

Dna in forensic science assignment

Law



Over the years, many different advances in technology have made the use of DNA in forensic science possible. In the past twenty years specifically, there have been many extraordinary discoveries in the fields of science that have led to the advancement of procedures in forensics. Before DNA testing, the most accurate way of identifying people was to match the blood types of suspects with blood found at the scene of the crime. Considering the lack of variability of this procedure, it is no surprise just how important the use of DNA in forensics has become.

The evolution of applying DNA testing to forensics can be traced by looking at Polymerase Chain Reactions, DNA Fingerprinting and the Innocence Project. For instance, the history behind how DNA became a reliable tool in forensics goes all the way back to when DNA was first discovered. In the year 1869, a German chemist named Frederica Mieser first discovered DNA, which he called nucleic acid (Monsoon, 2013). However, it wasn't until 1953 that biologists were finally convinced by Alfred Hershey and Martha Chase of DNA's importance as the genetic material in organisms (2013).

One year later, James Watson and Francis Crick deduced the structure of the DNA molecule. They proposed that it is a double helix with complementary nucleotide sequences (2013). Nonetheless, the most critical development in working towards using DNA in forensics was when Kary Mullis created the Polymerase Chain Reaction in 1983 (2013). Furthermore, the Polymerase Chain Reaction, or PCR, was the breaking point for using DNA in forensic science. PCR is a process that allows extremely small samples of DNA to become useful.

This is done by taking a double stranded DNA fragment and making it into two single stranded fragments. These two single stranded reagents are then copied, which creates two double stranded DNA fragments. This procedure is then repeated until there is enough DNA for analysis (2013). " PCR is so powerful that a single hair will do (2013). " Consequently, PCR could not truly be applied in forensics until DNA Fingerprinting was developed (Dale, Greenshank, Rooks, 2006). DNA Fingerprinting was invented by Alec Jeffrey three years after Kara Mullis developed PCR (2013).

Like the fingerprints that came into use by detectives and police labs during the 1980s, each person has a unique DNA fingerprint (Betsey, 1994). DNA Fingerprinting is a process used in forensic science to identify people at a crime scene, and to tell how many people were present at the scene. This is done by exposing a DNA fragment to a radioactively tagged " probe" and any complementary strands that occur in the fragment will bind to the probe. The result is a set of banded-like lines that is the DNA fingerprint (2013).

It is obvious how PCR would come in handy in the DNA Fingerprinting process. If there is not enough DNA present for analysis, PCR could be applied in order to create a useable sample from the DNA so that the DNA Fingerprinting can be applied (PCR Introduction, 2009). These many advances made the start of the Innocence Project possible. Founded in 1992 by the lawyers Barry Check and Peter Enfield (2013), the Innocence Project is an organization " dedicated to exonerating wrongfully convicted future injustice" (The Innocence Project).

One case example is the case of Orlando Bouquet. He was convicted for attempted sexual battery and burglary on May 23rd, 2006 and was quickly released on August 22nd of the same year after DNA testing on the victim's clothing proved that he was not the man who committed the crime (The Innocence Project). Another example is the conviction of Steven Barnes in 1989 for a murder he did not commit. He was convicted based on questionable eyewitness identifications and three types of forensic science that had not been validated.

Nearly two decades later, DNA testing obtained by the Innocence Project proved his innocence and he walked away as a free man on November 25th, 2008 (The Innocence Project). The Innocence Project has freed hundreds of convicted people over the past ten years (2013). This just goes to show how important DNA testing in forensics has truly become. PCR Amplification, DNA Fingerprinting, and the Innocence Project are just a few of the uses that have come from the numerous discoveries concerning DNA.

The use of DNA in forensics would not be possible without the help of the people that made critical findings concerning DNA, the use of PCR Amplification and DNA Fingerprinting, and it also served as the genesis of the Innocence Project. Thanks to the people that contributed to the discovery of DNA, its purpose, its structure, and its many uses, today there are several things that DNA is an essential part of. The development of PCR Amplification was a dire step in using DNA as a key part of forensic science.

DNA Fingerprinting is a more efficient, less expensive process that has become a very common tool in forensics, and the Innocence Project has

become a pillar of the American criminal Justice system (2013). The advances in science and technology over the past twenty years have had a major impact on many diverse parts of society. The advancements of DNA research are particularly noteworthy. With the help of PC Amplification and DNA Fingerprinting, hundreds of men and women that were wrongfully accused of a crime have been set free, and the true culprits have finally been put behind bars.

It is astounding how far scientists have already come in their research, and it is mind-boggling to think about just how far their discoveries have yet to go.