

26.1 Adaptations and Natural Selection



Summarize main points from each video.

Video Title / topic _____

Video Title / topic _____

Video Title / topic _____

Topic Introduction



Summarize your understanding of each paragraph.

Natural selection is a key mechanism of evolution, the change in heritable traits of a population over time.

Natural selection is an increased chance of survival and reproduction of individuals due to their differences.

Charles Darwin popularized the term "natural selection". He compared it with artificial selection, which is intentional, whereas natural selection is not.

Variation exists within all populations of organisms. This occurs partly because random mutations arise in the genome of an individual organism, and offspring can inherit such mutations.

Read/Summarize Text



1. Read the passage.
2. Underline key expressions in each sentence.
3. Re-write each word (or expression) you underlined.
4. Summarize the passage.

Difference between natural selection and evolution ...

1

What is the difference between natural selection and evolution and adaptation?

2

Natural selection also refers to the process by which genotypes associated with greater fitness increase in frequency in the population through time.

An adaptation (or an adaptive trait) is a trait with a functional role that evolved (and is maintained) by means of natural selection.

<https://biology.stackexchange.com>

Re-write words you underlined

3

Using a complete sentence, summarize or rephrase the passage

4

Read Text for Comprehension

Read this article for deeper understanding. No summary is required, although you may want to circle, underline, or mark key ideas and words.

Natural selection

Variation exists within all populations of organisms. This occurs partly because random mutations arise in the genome of an individual organism, and offspring can inherit such mutations. Throughout the lives of the individuals, their genomes interact with their environments to cause variations in traits. The environment of a genome includes the molecular biology in the cell, other cells, other individuals, populations, species, as well as the abiotic environment. Individuals with certain variants of the trait may survive and reproduce more than individuals with other, less successful, variants; therefore, the population evolves. Factors that affect reproductive success are also important, including sexual selection (now often included in natural selection) and fecundity selection.

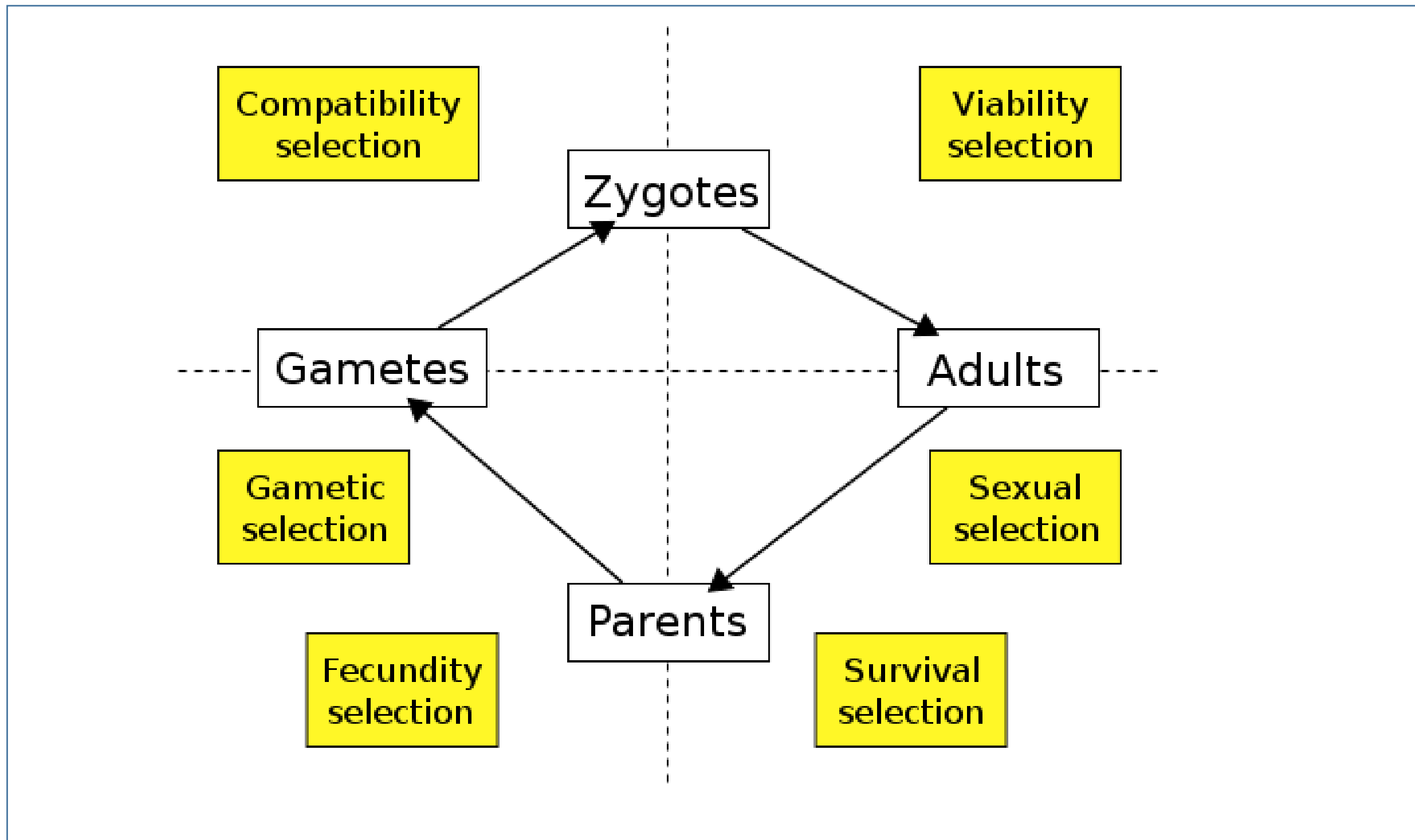
Natural selection acts on the phenotype, or the observable characteristics of an organism, but the genetic (heritable) basis of any phenotype that gives a reproductive advantage may become more common in a population. Over time, this process can result in populations that specialize for particular ecological niches (microevolution) and may eventually result in speciation (the emergence of new species, macroevolution). In other words, natural selection is a key process in the evolution of a population.

Natural selection is a cornerstone of modern biology. The concept, published by Darwin and Alfred Russel Wallace in a joint presentation of papers in 1858, was elaborated in Darwin's influential 1859 book *On the Origin of Species by Means of Natural Selection, or the Preservation of Favored Races in the Struggle for Life*. He described natural selection as analogous to artificial selection, a process by which animals and plants with traits considered desirable by human breeders are systematically favored for reproduction. The concept of natural selection originally developed in the absence of a valid theory of heredity; at the time of Darwin's writing, science had yet to develop modern theories of genetics. The union of traditional Darwinian evolution with subsequent discoveries in classical genetics formed the modern synthesis of the mid-20th century. The addition of molecular genetics has led to evolutionary developmental biology, which explains evolution at the molecular level. While genotypes can slowly change by random genetic drift, natural selection remains the primary explanation for adaptive evolution.

Draw Illustration



Copy and Label the Illustration in the Space Provided



https://en.wikipedia.org/wiki/Natural_selection#/media/File:Life_cycle_of_a_sexually_reproducing_organism.svg

Draw (Copy) the Illustration Here

Interpret a Graph



Write the title of the graph _____

Circle the type of chart this represents

Bar Chart Line Chart Pie Chart Other

If applicable,

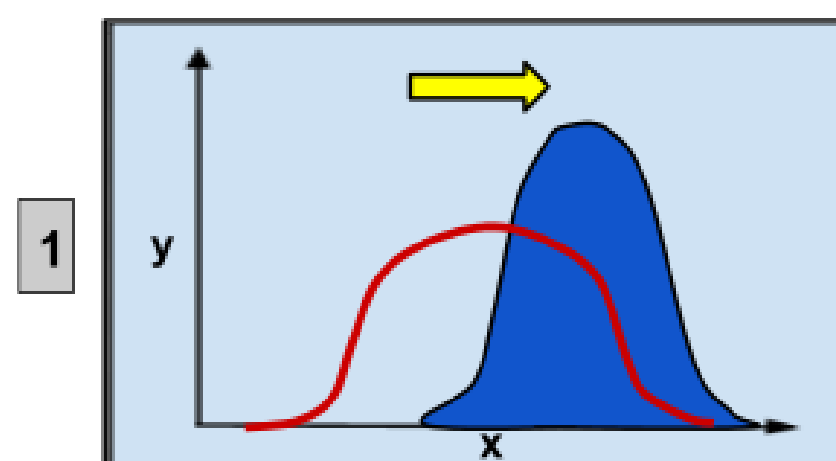
What does the X-axis represent _____

What does the Y-axis imply _____

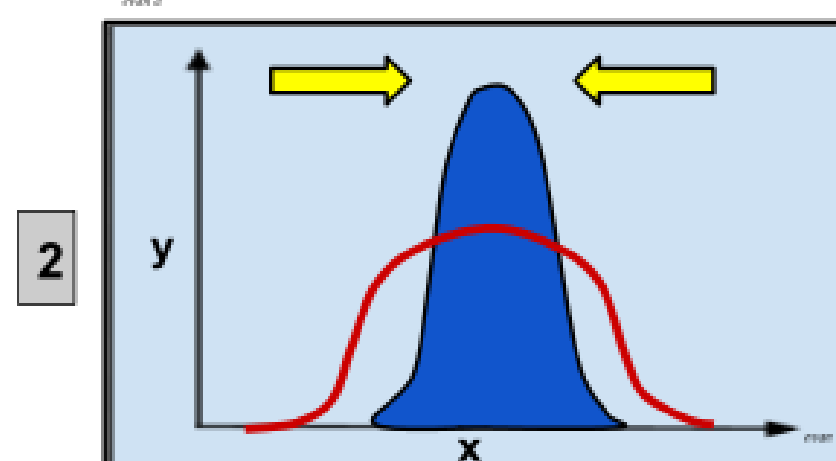
Summarize what this graph represents or conveys

https://en.wikipedia.org/wiki/Natural_selection

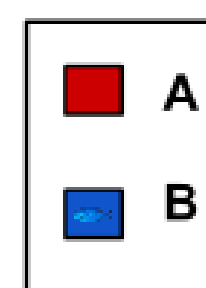
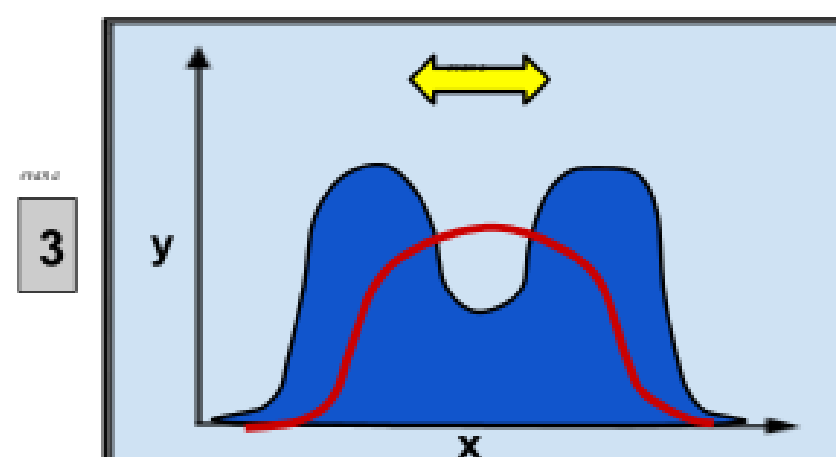
1, [directional selection](#): a single extreme [phenotype](#) favored.



2. [stabilizing selection](#): intermediate favored over extremes.



3. disruptive selection: extremes favored over intermediate.



X-axis: [phenotypic trait](#)
Y-axis: number of organisms

Group A: original population
Group B: after selection

Show-Off Your Smarts!



Instructions

- Complete as an individual or small group.
- Discuss your ideas/answers/responses in a small group.
- Select one person to present your responses to the class.

Q1. How can this information be applied to a young-person's life?

Q2. How does this information apply to (or impact) communities?

Q3. When do scientists need to apply this information? How?

Q4. How would a person from 100 years ago view this information?

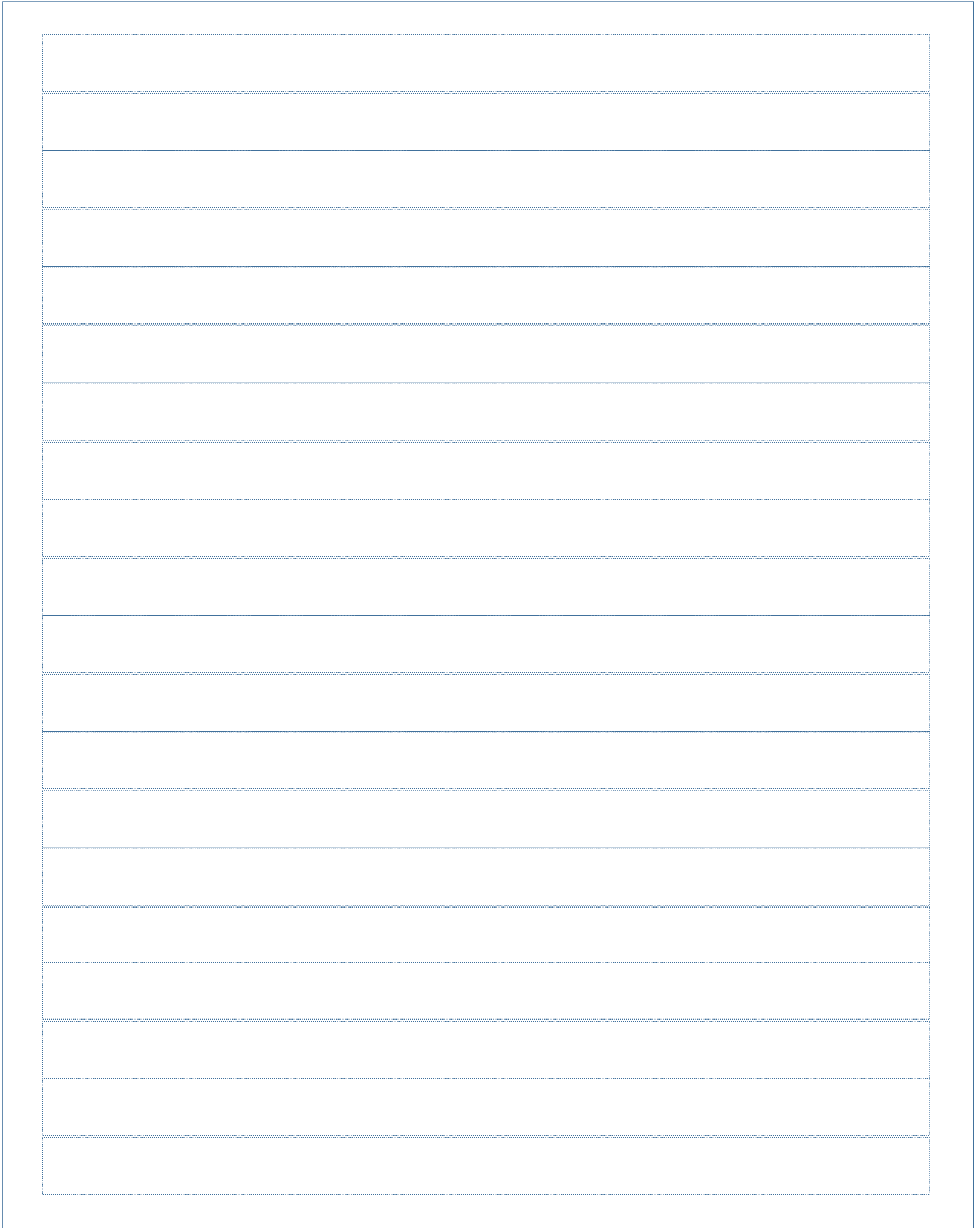
Q5. How does this topic connect to other science topics or math?

Write down at least three words introduced or covered by this topic.

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

Write a Poem or a Song

In the space provided here, create/write a poem which conveys the concepts about natural selection. The poem does not have to rhyme.

A large rectangular box with a dotted border, intended for writing a poem or song about natural selection. The box is empty and occupies most of the lower half of the page.