

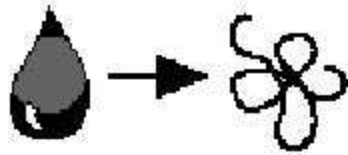


DNA FINGERPRINTING

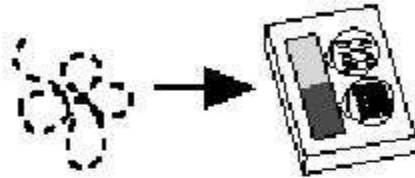
**MVR DEGREE COLLEGE
DEPARTMENT OF BIOTECHNOLOGY
HAINDAVI.K**

THE PROCESS OF DNA FINGERPRINTING

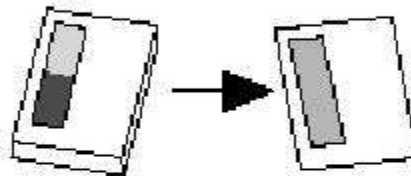
1. The process begins with a blood or cell sample from which the DNA is extracted.



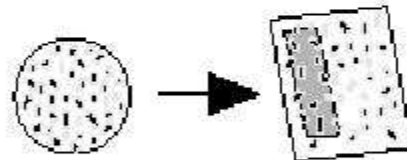
2. The DNA is cut into fragments using a restriction enzyme. The fragments are then separated into bands by electrophoresis through an agarose gel.



3. The DNA band pattern is transferred to a nylon membrane.



4. A radioactive DNA probe is introduced. The DNA probe binds to specific DNA sequences on the nylon membrane.



5. The excess probe material is washed away leaving the unique DNA band pattern.



6. The radioactive DNA pattern is transferred to X-ray film by direct exposure. When developed, the resultant visible pattern is the DNA FINGERPRINT.



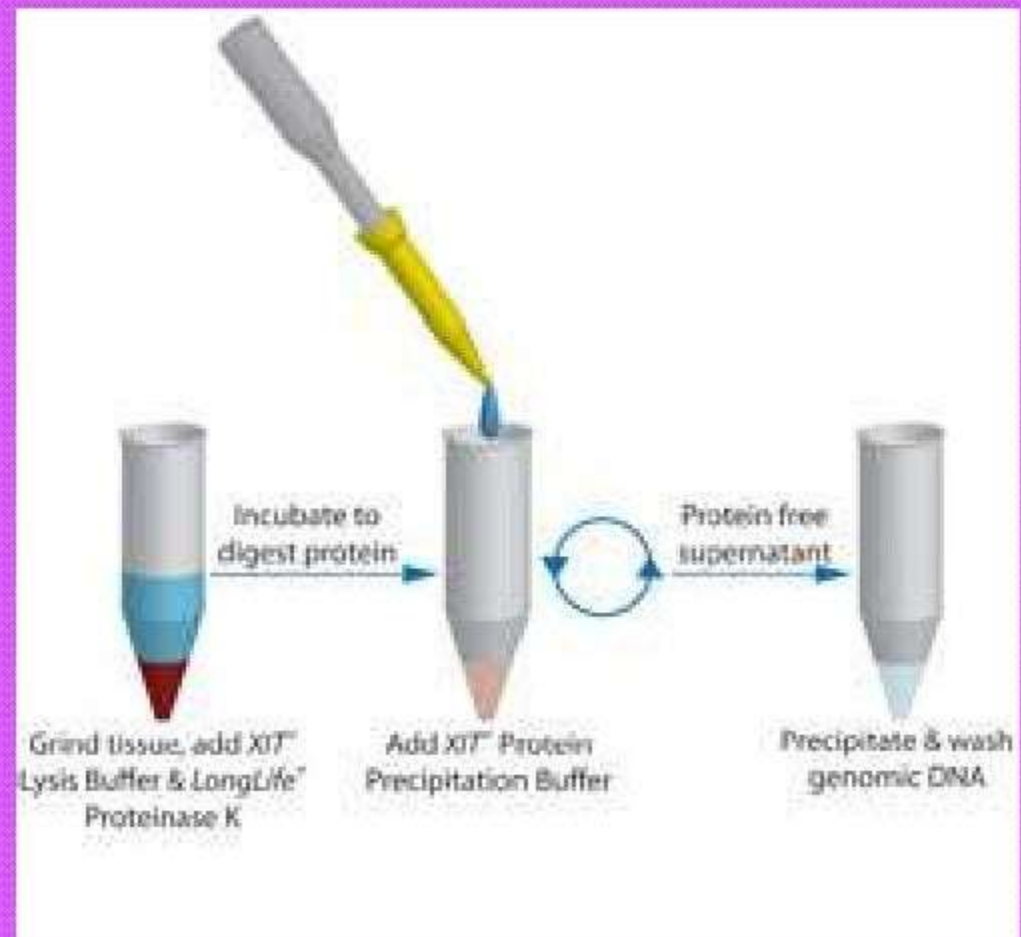
What is DNA Fingerprinting?

DNA Fingerprinting is a way to identify a certain individual, rather than simply identifying a species or a particular trait.

Figure 3.

6 Steps to DNA Fingerprinting

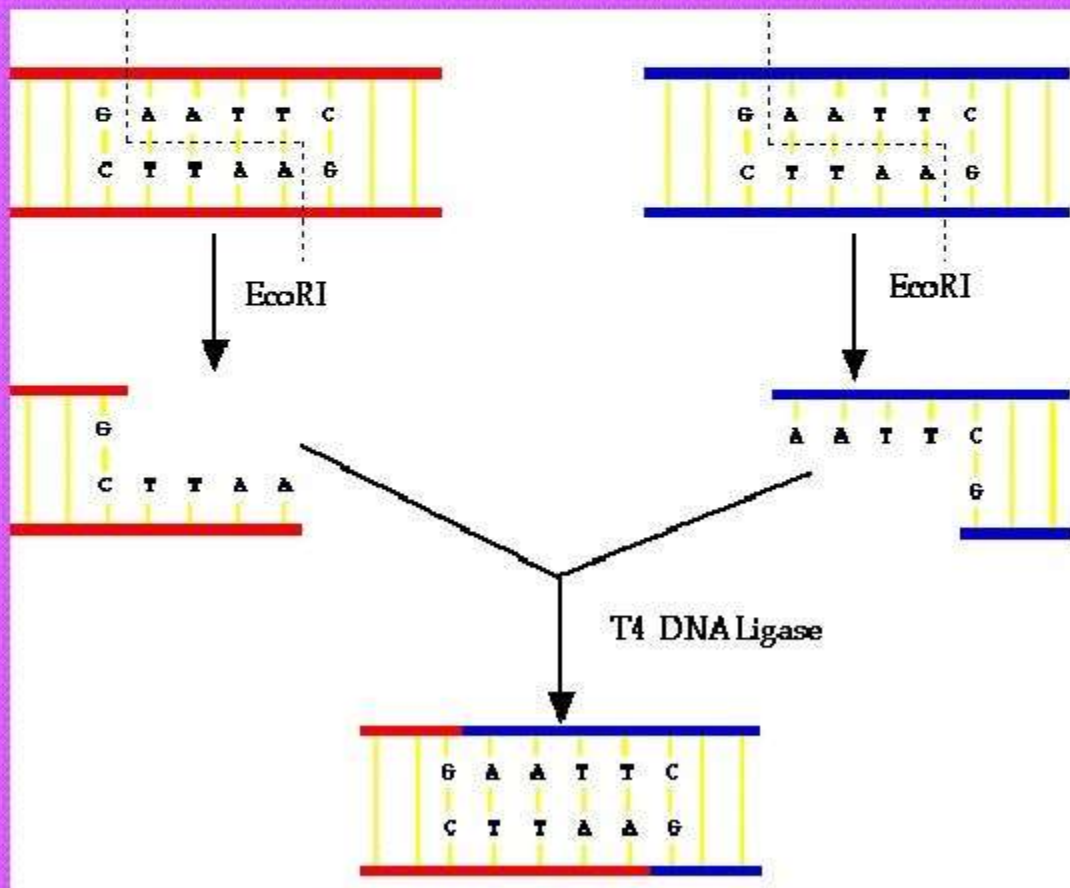
- Step 1: Isolation of DNA
 - DNA must be recovered from cells or tissue. Only a small amount of blood, hair, or skin is needed.



6 Steps to DNA Fingerprinting

• Step 2: Cutting, Sizing, and Sorting

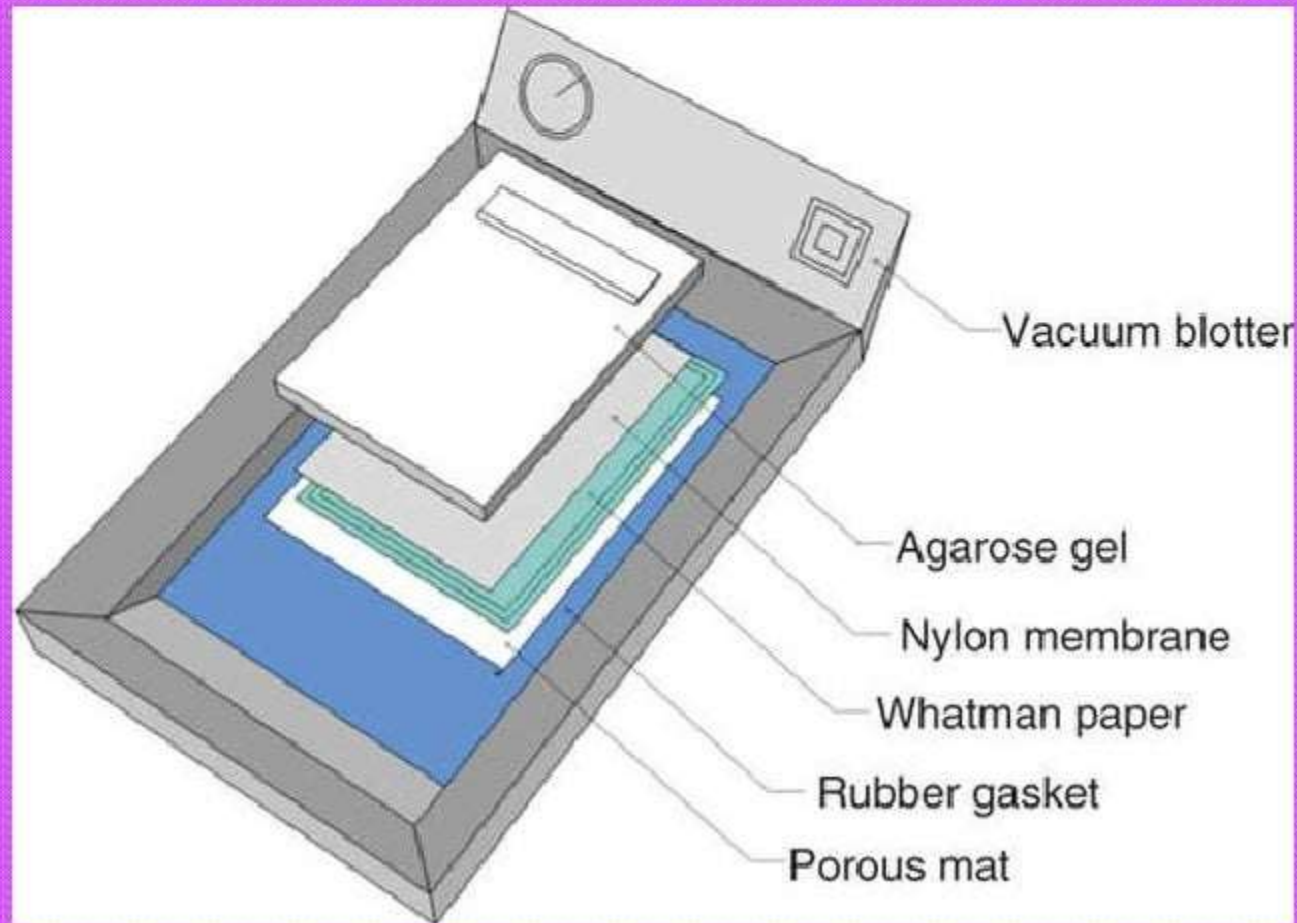
- Restriction enzymes are used to cut the DNA at specific places.
- In a process called electrophoresis, DNA pieces are sorted out by their size.
- Then the DNA pieces are passed through a gel made of seaweed agarose.



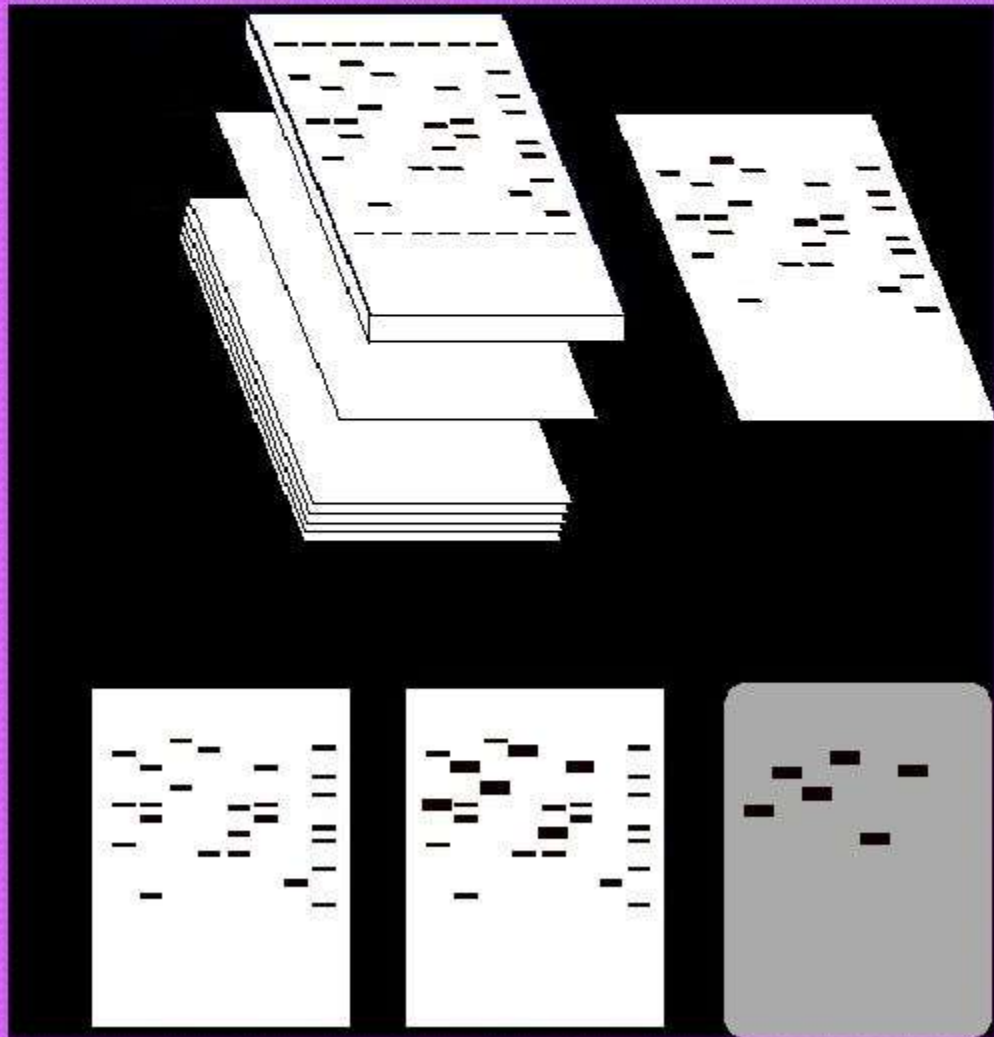
6 Steps to DNA Fingerprinting

Step 3: Transfer of DNA to Nylon

- The DNA pieces are transferred to a nylon sheet by placing the sheet on the gel and soaking them overnight.



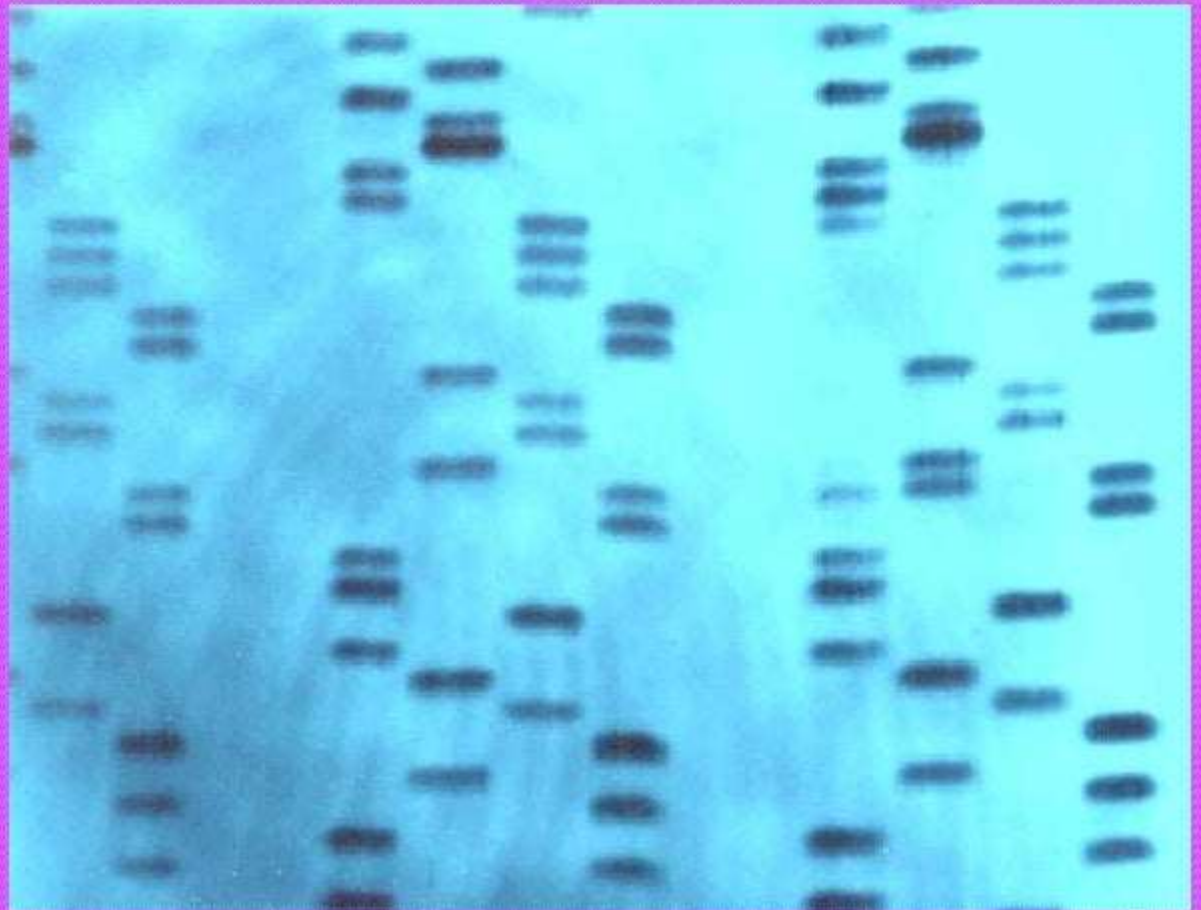
6 Steps to DNA Fingerprinting



- Step 4-5: Probing
 - Adding radioactive or colored probes to the nylon sheet produces a pattern, which is the DNA Fingerprint. Each probe only sticks to one or two specific places on the sheet.

6 Steps to DNA Fingerprinting

- Step 6: DNA Fingerprint
 - The final DNA fingerprint is built by using several probes. It resembles bar codes.



Uses of DNA Fingerprinting

- Diagnosis of Inherited Disorder

- Helps diagnose disorders in both prenatal and newborn babies
- Disorders may include cystic fibrosis, hemophilia, Huntington's disease, familial Alzheimer's, sickle cell anemia, thalassemia, and many more.



Uses of DNA Fingerprinting

Biological Evidence

- FBI and police labs around the country are starting to use DNA fingerprinting to link suspects to biological evidence.
- Also it helps in the court system with paternity tests and child support.



Uses of DNA Fingerprinting

- Personal Identification

- The U.S. armed services are just beginning a program where they collect DNA fingerprints from all personnel for later use, incase they need to identify casualties or missing people.

