

Guppy Simulation Lab

Name: _____

Date: _____

In this lab you will analyze how guppy populations change over time. The simulation activity allows you to start with a pool of guppies and your choice of predators. You will be able to watch what happens to your guppy population and how the introduction of predators can affect the guppy's appearance. This simulation will help you understand what pressures drive the guppy's evolution.

Instructions

1. Go to <http://www.pbs.org/wgbh/evolution/sex/guppy/>
2. Read the introduction and look at the "guppy gallery" to get an idea of the variety of guppies in the wild.
3. Begin answering the questions below **BEFORE** activating the simulation.

Questions prior to simulation

1. If being flashy and colorful attracts predators, why do you think guppies are so colorful?
2. After viewing the guppy gallery, pick the fish you find most interesting. What is the fish's scientific name, origin and average size? Describe the coloration of the fish you chose.
3. After viewing the predator gallery, pick the fish you find most interesting. What is the fish's common name, scientific name, and origin?
4. View the guppy's habitats and list what conditions would affect the predator populations.

Go back to the introduction and click on the "I'm ready to find out" link.

5. Who is John Endler? What did he study and where did he study it?
6. For each of the three stream areas, describe the guppy coloration:
Pool 1:

Pool 2:

Pool 3:

7. Develop your own hypothesis about guppy coloration. The hypothesis should answer the question: Why do guppies in different areas of the stream have difference in coloration?

Guppy Simulation

You will run 2 experiments and collect data about guppy populations. You will then analyze this data to determine whether your hypothesis is correct or not. Make sure each simulation runs through at least 5 generations.

Trial 1

Guppy color types	
Predator Species & Numbers	
% of Brightest guppies after 5 generations	
% of Bright guppies after 5 generations	
% of Drab guppies after 5 generations	
% of Drabbest guppies after 5 generations	

Was your hypothesis supported by your data? If so, why? If not, you want to change your hypothesis and rerun the experiment.

What happened in this simulation? Did the guppy coloration change over time? Did the predators seem to affect guppy coloration?

*****In the second trial, change the independent variables*****

Trial 2

Guppy color types	
Predator Species & Numbers	
% of Brightest guppies after 5 generations	
% of Bright guppies after 5 generations	
% of Drab guppies after 5 generations	
% of Drabbest guppies after 5 generations	

What happened in this simulation? Did the guppy coloration change over time? Did the predators seem to affect guppy coloration?

8. Describe how predators influence guppy coloration.

9. Was your hypothesis correct? Why or why not?

10. What is meant by “male guppies live in a crossfire between their enemies and their potential mates?”
11. Why do you think guppies in different areas of the stream have different coloration?
12. How does the number of predators affect the number of brightly colored guppies?
13. How does this simulation lab demonstrate the process of evolution? What mechanisms are NOT shown in this simulation?