Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Natural Selection

**Purpose**

The purpose of this exercise is to demonstrate the concept of selection and to observe the role of the environment in determining the direction of selection. [[1]](#endnote-1)

**Procedure**

 **Materials**

1. 25 colored discs each of the following colors: clear, blue, red, and yellow.

*These “plastic animals” can be any type of penny size plastic objects, markers, etc. Scatter these “plastic animals” on the classroom floor prior to starting lab.*

1. Petri dish

**Sequence of steps**

*Variations and Survival*

1. ![C:\Users\Angela\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\DRP2N1IJ\MCj04242300000[1].wmf]()At the signal to start, search the floor in the area assigned to you. Collect as many “animals” as possible in 2 minutes.
2. When time is up, count the number of each color that you have collected. Record these numbers in the observations section in Table 1. Collected Animals.

*Variations and Inheritance*

1. Collect all of the surviving animals (those left on the floor). Place them in the lid of a Petri dish and mix them thoroughly.
2. Draw out mating pairs of animals , 1 at a time, and lay the pairs on a table in columns:

Clear/clear in one column

Clear/red in another

Clear/blue in the third and so on.

**![C:\Users\Angela\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\DRP2N1IJ\MCj04242300000[1].wmf]()**

**Observations**

 Table 1. Collected Animals

|  |  |  |  |
| --- | --- | --- | --- |
| Variety of Animal | Beginning Number (on floor) | Number Collected | Number left on Floor |
| Clear |  |  |  |
| Blue |  |  |  |
| Red |  |  |  |
| Yellow |  |  |  |
| Totals |  |  |  |

**Conclusions**

1. What are the genotypes of the animals you created from the Petri dish?
2. What is the original frequency of each allele in the gene pool?
3. After foraging, what is the new frequency of each allele (left on the ground) in the gene pool?
4. Which animals were most difficult to find? Explain.
5. Was the difficulty in question 4 reflected in the final frequencies of the various alleles?
6. Which animals are best adapted, and which are more poorly adapted to their environment?
7. Suppose the surviving animals were to mate. How would the success of the best adapted animals be reflected in the offspring?
8. Assume that each mating resulted in a single offspring. How many offspring will be added to the population of plastic animals?
9. Of the number of offspring added, how many will be clear?
10. If this mating procedure were to be carried out over several generations, what would happen to the frequency of the clear allele and the recessive alleles?
11. How do changes in the frequencies of the alleles over several generations affect the predator?
12. For what variation in the predators would the environment select?
13. What was the origin of the variety of colors as seen in these animals?
14. The phrase “survival of the fittest” has been used to describe Darwin’s ideas. How has this concept been demonstrated?
15. Would “elimination of the unfit” be more appropriate? Explain.
16. Explain the difference between domestication and natural selection.

1. Agricultural Biology Curriculum Lesson Plans. Sacramento: California State Department of Education, Agriculture Education Unit, 1990. [↑](#endnote-ref-1)