

NAME: _____

PER: _____

DATE: _____

NATURAL SELECTION: THE GAME



Introduction:

The purpose of this activity is to demonstrate the process of natural selection in an observable and enjoyable way. What we'll be doing is this. The members of all the L2 biology classes will be assigned as either "predators" or "prey". The predators will be designated by having a red ribbon tied around their foreheads. The prey will be designated by having a posterior ribbon "tail".

The objective of the game for the predators will be to catch/kill as many prey as possible during the school day. This is accomplished by snatching the tail from a prey student, similarly to a game of "flag football".

The objective of the prey student is simply to survive the day without having their tails snatched.

However, a selective variable will be introduced which will aid us in observing the process of selection at work. This variable will be tail length. The prey's phenotype for tail length will have 3 variations; short, medium, and long. This will be a co-dominant trait represented by the letters S for short and L for long. Those prey with a genotype of SS will have short tails, those with SL will have medium tails and those with LL will have long ones. Hopefully, this activity will demonstrate the selective advantage of having a shorter tail.

Rules/Procedures:

Pre-Hunt:

All students will be categorized as predators or prey. Approximately 15% of students will be predators. The remainder will be prey. Of the prey 25% will have short tails, 50% medium, and 25% long.

Hunt rules.

- All hunting is to take place between classes. There will be no hunting in the following areas/times:
 - Classrooms
 - Cafeteria
 - Gym & Gym class
 - Library
 - School offices
 - Bathrooms
- Hunting and/or evading predators will not be accepted as valid excuses on lateness to class.
- Hunting begins following homeroom, and ends at the end of 13th period.
- A prey is killed/eaten if his/her tail is snatched from them.
- Prey are not allowed to cover/conceal their tails they must extend to the established length.
- Predators are not allowed to push, pull shove, grab, or otherwise restrain the prey. They must get the tail using a "clean snatch".
- Predators are to keep their captured tails and return them to the teacher the following day.
- No fighting/arguing. All disputes should be brought to the attention of your teacher. *Remember this is a game, just be glad you aren't a real prey animal.*

Post-Hunt:

- The day following the hunt, all prey are to report whether they were eaten, or survived the previous day. Only survivors will be allowed to mate.
- Survivors will be issued a blank index card; these will be collected and mixed in a box. They will also be issued 4 "gene" cards, representing their genotypes. For example if a prey has a medium tail, (SL), he/she will be given 2 cards with the letter S, and 2 cards with the letter L.
- Survivor cards will be drawn and randomly matched.
- Mates will then shuffle their cards and place one each on their desk. The resulting genotype will be assigned to a student who had been eaten on the previous days hunt. This procedure will be repeated until each "killed" prey has received a new genotype. Students should then record the number of each phenotype on the attached data table.

The above procedures will continue for 3 hunting days. Following the third day, class data will be pooled and analyzed.

Class Data:

Day	Number SS	Number SL	Number LL
Start			
Day 1			
Day 2			
Day 3			
Day 4 (if necessary)			
Change from start (Start-Day3)			

All Classes Data:

Day	Number SS	Number SL	Number LL
Start			
Day 1			
Day 2			
Day 3			
Day 4 (if necessary)			
Change from start (Start-Day3)			

Analysis:

You are to provide a lab paper according to the standard format provided to you for this class. Your paper should also include the following:

- A line graph showing the rate of increase or decrease in frequency of each phenotype (total of 3 graphs). This should be done using the data for the total for all classes.
- Data tables for both your single class, and the total of all classes

Teacher's Notes:

Materials

- Index Cards
- 100 "S" cards
- 100 "L" cards
- Ribbon (lots)

Notes/Suggestions:

For 5 classes, there should be 8 predators. These should be selected equally from all classes.

Tail lengths should be 3', 2', and 1' respectively