

Dna Fingerprinting Encyclopedia Article

Dna Fingerprinting

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Dna Fingerprinting

DNA fingerprinting is the overall term applied to a range of techniques that are used to show dissimilarities between the DNA present in different individuals of the same or different species.

DNA fingerprinting requires DNA to be broken down, or digested by, enzymes. This digested DNA is then placed into an agarose **gel** along with other samples of DNA. These other samples may be test samples or they may be controlled samples, because it is vital to always include a standard piece of DNA to calibrate the results. The loaded gel is then placed in a liquid bath and an electric current is passed through the system. The fragments of DNA are of different sizes and different electrical charges. As a result, the fragments migrate down the gel in various distances. The DNA can be seen by the application of dye, producing a gel which has a series of lines showing where the DNA has migrated. The enzymes used for the digestion cut at specific locations and different-sized fragments are produced depending on the bases (that is, the particular sequence of nucleotides) present in the DNA. Fragments of the same size in different lanes indicate the DNA has been broken into segments the same size. This indicates homology between the sequences under test. The greater the number of enzymes used in the digestion, the finer the resultant resolution.

DNA fingerprinting is used in forensics to examine DNA samples taken from a crime scene and compare them to those of a suspect. The statistical chance of two samples of DNA producing identical digestion patterns different individuals is very small.