

Evolution: How and Why It Happens

How does evolution happen? Through a process called natural selection. Darwin realized that animals have many offspring and some don't survive. The survivors are better suited to their environment. Through these ideas he created the theory of natural selection.

1. Overproduction – organisms have many offspring, not all of these offspring can survive.
2. Genetic Variation – Every individual is slightly different. Some traits make it easier to survive. When these individuals survive, they pass their traits on to their offspring.
3. Struggle to Survive – there are limited resources (water, food and space), so some organisms won't survive.
4. Successful Reproduction – Those who are well adapted (good traits) survive and reproduce to pass on their traits.

The variations that Darwin observed were mutations or changes to DNA. These changes can make a difference in a gene and in how the trait shows up.

Generation time is the time between the birth of one generation and the birth of the next generation.

Examples of natural selection:

Darwin's Example: Selective Breeding.

For many years people had been choosing traits they liked and breeding individuals with that trait. For example all the species of dogs were formed this way. Darwin thought the same thing could happen in nature. However instead of a person choosing the traits nature would choose the traits.

Insects become resistant to insecticides.

1. Insecticide kills off most insects.
2. Those insects that survive have a gene that makes them resistant.
3. Resistant insects reproduce with other resistant insects.
4. Their offspring have the resistant gene.
5. Insecticides don't work very well over time!

Other examples of evolution: Bacteria and Peppered moths



Name: _____

Date: _____

Evolution: _____ and _____ It Happens

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1. _____ – organisms have many _____, not all of these offspring can _____.
2. _____ – Every individual is slightly _____. Some traits make it easier to _____. When these individuals survive, they pass their _____ on to their offspring.
3. _____ – there are limited _____ (water, food and space), so some _____ won't survive.
4. _____ – Those who are _____ adapted (good traits) survive and _____ to pass on their traits.

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Examples of _____:

Darwin's Example: Selective Breeding.

For many years people had been _____ traits they liked and _____ individuals with that trait. For example all the breeds of _____ were formed this way. Darwin thought the same thing could happen in _____. However instead of a _____ choosing the traits, _____ would choose the traits.

_____ become resistant to insecticides. (Similar to drug resistance)

1. Insecticide kills off most _____.
2. Those insects that _____ have a _____ that makes them resistant.
3. _____ insects _____ with other resistant insects.
4. Their offspring have the _____ gene.
5. _____ don't work very well over time!

Other examples of evolution: _____ and the _____
_____.