



PLTW Virtual Learning

Medical Detectives

Lesson 16

April 27, 2020



7 & 8 Grade Medical Detectives

Lesson: April 27, 2020

Objective/Learning Target:
Lesson 16, Part 1

Students will be able to explain DNA evidence and how it is used to solve crimes.

Warm-Ups:

Quick Write:

What do you know about DNA profiling and how is it used to solve crimes?

How do we get someone's DNA?

What process is used to determine the DNA profile/fingerprinting?

Take a minute to write everything you know.

[One Minute Timer](#)



Lesson Introduction/Background Information:

DNA stands for deoxyribonucleic acid and determines all the characteristics of a living thing. Each nucleotide contains a sugar and a phosphate molecule, which make up the 'backbone' of DNA, and, one of four organic bases. The bases are adenine (A), guanine (G), cytosine (C) and thymine (T).

What is DNA fingerprinting/profiling? DNA samples are used to determine a pattern of bands that will be compared with the original bands to determine if there is a match.

Watch the video to learn more about [how is DNA fingerprinting used to identify a criminal.](#)

Practice:

Now that you know more about what DNA is and how it can be used to solve a crime, you are going to take part in a virtual lab DNA extraction. Click on the link below, interact with the virtual lab and work through the four steps of the extraction lab:

Step #1 - Collect cheek cells

Step #2 - Burst cells open to release the DNA

Step #3 - Separate DNA from proteins and debris

Step #4 - Isolate concentrate DNA

[Virtual Lab DNA Extraction](#)



Practice:

Watch the interactive video [DNA Fingerprinting/Profiling Video](#) and follow the directions below:

1. Pause the video at time 2:51 and determine who committed the crime -- was it Suspect #1, Suspect #2, Suspect #3 or Suspect #4? Why did you choose your suspect? Were you correct? Why?
1. Pause the video again at time 3:36 to determine who were the parents of the soldier -- were they Parents A&B, Parents C&D, Parents E&F, or Parents G&H. Were you correct in your choice? Explain how knowing the DNA of the parents can identify their child's DNA.



Self Assessment:

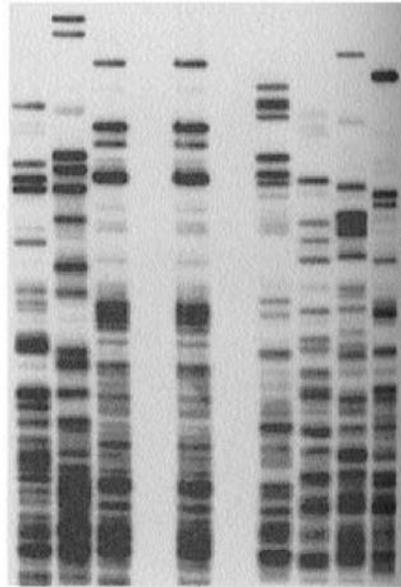
Find out what you know, and have learned, by determining which of the following statements are true and which ones are false.

1. The DNA in a person's blood is the same as the DNA in their skin cells and saliva.
2. Each person's DNA is different from every other individual's DNA.
3. DNA can have forensic value even if it's decades old.
4. DNA can identify a victim through the DNA from relatives.
5. DNA can place an individual at a crime scene, even if they claim they were not there.
6. DNA Fingerprinting was discovered by Alec Jeffreys in 1985.



Extend Your Learning/Continued Practice:

A. Who done it?



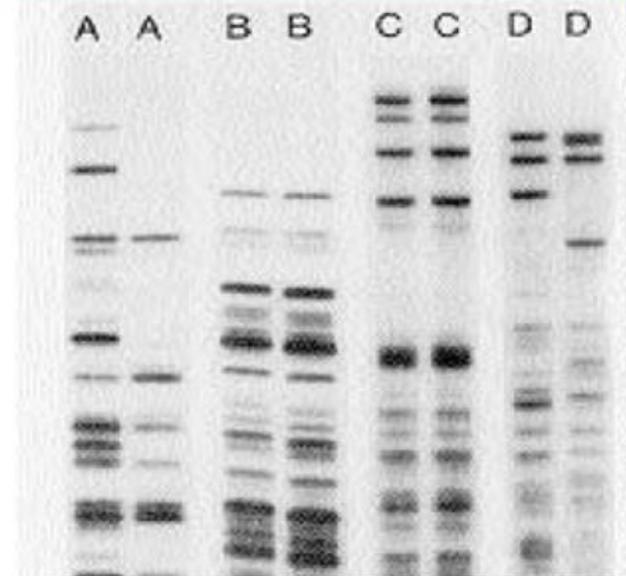
1 2 3 Bloodstain 4 5 6 7
Which suspect matches the bloodstain?

Can you solve A?
Who committed the Crime?

Can you solve C?
Which set of twins
Are identical twins?

Answer Key to the Quiz.
They are all true except #2 is false.

C. Identical or not?



Which sets of twins are identical twins?