

Name: Klasse:

Genetic Variation and Natural Selection – Solution

Principles of Natural Evolution

The natural evolution follows a few simple principles. Charles Darwin's theory of evolution highlights "genetic variation" and "natural selection".

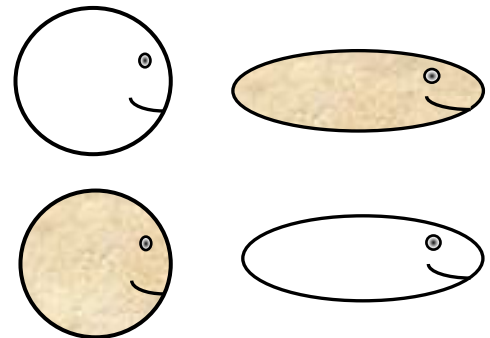
- As you may know from your own experience, siblings are often similar but also different in many ways (e.g. in looks, attitudes or other features). The term variation indicates that creatures born to the same parents do not have identical characteristics. Name two reasons for these variations.



- The genotype received from the parents has a slightly different mixture in each offspring.*
- The genotype has been altered by genetic mutation.*

- The variation in offspring is an important part of the theory of evolution, because not every offspring is able to reproduce or even to reach the reproductive age. This affects those individuals which are, because of their given properties, not as well adapted to their environment as others. This process is called "natural selection". You can think about the implications while studying following example.

In the picture you can see four related individuals of a fantasy animal species. They rather flee from danger than fight it and use for example abandoned holes in the ground to hide from natural enemies. Let's assume they are forced to populate a new habitat, dominated by rock surfaces and with frequent snowfalls.







Which individual do you think is most likely to reach the reproductive age and therefore has the chance to pass on its version of hereditary factors to the next generation? Give reasons for your opinion. Use your own words to answer the question, but make sure to include the terms "selection" and "adaption"/"adapted" where it is appropriate.

The individual on the bottom right probably has the highest chance of reaching the reproductive age. With its external features it seems to be better adapted to the conditions of their new environment than the others. The elongated body allows it to find hiding places and evade natural enemies. Its light color gives it a natural advantage over the darker coloured individuals when it comes to hiding from natural enemies. The likeliness to reproduce differs for each shown individual, also known as natural selection.

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3. Whether an individual is adapted better or worse is dependent on the environment. There are multiple angles to this, shown in the film on different examples. Summarize each example in one sentence. (Use the given example as a guide for filling out the table.)

	<p><i>Fast gazelles have a better chance to survive by escaping predators.</i></p>
	<p><i>Fast cheetahs have a higher chance to kill enough prey to survive.</i></p>
	<p><i>Male ostriches, which are attractive to female individuals, have a better chance to reproduce.</i></p>
	<p><i>Individuals with good camouflage have a higher chance to escape predators and catch enough prey to survive (as ambush predators).</i></p>