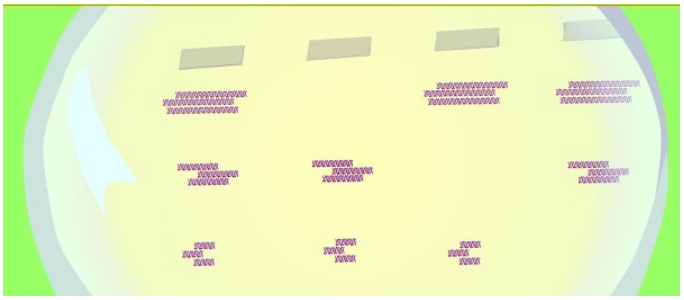
Student Web quest: Gel Electrophoresis

Source: Genetic Science Learning Center. "Gel Electrophoresis Virtual Lab." Learn.Genetics 14 July 2009
http://learn.genetics.utah.edu/content/labs/gel/

**Objective**: In this virtual lab, you will identify the resources and process of Gel Electrophoresis.



Introduction:

1. What is Gel Electrophoresis used for?

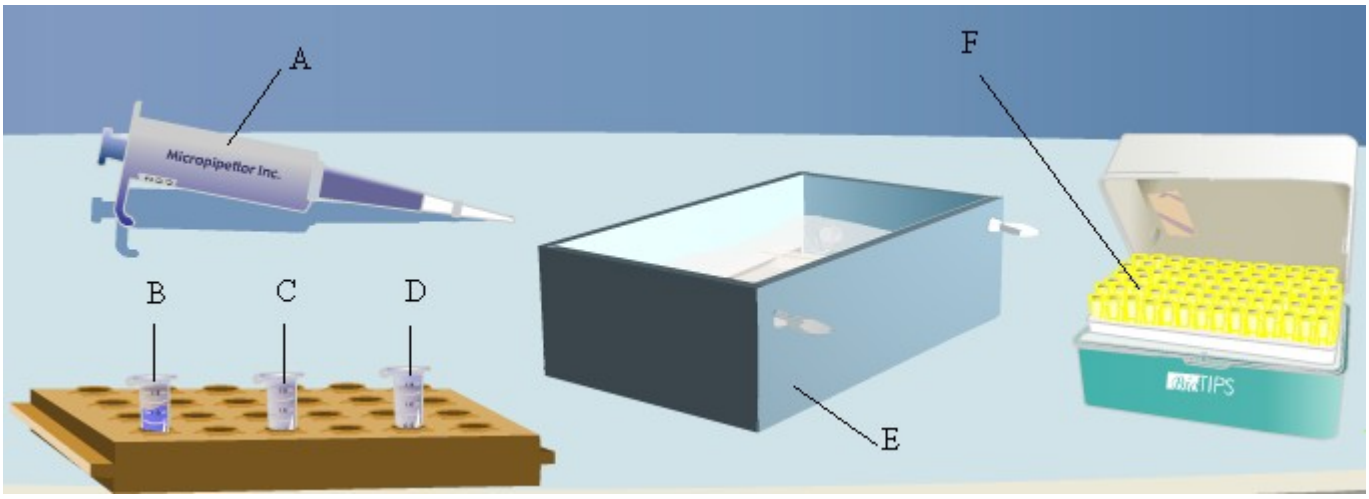
2. Using the picture to the left, describe how DNA moves through a gel.

Step One: Make the Gel & Step Two: Step up the Gel Apparatus

3. What is buffer and what is it used for?

4. What is the purpose of the "comb?"

Step Three: Load the DNA sample into the Gel




5. *Label the following on your bench. Your **Pipette tips** (F) has already been done for you.*

*A* _____ *C* _____

*B* _____ *D* _____

E _____

6. What are the two major functions of "Loading Buffer?"

1. _____

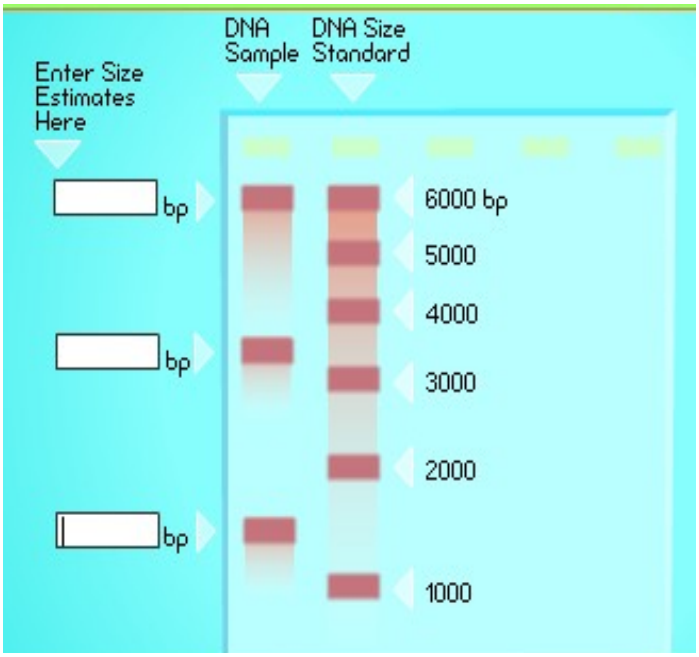
2. _____

7. What is the function of the DNA Standard (also called the "Ladder"?)

Step Four: Hook up the Electrical Current and Run the Gel

8. Since DNA has a negative charge, in which direction will it go in the gel?

9. If there are bubbles, what does this mean?



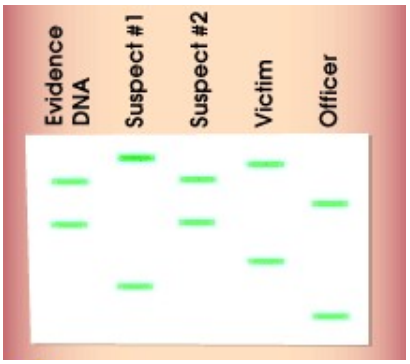

Step Five: Stain the Gel and Analyze the Results

10. What is ethidium bromide? Why can it be dangerous?

*11. Read the following gel to the left. Put in the estimated base pair lengths to the left in the boxes.*

12. Which fragments went the farthest through the gel, large pieces of DNA (6000 bp) or smaller pieces of DNA (1000 bp)?

**Analysis and Conclusions:**




13. Gel Electrophoresis is used often in forensics. Look at the following gel to the left. From the evidence DNA, which individual matches the DNA evidence left at the crime scene?

14. When running a gel, you need to have a positive control and a negative control. What do these mean and what are they each used for?

15. Name and discuss a source of error in performing and evaluating gel electrophoresis.