



EVOLUTION LABS



PART I: Flashy Fish

1. Go to the following website:
<http://www.pbs.org/wgbh/evolution/educators/lessons/lesson4/act2.html>
2. Download the Flashy Fish Data. This will include a series of questions to answer and data to record.
3. Purpose:
4. When answering the final question on what did you learn, include the following:
 - a. Who was Darwin?
 - b. What are the principles of natural selection (do not just say survival of the fittest)?
 - c. How does the environment influence natural selection? Give hypothetical examples using the guppies to exemplify each of the following: disruptive, stabilizing, and directional natural selection, genetic drift, and speciation.
5. Applications:
 - a. What is co-evolution? How could this concept apply to the guppies?
 - b. An argument supporting the use of genetically modified plants is that GMOs can be engineered to be more disease resistant and therefore fewer pesticides would have to be applied to crops. However, others argue that this is only short term and in the long run, farmers will end up having to use more/stronger pesticides. Explain.

PART II: Hardy-Weinberg

1. Go to the following website:
http://www.phschool.com/science/biology_place/labbench/lab8/intro.html
2. Answer the following questions:
 - a. What is Hardy-Weinberg Equilibrium?
 - c. What are the 5 requirements in order to be in H-W Equilibrium?
 - d. Describe what each of the H-W variables represent.
 - e. What are the applications/uses of H-W equation?
 - f. What is the difference between an allele frequency and a genotype frequency?
3. Do Sample Problems 1,2,3, Allelic vs. Genotypic Frequencies, and Analysis of Results. For each question: a) show your work b) record your answer
4. Answer the self-quiz questions at the end.
5. Application Q:
 - a. Some alleles like the one that causes cystic fibrosis are recessive alleles. Although the disorder is lethal, it is almost impossible to eliminate the allele from a gene pool. Why might this be (hint: heterozygous)?