# AQA Biology A-level

## 7.3 - Evolution may lead to speciation

Flashcards

Give genetic factors that cause phenotypic variation within a species.

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1. Mutation of alleles.
2. Random fertilisation by gametes.
3. Random assortment of genetic material during meiosis.

Other than genetic factors, why else may phenotype vary within a species?

Other than genetic factors, why else may phenotype vary within a species?

Environmental influences.

# Why does natural selection occur?

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1. Predation
2. Disease
3. Competition

All resulting in differential survival and reproduction.

# How does natural selection cause a change in a population's gene pool over generations?

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Organisms with advantageous characteristics are more likely to survive and pass their favourable alleles to offspring. Frequency of unfavourable alleles decreases.

# What is stabilising selection?

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Occurs when environmental conditions stay the same. Individuals closest to the mean are favoured, and any new characteristics are selected against. Results in low diversity.

# What is directional selection?

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Occurs when environmental conditions change. Individuals with phenotypes suited to the new conditions will survive and pass on their genes. Over time the mean of the population will move towards these characteristics.

# What is disruptive selection?

# What is disruptive selection?

The opposite of stabilising selection, in that both extremes of the normal distribution are favoured over the mean. Over time, the population becomes phenotypically divided.

# Define speciation.

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Where a population is split and isolated, there are different selective pressures on the two groups. If the genetic makeup changes to the extent the two groups can not longer interbreed, they have become separate species.

# What is meant by allopatric speciation?

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Speciation resulting from a physical barrier e.g. river, mountain range. The environments occupied by the two groups are different, and therefore different alleles are favoured.

# What is meant by sympatric speciation?

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Speciation resulting from a non-physical barrier e.g. a mutation that no longer allows two organisms to produce fertile offspring. Any changes in anatomy or behaviour may also prevent breeding.

# Define genetic drift.

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A change in a population's allele frequencies that occurs due to chance rather than selective pressures. In other words, it is caused by 'sampling error' during reproduction.

# Why does genetic drift affect small populations more than large ones?

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The gene pool is smaller, so there are less alleles available and any change in frequency becomes pronounced very quickly.