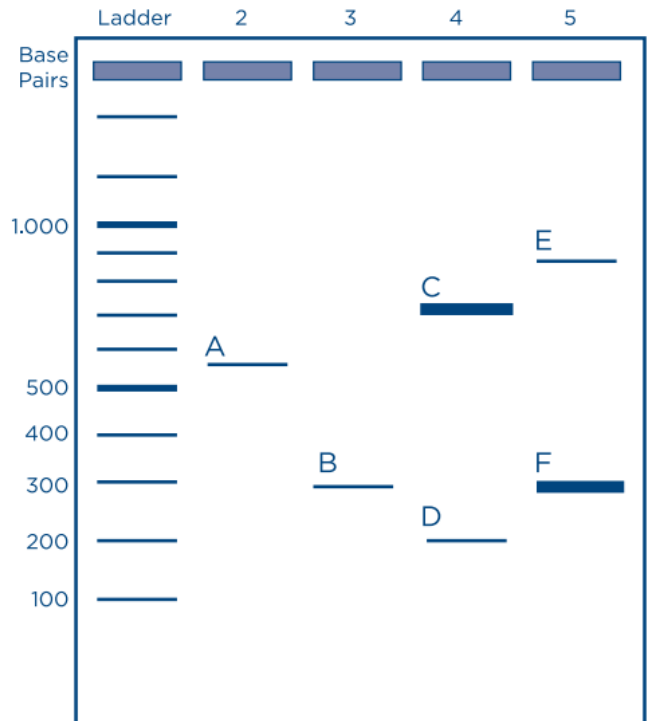


WORKSHEET - Gel Electrophoresis

1. Evaluate the following statements. Rewrite them so that they are correct if necessary.

- Each band in a DNA electrophoresis gel is made up of one molecule of DNA.
- Gel electrophoresis can tell you the sequence of a particular DNA fragment.
- You can see DNA on a gel because DNA is naturally fluorescent.
- DNA moves through a gel because it is positively charged and is attracted to the negative electrode.
- The speed at which DNA moves through a gel is directly related to its charge.
- An electrophoresis gel used for DNA is usually made from gelatin which is a protein obtained from seaweed.
- When visualizing your gel, you can tell the size of the DNA fragments by seeing how wide each band is.
- A gel is placed in a liquid called running buffer because it is an insulator and will protect the user from electric shock.

The gel below contains a DNA ladder in the first lane, followed by four DNA samples in lanes two through five. The DNA ladder has 10 bands that are each separated by 100 base pairs from lengths 100-1000; it also has bands at 1200 base pairs and 1500 base pairs



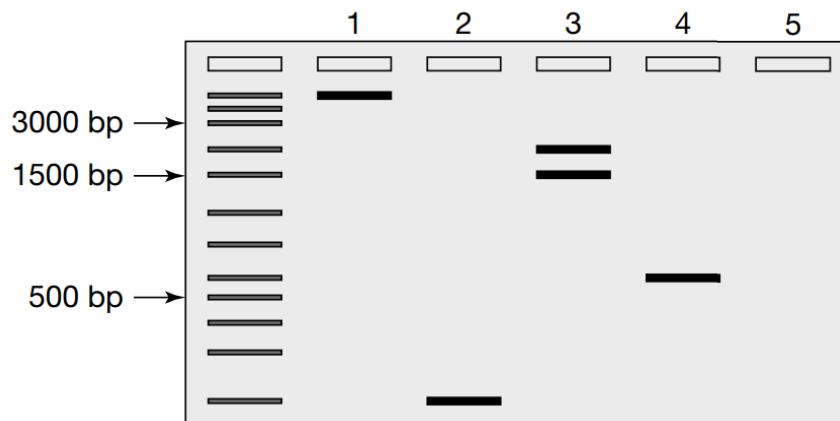
2. Which DNA fragment, A, B, C, D, E, or F, is the largest? Justify your answer.

3. Which two DNA fragments are the same size? How do you know this?

4. Which lane of the gel, 2, 3, 4, or 5, has a DNA fragment that is about 700 base pairs?

5. Which DNA fragment, B, C, D, or E is about the same size as the lengths of the fragment A and fragment F added together?

6. Analyzing data and applying principles:



a. Identify the lane that contains:

i the shortest fragments of DNA

ii DNA fragments that include one restriction site for Bgl II and were treated with that restriction enzyme

iii DNA fragments with an approximate size of 1500 bps iv DNA fragments with a size in excess of 3000 bps.

- b. If this same DNA that was treated with Bgl II had instead been treated with HindIII, would the pattern of bands obtained in electrophoresis have been the same? Explain.**
- c. A different sample of DNA was treated with a particular restriction enzyme that produced three fragments of sizes 400, 750 and 2500 bps. Consider that this DNA mixture was loaded into lane 5 of the gel shown in figure. Draw the expected pattern on completion of electrophoresis of this DNA in lane 5.