

1.1.4 Cell differentiation

AQA GCSE Biology (Higher)

Question and answer notes

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How to use these notes

These notes cover everything you need to know for this part of the specification. They have been written in question-answer format to make them easier for you to study from.

In order to study successfully, I recommend you do the following for each question and answer:

- Read it carefully and make sure you **understand** it.
- **Memorise** the answer.
- **Practice** applying your understanding to past exam questions.

A good way to memorise information is to use **retrieval practice**. This is when you practise retrieving information from your memory. You could do this by making a flashcard for each question with the question on one side and the answer on the other. Or you could use a flashcard app. Alternatively, use a sheet of paper to cover up the answer so you can only see the question. Try to answer the question and then check how you did.

You should practise retrieving each answer from your memory until you can do it perfectly. Even once you can retrieve the answer perfectly, your ability to retrieve it will probably fade as time passes without practising. Therefore you will need to keep going back to the questions that you have previously mastered and practising them again. However, each time you re-learn the answer, the memory will be stronger and will last longer than the time before.

What is differentiation?

Differentiation is the process of an unspecialised cell becoming a specialised cell.

What changes take place within a cell as it differentiates?

As a cell differentiates, it gains new sub-cellular structures that allow it to carry out its function as a specialised cell.

How is differentiation involved in the development of multicellular organisms?

Multicellular organisms usually develop from a single, unspecialised cell called a zygote. The zygote undergoes cell division to produce more cells. As cell division repeats, cells differentiate to form different types of specialised cells. This allows the organism to develop all its tissues and organs.

How is differentiation different in animals and plants?

In animals, once a cell has differentiated to become specialised, it stays as that specialised cell type until it dies. In plants, some types of specialised cells can transform into other cell types.