Biology Week 5 OL

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Starter

Definition Task

Mutation: A mutation is a change that is made to a species through evolution to allow the species to adapt to their environment or habitat.

Investigation Past Paper Question

- A tendon had a 4% change from 0 weights being added to 6 weights being added.
- A ligament had a 8% change from 0 weights being added to 6 weights being added.

What is Speciation?

Speciation is the name given to the formation of a new species.

- A species is a group of organisms that can interbreed to produce fertile offspring.

Speciation occurs in 4 main stages:

1. Isolation
2. Mutation
3. Natural selection
4. Speciation

One way to remember the order of speciation is **I M**ust **N**ot **S**moke

Isolation

Speciation occurs after part of an initial population becomes isolated by an isolation barrier.

Isolation barriers can be:

- Geographical
    - E.g rivers, Mountains, deserts
- Ecological
    - E.g pH, temperature, salinty
- Behaviourable
    - E.g sexual arousal

Mutation

Different mutations then occur in each isolated sub-population

- Mutations are random, spontaneous changes to genetic material that induce new alleles.

Natural Selection

Natural Selection selects for different mutations in each group, due to different selection pressures.

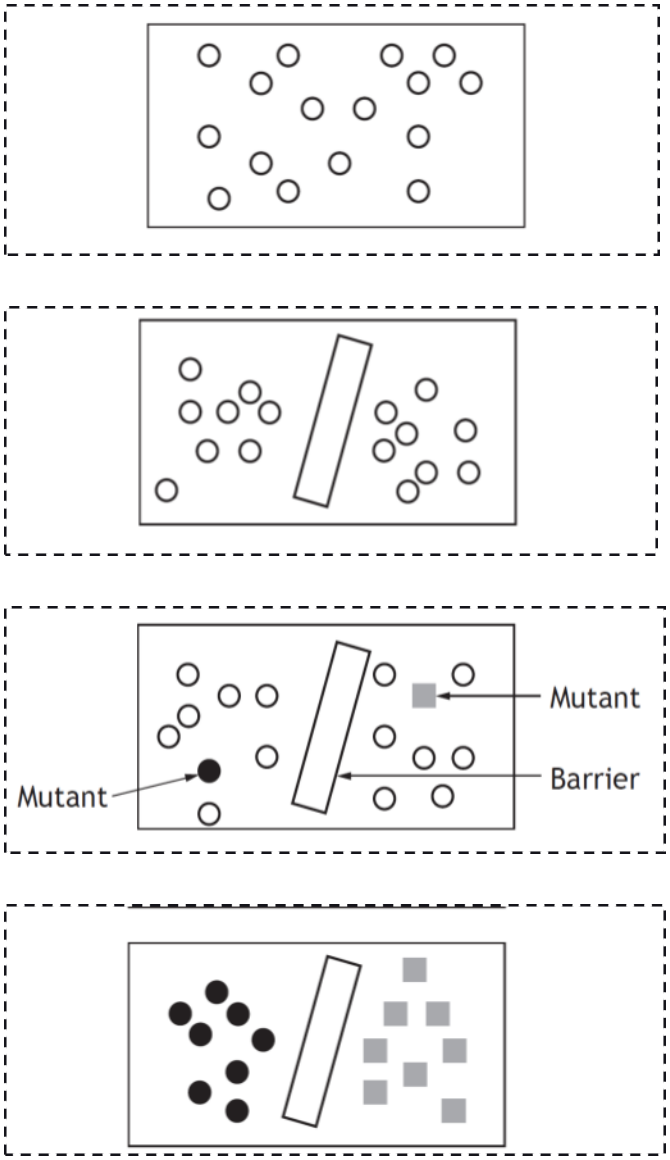
The best adapted individuals to the environment survive and reproduce, passing the desirable characteristics onto their offspring.

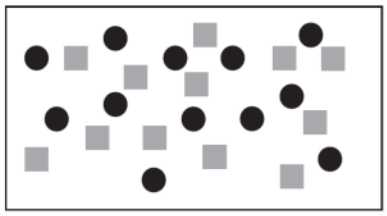
Speciation

Each subpopulation evolved over-time until they became so genetically different they are two different species.

We know they are two different species when they are reintroduced together again they cannot interbreed to produce fertile offspring.

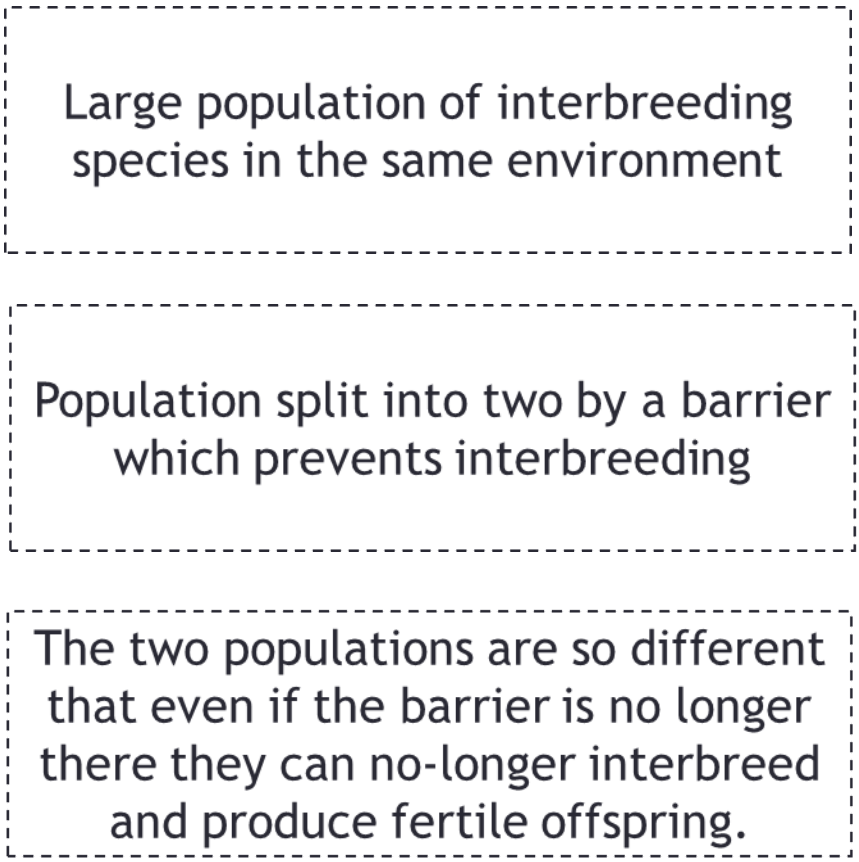
Stages of Speciation





The different selection pressures favour different mutations. The populations become genetically very different.

Different mutations arise in each subpopulation spontaneously. Each population has a different environment and selection pressures



Do you get it?

1. A
2. D
3. B
4. C

Darwins finches

The finches have mutated to the point where they can no longer produce fertile offspring. The finch have an advantage of having different shaped beaks because this allows them to get different prey which creates less interspecific competition.

Past paper questions

1. C
2. B

Extended response question

A. The initial population is separated by a barrier and mutates into two different species to the point where they can no longer interbreed to produce fertile offspring, the barrier is no longer needed because they are two different species