

# 6.3.1 Theory of evolution

## 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.

### **Which scientist published the book *On the Origin of Species* in 1859?**

Charles Darwin published the book *On the Origin of Species* in 1859.

### **What scientific theory did Charles Darwin explain in *On the Origin of Species*?**

In *On the Origin of Species*, Charles Darwin explained the theory of evolution by natural selection.

### **What does the theory of evolution by natural selection state?**

The theory of evolution by natural selection states the following:

- Individual organisms within a particular species show a wide range of variation for a characteristic.
- Individuals with characteristics most suited to the environment are more likely to survive to breed successfully.
- The characteristics that have enabled these individuals to survive are then passed on to the next generation.
- Through this process, the population of organisms evolves to have characteristics that are well suited to its environment.

### **Why did it take a long time for the theory of evolution by natural selection to be widely accepted?**

It took a long time for the theory of evolution by natural selection to be widely accepted for the following reasons:

- The theory challenged the idea that God made all the animals and plants that live on Earth.
- At the time, there was not enough evidence to convince many scientists.
- The mechanisms of inheritance and variation were not known until 50 years later.

### **What was the name of the main alternative theory to the theory of evolution by natural selection at the time when Darwin published *On the Origin of Species*?**

At the time when Darwin published *On the Origin of Species*, the main alternate theory to the theory of evolution by natural selection was Lamarckism.

### **What is Lamarckism?**

Lamarckism is a theory that was put forward by a scientist called Jean-Baptiste Lamarck in the early 1800s. It states that changes that occur to an organism during its lifetime can be inherited by its offspring, and that this causes evolution. However, we now know that in the vast majority of cases this cannot occur.