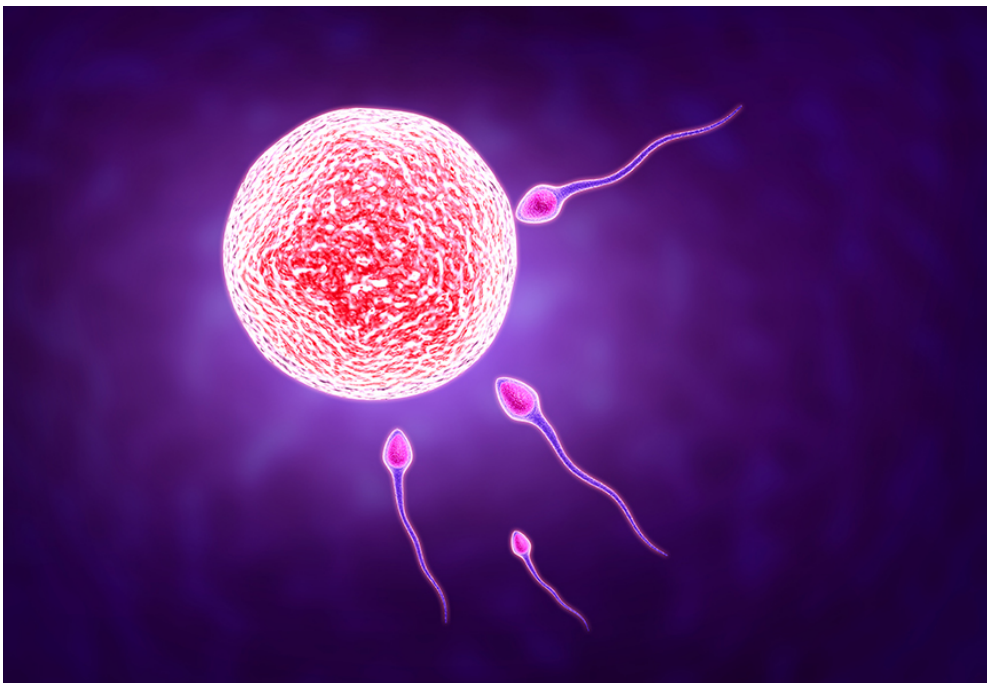
- Chromosome
- Cytoplasm
- DNA
- Diploid and/or Haploid
- Mitosis or meiosis
- Nucleus

Success Criteria:

Does the learner make it clear:

- That the type of cell division is mitosis?
- That the DNA/chromosomes are copied before the cell divides?
- That the doubled chromosome is made up of two chromatids?
- That the nuclear membrane breaks down?
- That the chromosomes line up on the equator of the cell?
- That one chromatid from every chromosome goes to each pole?
- That the cytoplasm divides?
- That the nuclear membrane reforms in each daughter cell?
- That each daughter cell has the same number of chromosomes as the parent cell?
- That the daughter cells are genetically identical to each other and the parent cell?

Task 2 How do sex cells form?



Learner Instructions:

Your sister is in Year 7 and has been studying reproduction in science. She has come home very confused. "The teacher said we all have 46 chromosomes in our cells and that when an egg and a sperm meet the nuclei fuse. But if that happens, why don't babies have 92 chromosomes?"

Your parents aren't sure about it so they have asked you to explain it to her.

So that you don't have to go over it again and again produce a short video sequence showing how sex cells are produced. You will need to explain each stage. Make sure you use the correct terms listed below.

1. Decide on what type of cell division it is.
2. Use the modelling clay to produce a model cell. Although human cells have 46 chromosomes you can simplify this so that your model has 4 chromosomes.
3. Make a sequence of models and film them so that when finished you have a short video. At each stage you need to explain what is happening.

Terms to use:

- Chromosome
- Cytoplasm
- DNA
- Diploid and/or Haploid

- Mitosis or meiosis
- Nucleus

Does the learner make it clear:

- That the type of cell division is meiosis?
- That the DNA/chromosomes are copied?
- That the doubled chromosome is made up of two chromatids?
- That the parent cell contains 2 copies of each chromosome (one from the male parent and one from the female parent)?
- That cells that have two copies of each chromosome are called diploid?
- That the nuclear membrane breaks down?
- That the homologous chromosome pairs line up on the equator of the cell?
- That one chromosome from each homologous pair of chromosomes goes to each pole?
- That the cytoplasm divides?
- That a second division takes place?
- That the chromosomes line up on the equator of the cell?
- That one chromatid from every chromosome goes to each pole?
- That the cytoplasm divides?
- That the nuclear membrane reforms in each daughter cell?
- That each daughter cell has half the number of chromosomes as the parent cell?
- That cells that only have one copy of each chromosome are called haploid?
- That the daughter cells are genetically different to each other?
- That at fertilisation the nuclei fuse so the fertilised egg has two copies of each chromosome and is diploid?

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