

334
EDVO-Kit #

PCR-based VNTR Human DNA Typing

Storage:

See page 2 for specific instructions.

Experiment Objective:

The objective of this experiment is to determine the DNA profile of a sample by using PCR-based VNTR analysis.

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BACKGROUND INFORMATION

Background Information

PCR is a technique used to amplify a specific DNA sequence. It involves repeated cycles of heating and cooling to separate DNA strands and synthesize new strands. The process is highly specific and efficient, allowing for the detection of small amounts of DNA. In this kit, PCR is used to amplify a specific VNTR region of human DNA, which is then analyzed using gel electrophoresis to determine the number of repeats.

The amplified DNA is then analyzed using gel electrophoresis. The DNA fragments are separated based on size, and the resulting bands are visualized using a DNA staining agent. The number of bands and their positions are used to determine the number of repeats in the VNTR region. This information is then compared to a reference database to identify individuals.

BACKGROUND INFORMATION

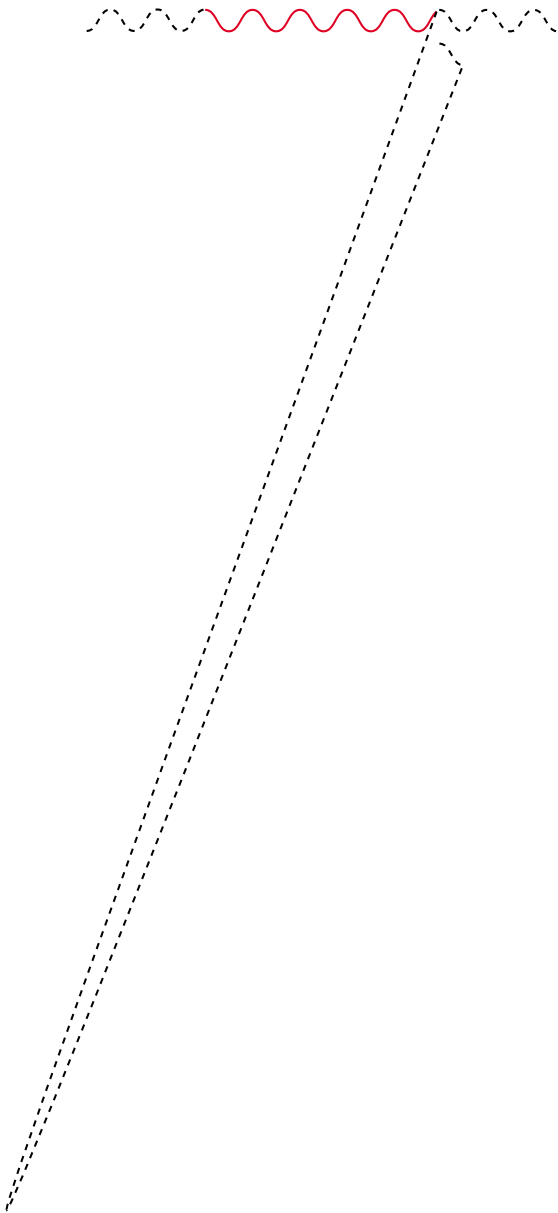
Background Information,
continued

Figure 2 - The Polymerase Chain Reaction (PCR)

If the template DNA is a double-stranded DNA molecule, the PCR process involves the following steps: 1. Denaturation: The double-stranded DNA is heated to separate into two single strands. 2. Annealing: Short DNA sequences called primers bind to the single strands. 3. Extension: A DNA polymerase enzyme (like Taq polymerase) synthesizes a new DNA strand by adding nucleotides to the primers. This process is repeated for several cycles to amplify the DNA.

The first PCR was developed by Kary Mullis in 1983. The first PCR was used to identify the DNA of a man who had been killed in a plane crash in 1991. The PCR process is now used in many fields, including forensic science, medicine, and agriculture. The PCR process is a powerful tool for DNA analysis.

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