

Allopatric and Sympatric speciation

Task: You will compare two types of speciation: allopatric and sympatric.
1) Read the passage below with your partner. 2) Use the Venn diagram to compare Allopatric and Sympatric Speciation.

Speciation is the process by which one species splits into two or more distinct species. This process is central to the evolution of biodiversity on Earth. Over time, populations of the same species may become so different that they can no longer interbreed and produce fertile offspring. When this happens, new species are formed.

There are two main types of speciation: **allopatric speciation** and **sympatric speciation**.

1 Allopatric Speciation

Allopatric speciation occurs when a population is divided by a geographical barrier such as a mountain range, river, or ocean. The separated groups of organisms are exposed to different environments, and over generations, they adapt to their surroundings. These changes can include mutations, differences in natural selection, or genetic drift. Eventually, the two groups become so genetically different that even if they are brought back together, they can no longer mate successfully.

✚ Example: When a group of birds is blown off course and ends up on a remote island, they may evolve differently from the mainland population. Over time, they become a separate species.

2 Sympatric Speciation

Sympatric speciation happens within the same geographic area. Instead of being physically separated, reproductive isolation occurs due to genetic changes, behavioral differences, or ecological niches. One common cause is polyploidy, where an organism ends up with extra sets of chromosomes (common in plants). This genetic change can prevent individuals from breeding with the original population.

✚ Example: A plant that becomes tetraploid ($4n$) cannot reproduce with its diploid ($2n$) relatives, even though they grow side by side. Over time, the polyploid plants form a new species.

Name: _____

Date: _____

VENN DIAGRAM

Allopatric and Sympatric speciation

