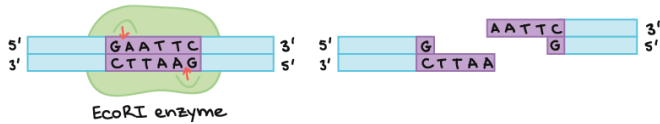


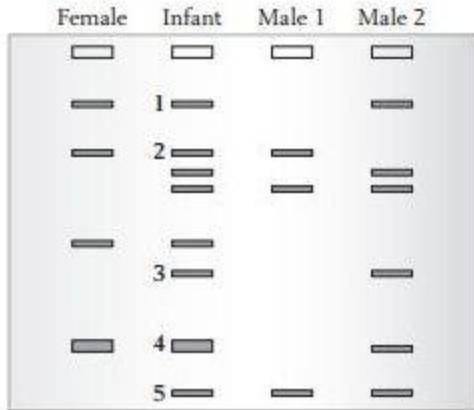
Gel Electrophoresis Practice

Name _____

- The following DNA samples from a child, mother, and 2 potential fathers were digested with a restriction enzyme called EcoRI. EcoRI cuts DNA before the A everywhere there is a sequence AATT as shown below.



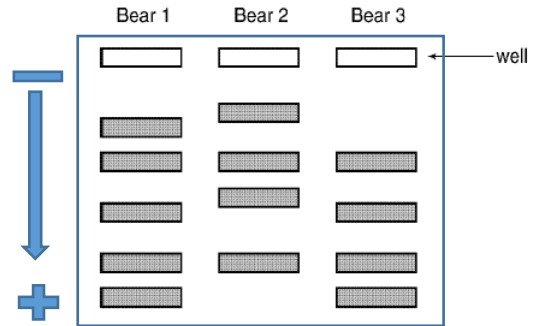
After PCR, the following gel electrophoresis resulted.



A. Which father, if either, should be paying child support? _____

B. Why would a crime scene DNA have to match exactly, but not in a paternity case? _____

- The following diagram shows the results of a test that was done using DNA samples from 3 bears of different species. Each DNA sample was cut into fragments using a specific restriction enzyme and placed in the wells as indicated below. The DNA fragments were then separated using gel electrophoresis.



1. Gel electrophoresis is used to separate the DNA fragments based on their

- A. size. C. color.
B. function. D. chromosomes.

2. The arrow represents the direction of movement of the DNA fragments. What is responsible for the movement of the DNA in this process?

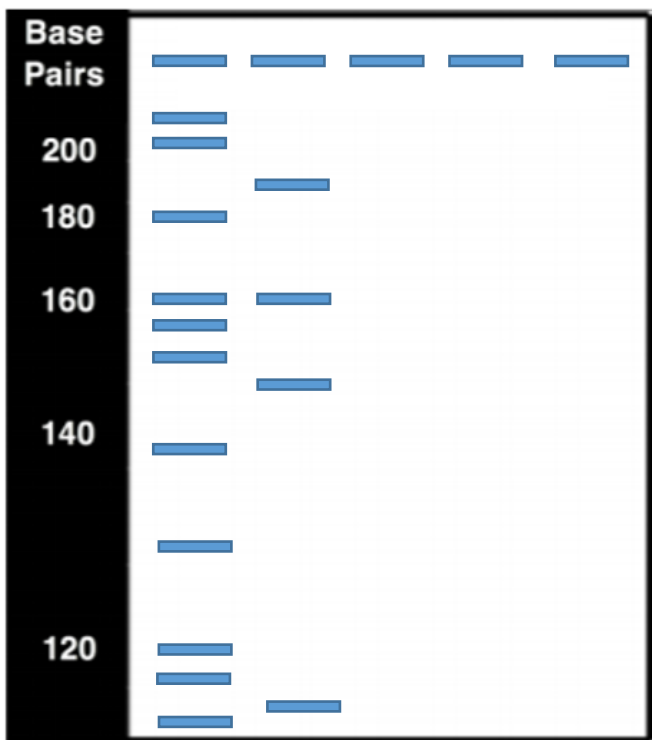
3. Which 2 species of bear have the closer evolutionary relationship? _____ How does the gel electrophoresis tell you that?

4. Before the DNA was put into the wells, it underwent a process called PCR, polymerase chain reaction. Look up the procedure PCR. Why is it necessary to do PCR before the gel electrophoresis?

- A group of scientists are investigating the arrest of a poacher caught with an elephant tusk. Park rangers believe the tusk is from a recently discovered crime where 3 elephants from the same population were found dead with their tusks removed. The rangers give the scientists DNA samples from the tusks and the 3 dead elephants. The numbers in the table below represent the size of the 2 gene pieces cut by the restriction enzyme in base pairs (bp).

	Gene name		
	FH19	FH67	FH129
Elephant 1	189	120	132
	193	129	160
Elephant 2	193	147	160
	193	113	160
Elephant 3	183	130	152
	185	103	160

Draw the expected pattern of bands on a gel that shows the DNA fragments of the 3 slaughtered elephants. A DNA ladder for a control group has already been added to well 1. The DNA from the seized elephant tusk in is well 2. If both DNA fragments are the same length, you only need one line, since they both move the same distance.



6. Can the rangers arrest the suspected poacher? _____
 Explain. _____