Mr. Gunstenson
Biology 30

Lab: Forensic DNA Fingerprinting

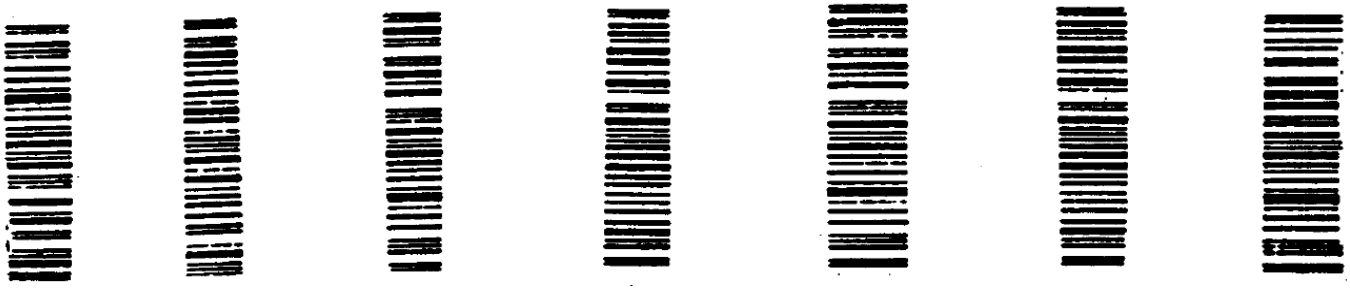
Part A: Rape Case

Background: You are a molecular biologist involved in forensic medicine. Two young women have been recently raped within a span of 2 weeks and you have been given the following evidence from the scene of the crime: blood samples from both women, semen collected on each victim, and blood samples from three possible suspects. It is your job to determine if both women were raped by the same man and which of the three accused suspects, if any, is the actual rapist.

You ran an agarose gel electrophoresis with the samples in the following wells, applying the restriction enzyme, EcoRI to each sample, and later probes for sequence variation determination.

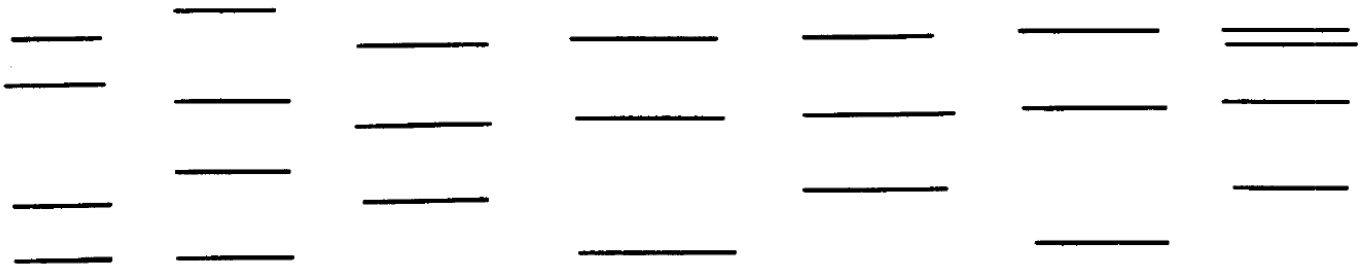
Results from the Restriction Enzyme Digest:

Victim A Blood	Victim B Blood	Semen collected on Victim A	Semen collected on Victim B	Suspect X Blood	Suspect Y Blood	Suspect Z Blood



Results from the Southern Blot:

Victim A Blood	Victim B Blood	Semen collected on Victim A	Semen collected on Victim B	Suspect X Blood	Suspect Y Blood	Suspect Z Blood



Write a paragraph to summarize your findings with reasoning:

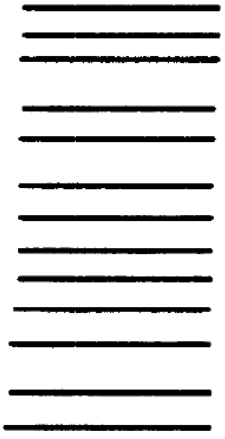
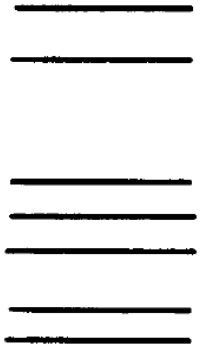
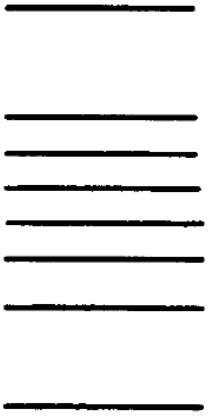
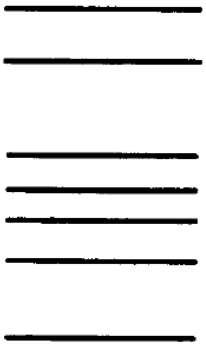
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Part B: Paternal Case

Background: Fingerprinting was developed in 1985 by Alec Jeffreys, a geneticist at the University of Leicester. Now, forensic scientists use the technique to examine DNA in biological evidence and prove with almost certainty whether it came from a given individual. By doing so, the technology has helped to incriminate or exonerate accused rapists, identify murder suspects, and settle paternity questions.

You are a molecular biologist involved in analyzing a paternity dispute. Blood typing tests proved inconclusive. Therefore, in order to determine which of the men listed contributed genetic material to the child, you run an agarose gel electrophoresis, adding an appropriate restriction enzyme to each of the samples.

Results for the Restriction Enzyme Digest:

Mother's Blood	Child's Blood	Male Sample 1	Male Sample 2	Male Sample 3
				

Write a paragraph to summarize your findings with reasoning: