

DNA DETECTIVE WORK

Unless you have a twin, no one in the world has a DNA sequence identical to yours. Although 99 percent of the DNA is the same in all humans, certain segments vary widely. Differences in these segments are detected through DNA fingerprinting. A small amount of tissue, such as blood, hair, or semen, is all that is needed to create a DNA fingerprint. The sample is cut up using enzymes and the segments are separated by size through gel electrophoresis. DNA is made visible either with radioactive probes or by staining. This reveals a pattern of bars: the DNA fingerprint. If the two DNA fingerprints match, they probably came from the same person. If they don't match, they certainly came from different individuals. In recent years, a number of people convicted of crimes have been exonerated based on DNA evidence.

Activity

In this exercise, you will learn the basics of DNA fingerprinting and consider the use of DNA in criminal investigations.

Part 1.

1. In your opinion, what role (if any) did newspaper stories and editorials have in the outcome of the original trial of Dr. Sam Sheppard?
They were a big help. They were always snooping around trying to throw stories, or twist anything they could get into.

1. What is the function of the restriction enzymes in DNA fingerprinting?
The function of the restrictive enzymes fingerprinting is to cut the sample of DNA into different length segments.

1. What is the function of the agarose gel electrophoresis step?
The function of the agarose gel is to organize and individualize the segments if DNA according to length.

1. Why is a nylon membrane used to blot the DNA?
It's used to blot DNA because it is absorbable

1. What does a dark spot on the X-ray film indicate?
Where probes have attached to the DNA.

Part 2.

1. What evidence was initially used to convict Cotton?

The evidence that was initially used to convict Cotton were photos, the track of a shoe and a flashlight.

1. What did the DNA evidence show?

The DNA evidence showed Cotton was innocent

1. How could DNA fingerprinting be used to prevent a false conviction if a case like this was being tried today?

DNA fingerprinting could be used to prevent a false by conviction; if a case like this was being tried today, it would skip all the assumptions and go straight to the facts.

1. What percentage of convicts are unjustly convicted of sexual assault cases, according to Neufeld and Scheck?

25% of convicts are unjustly convicted of sexual assault cases, according to Neufeld and Scheck.

1. The O.J. Simpson trial was one of the most visible trials that attempted to use DNA evidence. In the end, the DNA evidence was not satisfying to the jury, who acquitted Simpson. What do Neufeld and Scheck believe about the impact of the O.J. Simpson trial on the use of DNA evidence?

They say that this case shows potential within the technology we have today and introduced responsibility in the DNA field with testing carefully and cautiously.