

AQA Biology GCSE

6.3 - Genetics and Evolution

Flashcards

This work by [PMT Education](https://www.pmt.education) is licensed under [CC BY-NC-ND 4.0](https://creativecommons.org/licenses/by-nc-nd/4.0/)



Outline the theory of evolution by natural selection.
(biology only)



Outline the theory of evolution by natural selection.

Individuals of a species show a wide range of variation for a characteristic.

Those with the characteristic most suited to the environment will survive breed most successfully.

The desirable characteristic that has enabled the individuals to survive are passed onto their offspring.



Why was Darwin's theory of evolution not accepted initially? (biology only)



Why was Darwin's theory of evolution not accepted initially?

- Most people believed in creationism
- Insufficient evidence to prove the theory
- The mechanism of variation and inheritance was not known at the time



What was Jean-Baptiste Lamarck's
theory of inheritance.
(biology only)



What was Jean-Baptiste Lamarck's theory of inheritance.

That changes during the lifetime of an organism can be inherited.



What is speciation? (biology only)



What is speciation?

The formation of a new species, when two populations become so varied that they cannot interbreed to produce fertile offspring.



What is the definition of a species?
(biology only)



What is the definition of a species?

A group of organisms with similar characteristics which are able to interbreed to produce fertile offspring.



Outline the process of speciation through
geographic isolation.
(biology only)



Outline the process of speciation through geographic isolation.

- Two populations of the same species are separated geographically
- Geographic isolation prevents interbreeding and mixing of genes between the populations.
- Due to different selection pressures, different mutations occur producing different phenotypes in each population.
- Over time, the two populations may evolve so that they are not able to interbreed.



Why is genetic variation important in speciation?

(biology only)



Why is genetic variation important in speciation?

Genetic variation produces phenotypic variation, some of which are better suited to the environment and are selected for.



How did Mendel study inheritance? (biology only)



How did Mendel study inheritance?

Through carry breeding experiments on plants and analysing the ratio of characteristics in offspring.



Why was Mendel's work not recognised
until after his death?
(biology only)



Why was Mendel's work not recognised until after his death?

He could not explain the mechanism of inheritance, as chromosomes were only discovered after his death.

It was not communicated well to other scientists and not published in a reputable scientific journal.



State two kinds of evidence used to show evolution.



State two kinds of evidence used to show evolution.

- Fossils
- Antibiotic resistance in bacteria



How are fossils formed?



How are fossils formed?

- Parts of organisms that have not decayed due to conditions needed for decay being absent.
- Parts of organisms that have been replaced by minerals as they decayed eg. bones.
- Traces of organisms are preserved, covered in sediment and becoming rock.



Why are there few traces of early life-forms left behind?



Why are there few traces of early life-forms left behind?

They are mostly soft-bodied.



How do fossils act as evidence for evolution?



How do fossils act as evidence for evolution?

Scientists can identify the ages of the fossils and use them to show how organisms change over time.



What do branches in evolutionary trees indicate?



What do branches in evolutionary trees indicate?

Where speciation has occurred.



What is extinction?



What is extinction?

Where there are no individuals of a species still alive.



State the factors that may lead to extinctions.



State the factors that may lead to extinctions.

- New disease
- Predation
- Competition
- Changes to the environment
- Catastrophic events



What enables bacteria to evolve quickly?



What enables bacteria to evolve quickly?

The fast rate of their reproduction.



Outline the process of antibiotic resistance bacteria evolving.



Outline the process of antibiotic resistance bacteria evolving.

- Mutations occur in bacteria producing genetic variation.
- Certain strains are resistant to antibiotics and are not killed when the antibiotic is applied.
- Resistant strains survive and reproduce.
- Over time, the population of the resistant strains increase.



Why are resistant strains of bacteria dangerous?



Why are resistant strains of bacteria dangerous?

People have no immunity to them and there is no effective treatment.



State an example of a resistant strain of bacteria.



State an example of a resistant strain of bacteria.

MRSA.



What can be done to reduce the rate of development of antibiotic resistant bacteria?



What can be done to reduce the rate of development of antibiotic resistant bacteria?

- Refrain from inappropriately prescribing antibiotics eg. for viral diseases.
- Patients should complete the prescribed course of antibiotics.
- Restrict agricultural uses of antibiotics.



Why is it difficult to keep up with emerging resistance strains?



Why is it difficult to keep up with emerging resistance strains?

Developing antibiotics have a high cost and take a long time to develop.

