ANSWER KEY

DNA Fingerprinting Activity

Introduction: DNA fingerprinting relies on the fact that the DNA code is universal for all living things and that there are differences between individuals within that code. Because human DNA is very similar to every other human's DNA, DNA fingerprinting primarily focuses on the areas of the genetic code that vary greatly amongst individuals. These non-coding regions of DNA, called introns, have the most variable coding sequences within members of a species because they do not code for proteins.

Scientists use restriction enzymes to cut intron segments of DNA. They "run" the fragments of DNA in a gel electrophoresis, and then use the cried bonding patterns (created by the fragments) between individuals to determine identity. Uses for DNA fingerprinting include: crime scene investigation, missing person identification, paternity testing, diagnosing genetic disorders, species identification and many others.

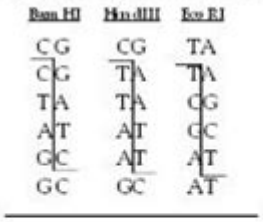
Instructions:

1. Using the restriction enzymes Bam HI, Hin dIII and Eco RI, identify and label the sites where each would cut the DNA sequence provided.
2. Record the number of cuts, the number of fragments and the length of each fragment created by each of the three enzymes. **NOTE**: To count fragment lengths, only count the number of bases on the **longest side** of the DNA strand.
3. Using the data collected, draw the banding patterns that would result if these fragments were run on an electrophoresis gel.

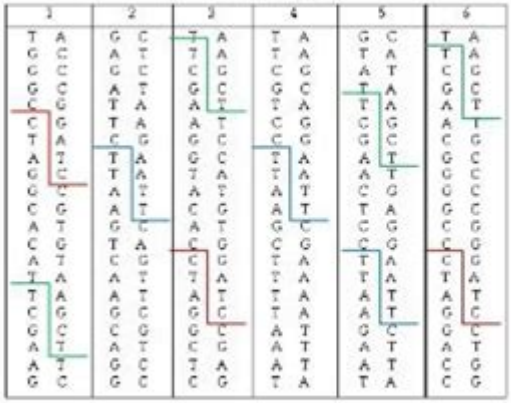
Data Table:

Restriction Enzyme	# of cuts	# of fragments	Length of DNA fragments
Bam HI	3	4	9, 50, 63, 8
Hin dIII	3	4	32, 42, 28, 29
Eco RI	4	5	19, 28, 45, 18, 20

Restriction Enzyme and where the cut:



DNA Sample:



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