



# Evolution by Natural Selection

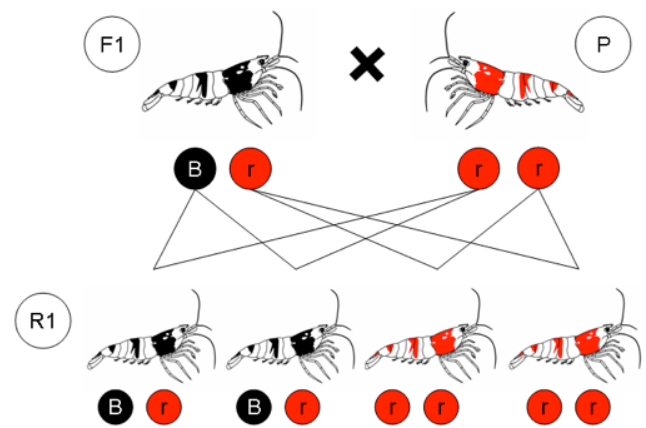
Natural selection happens when individuals of a population have differing characteristics caused by their genes (heritable).

Differences between individuals mean that some individuals are better adapted to their environment than others.

Variations in traits between organisms of the same species occur because of differences in their genes. Genes are made up of DNA and are found in every cell of your body. The genetic code is a set of instructions for making an entire organism with each gene coding for a specific protein. Every organism has a different genetic code due to having genetic material from two different parents. Some traits can be advantageous, while others are not beneficial.

When cells divide or gametes are formed the DNA is replicated (copied).

Sometimes errors occur in the copying called mutations. Mutations are random. Most of the time this has no effect or a negative effect on the organisms survival chances. But sometimes these mutations can be beneficial.

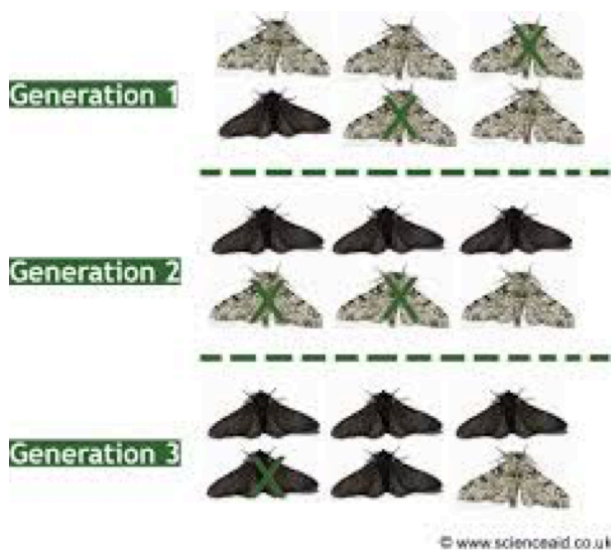




Before the industrial revolution, the white variety of peppered moth was well camouflaged.



However, during the industrial revolution, the air pollution turned the trees dark-giving the darker variety an evolutionary advantage.



The black varieties thus had a greater chance of survival and thus reproduction, and their numbers increased.

When beneficial traits are passed on, the chances of survival (and thus reproduction) of an organism increase. The frequency of the genes that cause these beneficial characteristics will thus increase from generation to generation, leading to an overall change in the species-known as evolution.