Homework one:2022. 30 points. Think of this not only as homework but as a study guide also. Please place your last name in the tile and full name on the document submitted. I will only return comments on doc, docx, or text files submitted. NO pdfs or urls pointing to Google docs on other sites. I need files I can download locally to grade. Please use spaces proved after questions as to the desired length of your answer.

**The urls listed in the questions may not directly link to the proper websites. If you run into problems, please use the urls provided on the lesson guide.**

1. Using the lesson guide, Provide a “working” definition for

a. Evolutionb. Natural Selection and c. Genetic drift

2. *The connection between evolution and natural selection.*

Directional selection is seen as a force for evolution, stabilizing as a force against. Why? Hint: Use the micro definition of evolution.

3. *The connection between selection and fitness.*

Visit the following web site. <https://evolution.berkeley.edu/survival-of-the-sneakiest/> How would you begin to evaluate the fitness of the two different types of male? Hint: Use, despite its flaws, the number of matings obtained by males to calculate relative finesses. Then tell me what you would do if you could do paternity tests.

4. Assume as in guide one, color is a co dominant trait (i.e. the heterozygotes differ phenotypically from both homozygotes), and the pink individuals are heterozygous You sample a population of annual flower in 2020 and find the following phenotype frequencies:

Red Pink White

100 200 100

You return to the population in 2022 and find the following phenotype frequencies:

Red Pink White

100 150 50

What changes have occurred in the population with respect to gene frequencies? a. What type of selection could explain the change in gene frequencies? b. Could genetic drift explain the changes?

5. Visit the following websites. Commit to memory definitions for mutation and sexual recombination.

<https://evolution.berkeley.edu/evolution-101/mechanisms-the-processes-of-evolution/genetic-variation/>

<https://evolution.berkeley.edu/evolution-101/mechanisms-the-processes-of-evolution/the-effects-of-mutations/>

<https://evolution.berkeley.edu/evolution-101/mechanisms-the-processes-of-evolution/sex-and-genetic-shuffling/>

What is the difference between the variation created by sexual reproduction (recombination) and that caused by mutation? Hint: Which of the two creates new variation at the gene level? Which of the two simply reshuffles genotypes but can lead to new phenotypes?

6. Darwin used artificial selection as evidence that natural selection was possible. What is the difference between the two? Hint: Which of the two is “goal” oriented? Which, do you think, can cause changes faster?

<https://evolution.berkeley.edu/evolution-101/mechanisms-the-processes-of-evolution/artificial-selection/>