Genetic Drift: Population Bottleneck

Background Info: Genetic drift is a change in allele frequency in a population due to a random event. The change in DNA has nothing to do with an organism’s fitness, only its luck.

Complete the following lab to determine if genetic drift has more of an effect on a small or a large population by using the species Fruitloopitus.

Hypothesis: If the Fruitloopitus population is small, then genetic drift will have more/less of an effect because \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Materials: cup or bag, 100 Fruitloopiti, pencil

Procedure:

1. Count and record in the data table the number of each color of Fruitloopitus.
2. Put all 100 Fruitloopitus back into the cup or bag**. A hurricane has hit** and killed off most of the fruitloopitus population, only 20 survive**. Without looking**, pick out 20 Fruitloopiti- **these are the lucky survivors.**
3. Count and record in the date table the number of each color of the 20 Fruitloopiti.
4. Put the fruit Loops back in the bag – please no eating!
5. Finish lab questions.

Data:

**ORIGINAL POPULATION (100 Fruitloopitus)**

|  |  |  |  |
| --- | --- | --- | --- |
| Color of Fruitloopitius | # of color | Total # in population | Percent of Population  (# of color/Total population) X 100 |
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|  |  |  |  |

Insert a chart showing how many Fruitloopitus you had of each color. The color goes on the x axis and the number goes on the y axis. Label all parts.

**NEW SURVIVING POPULATION (20 Fruitloopitus)**

|  |  |  |  |
| --- | --- | --- | --- |
| Color of Fruitloopitius | # of color | Total # in population | Percent of Population |
|  |  |  |  |
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Draw a graph showing how many Fruitloopitus you had of each color. The color goes on the x axis and the number goes on the y axis. Label all parts.

Post Lab Questions: **Write all answers in complete sentences and be detailed in your responses**

1. Based on your data, describe which Fruitloopitus became more frequent in the gene pool and which Fruitloopitus became less frequent in the gene pool.
2. How many colors of Fruitloopitus did you start out with? \_\_\_\_ How many colors did you end up with? \_\_\_\_ Based on your experiment, what does genetic drift do to the diversity of a population?
3. Did natural selection play a role in this Genetic Drift lab? Why or why not?
4. If genetic drift occurred again on your population of 20 survivors, predict the effect it could have on that population’s survival. Would the new, small population have a greater chance of survival than the original, large population? Explain.
5. This lab demonstrated Population Bottleneck. What is the difference between population bottleneck and founder’s effect?
6. What were some experimental errors that occurred during this lab?