

Temperature, evolution and speciation

What is Q_{10} ?

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Write the formula for Q_{10} .

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What does a Q_{10} of 2 mean?

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Why do enzyme-controlled reactions slow above the optimum?

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Name two organisms used in core practical 12.

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Name three variables to control in the brine shrimp investigation.

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Give two ways of taking account of the ethical use of organisms.

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Define evolution.

$Q_{10} = \text{rate at } (T + 10) ^\circ\text{C} \div \text{rate at } T ^\circ\text{C}.$

The factor by which the rate of a reaction increases for a 10 °C rise in temperature.

The enzyme denatures: bonds break and the active site changes shape.

The rate of the reaction doubles for every 10 °C rise in temperature.

Salinity and volume of solution, number of eggs, light, time.

Brine shrimp (hatching) and seedlings such as cress (growth rate).

A change in allele frequency in a population over generations.

Use the minimum number of organisms and avoid extreme conditions; dispose of them humanely.

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What is the source of new alleles?

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Outline how natural selection changes allele frequency.

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What is a species?

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Define allopatric speciation.

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Define sympatric speciation.

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What is gene flow?

Individuals with an advantageous allele are more likely to survive and reproduce, so pass it on and its frequency increases.

Gene mutation.

Formation of new species from populations isolated by a geographical barrier.

A group of organisms that can interbreed to produce fertile offspring.

The movement of alleles between populations by interbreeding.

Formation of new species within the same area through reproductive isolation, for example by polyploidy.