

Unit 03: Darwinian Natural Selection

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1. Unit 03: Darwinian Natural Selection

4. Chapter: Unit 03: Darwinian Natural Selection

1. Unit 03: Darwinian Natural Selection Questions

4.1.1. A local snail has 3 phenotypes with the heterozygous individuals sh...

Author: Olivia D'Ambrogio

A local snail has 3 phenotypes with the heterozygous individuals showing incomplete dominance. Therefore, individuals with a genotype of BB are brown, Bb are tan, and bb are white. These snails are particularly tasty to the local birds. Their current environment only affords camouflage for the brown and white individuals on brown and white rock tide pools. Therefore, the tan individuals are seen and eaten more easily by the birds. Which graph below describes this example of selective pressure?



Please choose only one answer:

- A - Disruptive
- C - Stabilizing
- B - Disruptive
- A - Directional

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4.1.2. A local snail has 3 phenotypes with the heterozygous individuals sh...

Author: Olivia D'Ambrogio

A local snail has 3 phenotypes with the heterozygous individuals showing incomplete dominance. Therefore, individuals with a genotype of BB are brown, Bb are tan, and bb are white. These snails are particularly tasty to the local birds. Due to a recent storm, their current environment only affords camouflage for the tan individuals, because all the brown and white tide pools have been covered by tan sand by the storm. Therefore, the brown and white individuals are seen and eaten more easily by the birds. Which graph below describes this example of selective pressure?



Please choose only one answer:

- B - Directional
- B - Stabilizing
- C - Disruptive
- A - Negative

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4.1.3. A local snail has 3 phenotypes with the heterozygous individuals sh...

Author: Olivia D'Ambrogio

A local snail has 3 phenotypes with the heterozygous individuals showing incomplete dominance. Therefore, individuals with a genotype of BB are brown, Bb are tan, and bb are white. These snails are particularly tasty to the local birds. Due to a recent storm, the species has migrated to a different beach in which the current environment only affords camouflage for the brown individuals. Therefore, the tan and white individuals are seen and eaten more easily by the birds. Which graph below describes this example of selective pressure?



Please choose only one answer:

- A - Directional
- A - Stabilizing
- B - Disruptive
- C - Directional

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4.1.4. Determine if the examples below (I through III) are due to the effe...

Author: Olivia D'Ambrogio

Determine if the examples below (I through III) are due to the effects of the environment on phenotypic plasticity or evolutionary change.

I. An individual Common Ice Plant has the ability to change from C3 photosynthesis to CAM photosynthesis when it becomes stressed by low water or high salinity.

II. When plants become too dense and competition is high, some Aphid species grow wings between generations to enable dispersion, and then the next generation is without wings.

III. Bats are able to fly with wings that are paws with really long fingers and skin stretched between them; one way this could happen is if these finger bones grew at a faster rate than the rest of the body.

Please choose only one answer:

- I = plastic phenotype, II = phenotypic plasticity, III = evolutionary change
- I = plastic phenotype, II = evolutionary change, III = evolutionary change
- I = evolutionary change, II = evolutionary change, III = plastic phenotype
- I = evolutionary change, II = plastic phenotype, III = plastic phenotype

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Question: [Determine if the examples below I through Olivia D @Saylor.org Evolutionary](#)

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4.1.5. Due to a recent hurricane, the local seeds available for forage are...

Author: Olivia D'Ambrogio

Due to a recent hurricane, the local seeds available for forage are much smaller than in the past. Local seed eating birds that were adapted to harvest the larger seeds appear to be having a hard time obtaining the smaller seeds. However, those individuals with smaller beaks are finding it easier to get the seeds, and with less competition. According to the theory of natural selection, what changes will likely occur in this population?

Please choose only one answer:

- Over time, individuals will show smaller beaks, because this is more advantageous for the birds.
- The birds with the smaller beaks will most likely be more successful in foraging and therefore breeding, which over time will lead to a population with smaller beak size.
- The birds will choose to pass on the smaller beak size gene to their offspring, because it is now the better phylogeny.
- The next generation of birds will have smaller beaks, because they will be able to forage better.

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4.1.6. Evolutionary synthesis brought together many ideas and data from se...

Author: Olivia D'Ambrogio

Evolutionary synthesis brought together many ideas and data from several areas of biology, particularly ecology, genetics, botany, cytology, systematics, morphology, and paleontology. Dobzhansky & Mayr were most involved in which field?

Please choose only one answer:

- Genetics
- Systematics
- Morphology
- Paleontology

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4.1.7. Female northern cardinals choose males with the brightest red feath...

Author: Olivia D'Ambrogio

Female northern cardinals choose males with the brightest red feathers. It has been shown that these males more frequently feed their young, which allows the mother to be able to raise more offspring. This advantage for sexual selection is best explained by which of the following?

Please choose only one answer:

- Direct benefits
- "Sexy Sons"
- Good Genes Hypothesis
- More than one of the above

Check the answer of this question online at QuizOver.com:

Question: [Female northern cardinals choose males Olivia D'Ambrogio @Saylor](#)

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4.1.8. Fill in the blanks. One of the most distinguishing characteristics ...

Author: Olivia D'Ambrogio

Fill in the blanks. One of the most distinguishing characteristics separating Darwin's theory of natural selection from other theories, particularly Lamarck's, is the idea that _____ evolve, while _____ do not.

Please choose only one answer:

- species, populations
- populations, individuals
- individuals, populations
- individuals, species

Check the answer of this question online at QuizOver.com:

Question: [Fill in the blanks. One of the most Olivia D'Ambrogio @Saylor.org](#)

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4.1.9. Fill in the blanks. Ornate peacock feathers are thought to be a tra...

Author: Olivia D'Ambrogio

Fill in the blanks. Ornate peacock feathers are thought to be a trait that was developed with the function to maximize reproductive success, not necessarily to help the individuals survive. This is an example of _____ selection and is solely based on an individual's _____.

Please choose only one answer:

- natural, phenotype
- sexual, phenotype
- natural, genotype
- sexual, genotype

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4.1.10. Male elk with large groups of mating females, or harems, tend to ha...

Author: Olivia D'Ambrogio

Male elk with large groups of mating females, or harems, tend to have individually specific phenotypic traits including large antlers and body size. If a male with a smaller body size is seen with a large group of females, then which advantage is most likely in effect for these females to choose this male?

Please choose only one answer:

- Direct benefits
- "Sexy Sons"
- Good Genes Hypothesis
- Red Queen Hypothesis

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4.1.11. Male specimen "A" is 54 years old, has 14% body fat, exercises dail...

Author: Olivia D'Ambrogio

Male specimen "A" is 54 years old, has 14% body fat, exercises daily, eats well, and has 2 children. Male specimen "B" is 50 years old, has 29% body fat, exercises occasionally, eats a typical American diet, and has 3 children. Male specimen "C" had 32% body fat, exercised rarely, did not eat well, and has 5 children. "C" died at age 47. In terms of biological fitness, at this time, which individual is the most fit?

Please choose only one answer:

- Individual "A" because he is the healthiest
- Individual "B" because he is the youngest that is still alive
- Individual "C" because he had the most children
- Individuals "A" & "B" because they lived longer than "C"

Check the answer of this question online at QuizOver.com:

Question: [Male specimen A is 54 years old has 14 Olivia D'Ambrogio @Saylor](#)

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4.1.12. Modern evolutionary synthesis would predict what type of pattern in...

Author: Olivia D'Ambrogio

Modern evolutionary synthesis would predict what type of pattern in the fossils record?

Please choose only one answer:

- A linear progression pattern
- A regular, branching, and directional pattern
- An irregular, branching, and non-directional pattern
- A non-branching and non-directional pattern

Check the answer of this question online at QuizOver.com:

Question: [Modern evolutionary synthesis would predict Olivia D @Saylor.org](#)

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4.1.13. When comparing two populations of a plant species, a biologist observe...

Author: Olivia D'Ambrogio

When comparing two populations of a plant species, a biologist observes that one population's root size is significantly different. Can she conclude that the species are diverging and have different genetic traits? Why, or why not?

Please choose only one answer:

- Yes, her results show significant differences between the two populations
- Yes, she must compare the environmental differences between the populations to determine if the difference is one due to plastic phenotypes of the species or if the difference is genetically based.
- No, significant difference in traits between populations is always genetically based.
- No, she must compare both the genetic and environmental differences between the populations to determine if the difference is one due to plastic phenotypes of the species or if the difference is genetically based.

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4.1.14. While hiking through the mountains during the fall, you notice that...

Author: Olivia D'Ambrogio

While hiking through the mountains during the fall, you notice that many of the elk are grouped with one male to many females, and it appears that those males with more points and larger racks tend to have more females in their group than males with fewer points and smaller racks. Is this an example of natural selection or sexual selection, and why?

Please choose only one answer:

- Natural Selection, because these males are reproducing more, which is adaptive, and their rack size could be influenced by abiotic and/or biotic factors such as forage availability
- Sexual Selection, because these males are reproducing more, which is adaptive, and their rack size could be influenced by abiotic and/or biotic factors such as forage availability
- Natural selection, because if these males mate with each of these females, then the males with more points and larger racks will be reproducing at a greater rate and this is an example of selection that may not necessarily be adaptive and is determined by the individual elk
- Sexual selection, because if these males mate with each of these females, then the males with more points and larger racks will be reproducing at a greater rate and this is an example of selection that may not necessarily be adaptive and is determined by the individual elk

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4.1.15. While on a local tour of undisturbed rainforest in Costa Rica you n...

Author: Olivia D'Ambrogio

While on a local tour of undisturbed rainforest in Costa Rica you notice that the spider monkeys have unusually long arms that help them make their way through the trees with great agility and speed. Determine which explanation below best fits Charles Darwin's theory of natural selection.

Please choose only one answer:

- Over their lifetime, the individual spider monkeys that grew longer arms became faster and then passed this trait onto their offspring
- There was a large catastrophe in the past, and those organisms with longer arms survived and reproduced.
- Over many generations, those individuals that possessed longer arms were more successful in reproducing; therefore, the trait was passed on through the generations.
- Over many generations, individuals grew longer arms and then passed that trait onto their offspring.

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Question: [While on a local tour of undisturbed Olivia D'Ambrogio @Saylor.org](#)

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