**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. Set the micropipettor for 10 ul. Place a tip on the end of the pipet. Practice loading 10 ul of sample into the wells. Reset and practice loading 20ul.
2. 1000ul = 1ml . Use this information to perform the following conversions for micropipette use.

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

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

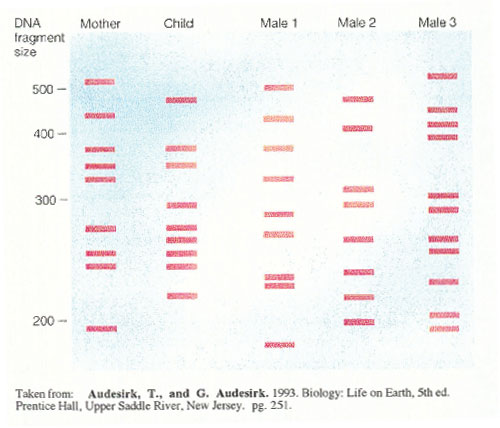
1.5 ml =\_\_\_\_\_\_\_\_\_\_\_\_\_ul

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

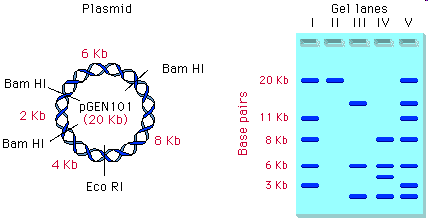
1. Try to load 15 ul of DNA into an actual agarose gel. Troubleshoot the process here. Difficulties? Was it easy? What made it hard to do?

Part C: Reading Gels for Application

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. Use this plasmid and the gel below to answer the questions.



1. What is the plasmid made of? Where did it come from?
2. What are the notations Bam HI and Eco RI on the plasmid? What will happen at those locations?
3. If you mix the plasmid with Bam HI, how many fragments will you have in your tube? What size will each fragment be?
4. If you mix the plasmid with the restriction enzyme Hind III, how many fragments will be created? Explain your answer.
5. If the plasmid is cut with the noted enzymes and ran on a gel, which lane would represent the plasmid fragments created from a mixture of plasmid and Bam HI? Which lane would represent the plasmid fragments created from a mixture of plasmid DNA and Bam HI AND Eco RI?