

STUDENT HANDOUT: Natural Selection in Action

Table One: A small population of horse-like animals have been removed from a large population of the same creatures and moved to a small island many miles away. The environment of this island is slightly different than the mainland: temperatures are cooler, and the only food source is a fruit that turns bright red when ripe and is located higher up in the trees. The island is only a few square kilometers, and there are no natural enemies.

After many generations you return back to the island and examine that the animal has physically changed as a result of being moved to a new environment. Examine each of the possible alleles for the traits below. Choose an allele for each trait that you believe the animals will possess and explain why you chose that answer.

Allele one	Allele two	Justification
Long hair	Short hair	
Blue eyes	Brown eyes	
Long tail	Short tail	
Long neck	Short neck	
Good hearing	Poor hearing	
Fast runner	Slow runner	
Color vision	No color vision	
Long nose	Short nose	
Long tongue	Short tongue	

On a separate sheet of paper provided draw a picture of the animal, with the alleles chosen in Table One. Also write a description of the animal.

Questions

1. Which of the traits provided no particular advantage to the animal in reproducing? How could you determine this?
2. Why would it be correct to state that this small group of animals reaching and then inhabiting the island was an example of the founder effect, a form of genetic drift?
3. Do you think the future animal will look the same as the population on the mainland from which the animals originated? Explain your answer.
4. What environmental factors do you believe influenced the changes in allele selection?
5. What are adaptations? What adaptations do you think will occur to the animals on the island?
6. Why is it true that the animals found on the island after many generations have greater "fitness" than the animals first introduced to the island?
7. Suppose the water table around the island dropped and the island and mainland were once again joined. What effect would the migration of these animals back to the main population be on the allele frequencies?