**Gel Electrophoresis Activities / Interactions and Heredity**

**Classwork 15 pts.**

Part A: Pearson Lab Bench

<http://www.phschool.com/science/biology_place/labbench/lab6/concepts2.html>

1. Work through the tutorial on Gel Electrophoresis. Read all information, run animations, make notes. Notes should focus on:
2. What are restriction enzymes and how do they work?
3. What are the steps in a general gel electrophoresis procedure?
4. What is the purpose of a ‘marker’ and a standard curve?
5. Hind III is a restriction enzyme that is commonly used to cut DNA into marker fragments. How many bands does Hind III cut from the DNA sample?
6. Complete the two practice problems.
7. Take the 8 question quiz at the end. Record your score \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Part B: Observing the apparatus and loading gels.

1. Take pictures of or diagram the set up of the gel electrophoresis apparatus at each stage.
2. Practice loading 10 ul of sample into the wells.
3. 1000ul = 1ml . Use this information to perform the following conversions for micropipette use.

200 ml = \_\_\_\_\_\_\_\_\_\_\_\_\_\_ul

1.5 ul = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ml

1.5 ml =\_\_\_\_\_\_\_\_\_\_\_\_\_ul

.76 ml =\_\_\_\_\_\_\_\_\_\_\_\_\_ul

Part C: Reading Gels for Application

1. This is a DNA fingerprint exhibiting samples from a victim, two suspects, and the crime scene. Which of these DNA fragments is common to both the victim and Suspect 1?



1. Under each column in the autoradiograph, write the letters associated with each individual's genotype. For example, the genotype of the mother in the first column is A/D. Then, circle the letter in the child's genotype that represents the gene inherited from the mother.

Which "letters" must the child have inherited from its father?

 

1. Use the following DNA fingerprint to answer the questions:

 

1. Which male is the father of the child?
2. Give the approximate base pair size of the bands the child received from the mother.
3. Give the approximate base pair size of the bands the child received from the father.
4. Is every band in the child’s fingerprint accounted for?
5. Brainstorm ways you could use gel electrophoresis technology for evolutionary research.