

# Dna in criminal investigations research paper examples

[Law](#), [Criminal Justice](#)



The discovery of deoxyribonucleic acid (DNA) was in 1953. The scientists behind the discovery are Doctor Watson and his colleague Crick. The DNA is the basic unit of an organism. It acts as a finger print of the blood. There are two individuals with the same DNA on the earth. This includes even identical twins. Since the discovery, of DNA has had a large impact on science. A major impact of DNA is on the field of forensic science. This field of science is involved with solving crime. This is through using various laboratory techniques in testing samples. The techniques have developed over time, to reach remarkably accurate techniques. Prior to the discovery of DNA, crime investigators used blood to solve crimes. This and other methods were cumbersome. There are several current techniques that use latest techniques to profile DNA. These techniques have had a key impact on the criminal justice system (Butler, 2005).

DNA profiling began in 1985 with a popular scientist, Doctor Alec Jeffery. This is after he noticed that there were repetitive sequences along the DNA strands. This was further accelerated when he noticed that the repetitive sequences are distinctive to every person. The repetitive sequences are known as Variable Number Tandem Repeats (VNTRs). Doctor Alec used a technique called Restriction Fragment Length Polymorphism (RFLP). It is a method that uses a restriction enzyme is used to restrict the VNTRs. It is among the earliest techniques used in forensic analysis. The method is cumbersome as it requires large sample sizes to profile DNA. This is in comparison with other profiling techniques that require remarkably small sample sizes. The process also requires multiple steps to profile DNA which makes it labor demanding. These multiple steps also are time consuming

and may lead to the sample being contaminated with foreign material. This leads to in accuracy of the technique (Butler, 2005).

There are several latest techniques that are used to profile DNA. These techniques include Polymerase Chain Reaction (PCR), Short Tandem Repeat (STR) Analysis, Mitochondrial DNA Analysis and Y Chromosome Analysis. Y chromosome is a technique that is uses genetic markers on a Y chromosome to profile ancestral ties in males. This technique profiles any evidence that consists of a number of males. This is because a son inherits the Y chromosome from the father. The technique can also be used to profile a hereditary line because the Y chromosome is dominant. The other recent technique is the Mitochondrial DNA Analysis. This technique uses the cell mitochondrial DNA from a sample. This technique has numerous advantages over prior profiling techniques. This is because it uses minute DNA samples to make a profile. It also can profile old samples that have lost nuclear material. Mitochondrial DNA can also profile degraded samples. It is normally used to profile for missing persons. The mitochondrial DNA of a mother and daughter is similar (Butler, 2005).

There is also the use of STR analysis. This functions to analyze the different parts of the DNA. These parts draw a distinction between individuals. The police use 13 regions of the DNA sequence to profile criminals. The police use these regions to make up their database. This is because these regions are highly variable and cannot be found in two individuals. Statistics show that the chances that two people can have the same 13 regions are one over a billion, which is virtually impossible. PCR analysis is a method that permits

investigators to replicate DNA to million pieces from a single sample. This is through amplification of the minute pieces. The method has several advantages over prior DNA techniques. It requires remarkably small amount of sample of DNA to profile a criminal. The method is also straightforward and easy to use. This is because the process is automated. The method can also profile degraded samples. It is also a quick method of profiling because it takes a week or less to profile a criminal (Butler, 2005).

The impacts of DNA profiling techniques to the justice system are beneficial. This is because of the numerous crimes that the forensic analysis has helped to solve. These are crimes that would have gone unresolved using other techniques. Therefore, these techniques serve to implement law enforcement as it helps to solve horrific murders in the world (Lazer, 2004).

## **Conclusion**

The current methods are superior to the traditional methods. There is no doubt that, with the advancement in technology, superior profiling techniques will emerge. The impact that these profiling techniques have had on the criminal justice system is enormously beneficial. This is in the numerous crimes that DNA profiling helps to resolve. The police and other law enforcement agents should use the current profiling techniques to help solve crimes with evidence from crime scenes. This is because the current techniques are automated which makes them not be labor intensive. These techniques are also accurate and less time consuming in testing of the samples. However, the prior techniques should also not be thrown away as they can be applied in some instances.

## **References**

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