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# FINGERPRINTING

**Fingerprint**

* Fingerprint. The probability of having two people with the same DNA fingerprint that are not identical twins is very small.

***Genetic fingerprint***

A set of characteristics that is unique to the DNA of an individual ***Fingerprint:***

* Fingerprints are the most common form of print analysis in the process of body identification. The analysis of palm prints is similar to that of fingerprints. However, they also provide information on the dominant hand and age of the individual, which are both key indicators of identity.

***DNA fingerprinting:***

* it is a technique that simultaneously detects lots of minisatellites in the genome to produce a pattern unique to an individual. This is a DNA organism, obtained by analyzing small samples of biological material such as body tissues or fluids and used especially in the context of forensic investigation.
* The pattern of DNA unique to each individual that can be analyzed in a sample of blood, saliva, or tissue: used as a means of identification.

***USES:***

* DNA fingerprinting is a chemical test that shows the genetic makeup of a person or other living things. It's used as evidence in courts, to identify bodies, track down blood relatives, and to look for cures for disease.
* Physically connect a piece of evidence to a person or rule out someone as a suspect.
* Establish paternity and parentage.
* Identify victims of war and large scale disasters.
* Study biodiversity of species.
* Track genetically modified crops.
* Settle immigration disputes.

***APPLICATION:***

* Paternity and Maternity. Because a person inherits his or her VNTRs from his or her parents, VNTR patterns can be used to establish paternity and maternity. ...
* Criminal Identification and Forensics. ...
* Personal Identification.
* Murder

***Process:***

* DNA fingerprinting relies on the unique pattern made by a series of DNA fragments after separating them according to length by gel electrophoresis.
* DNA samples from different suspects, the victim, and samples from the crime scene are first purified. The samples are then processed to generate a set of DNA fragments.

**History of genetic fingerprinting**

* You could say that the path that led to the discovery of genetic fingerprinting began for Professor Sir Alec Jeffrey’s when his father gave him a chemistry set and a microscope at the age of eight.
* Scientists, he believes, like musicians are born not made, nonetheless he acknowledges that this parental encouragement played its part in his choice of vocation. It might have been disastrous, as he explained.
* This was a real chemist's chemistry set, not a child's toy, and later, when I was 13 or 14 I got a face full of sulphuric acid, which is why I wear this beard now. I consider it a badge of honor.

***FINGERPRINT TEST:***

* To get your DNA fingerprint, you would give a sample of cells from your body. This can come from a swab inside your mouth, from your skin, the roots of your hair, or your saliva, sweat, or other body fluids. Blood is usually the easiest way. Lab workers treat the sample with chemicals to separate the DNA, which is then dissolved in water.

**PROCEDURES**

* The procedure for creating a DNA fingerprint consists of first obtaining a sample of cells, such as skin, hair, or blood cells, which contain DNA. The DNA is extracted from the cells and purified.

**STEP:**

* Extracting the DNA from cells.
* Cutting up the DNA using an enzyme.
* Separating the DNA fragments on a gel.
* Transferring the DNA onto paper.
* Adding the radioactive probe.
* Setting up the X-ray film.
* Yes - we've got the result.
1. **FIVE DIFFERENT TESTS FOR VIRUS DIAGNOSIS :**
2. **ELISA:**

It is abbreviated as enzyme linked immunosorbent assay, it is a type of serological test and immunoassay technique

In ELISA a specific type of enzymes is linked to an antibody to detect the presence of protein like the antigen

ELISA method was elevated from RIA technique; therefore ELISA technique is less similar to RIA where the antigen is radio labeled

ELISA technique is widely used as compared to RIA technique due to environmental pollution and to detect the viral infection or diagnosis

1. **IMMUNOELECTRON MICROSCOPY:**

It is used to detect or identified the viruses

The negative staining technique of electron microscope referred to earlier for the demonstration

Of viruses is also useful in identification

The virus is reacted with the immune serum, resulting in clumping that can be seen when viewed under the electron microscope

1. **VIRUS NEUTRALIZATION(VN):** It is used to detect and measure antibody

Virus neutralization is the most widely used method to detect and measure antibodies to viruses of veterinary

1. **PCR:** it is stand for polymerase chain reaction

It is used to detect or to identified the specific virus or specific genes sequence

PCR in vitro method of DNA replication is capable of amplifying DNA segments by more than one million fold

A single copy of viral DNA or genome if present in a clinical material is amplified yielding millions of copies that can be readily detected by electrophoresis

This is accomplish by creating a reaction mixture that in addition to simple DNA , contains two oligonucleotides primers that complement opposite ends of each stand of targeted sequence deoxynucleoside triphosphate and a thermo stable DNA polymerase (TAQ polymerase)

The reaction mix is than subjected to a temperature cycle order to facilitate DNA replication and thus increase the amount of DNA

**5. ELECTRON MICRSCOPY (EM):** it is used to demonstrate viruses in clinical samples

In this technique of negative contrast EM distilled water lysates of clinical specimen are stained with a solution of heavy atoms

The technique is primarily used for the examination of those clinical specimen expected to contain a large number of viral particles such as feces (Corona virus, pro viruses) and vascular and pox like lesion (Herpes and pox viruses)

Specimen’s preparation and EM examination usually can be completely within 30 mints.

 ( THANKS)