



Review Paper

DNA Technology: The Technology of Justice - Current and Future Need

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Available online at: www.isca.in

(Received 16th September 2011, revised 11th January 2012, accepted 25th January 2012)

Abstract

The intelligence of human being, since the beginning of this world has resulted in the growth of science and technology. Science and technology have developed according to the interest and needs of humankind. They are having tremendous impact on human lives. Advances in DNA technology are being seen as significant, reliable, efficient and accurate tools for law enforcement agencies to fight crimes. DNA evidences are capable of proving guilt of accused or innocence of accused persons wrongly convicted. Forensic DNA Technology has transformed investigative methods of serious crimes due to its remarkable capability to convict wrongdoers or exonerate accused or convicted offenders. One of the most significant and great qualities of DNA evidence is its ability to solve cold cases. More importantly, DNA technology can quickly lead suspicion away by allowing samples of past crimes that were never solved to be reassessed. This can result in the arrest of suspect(s) years after the crime was committed. In essence, DNA evidence is rapidly becoming irrefutable proof of identification. The question whether DNA is advancing justice becomes relevant in cases where police, in their efforts, use DNA evidence to find suspects and solve crimes. Certainly, questions of justice weigh most heavily when the DNA samples of innocent person is taken, stored and analyzed and falls under the lens of suspicion. Therefore, this paper deals with the utility of DNA Technology in criminal investigation process. Advancement of DNA technology toward a vision of justice is a focal point of this research paper.

Keywords: Forensic DNA technology, technology of justice, cold case, criminal investigation.

Introduction

In recent days perpetrators use science and technology to their advantages in committing crimes. Consequently, investigating officers are required to possess scientific tools to investigate these crimes. Forensic science comes to their rescue by introducing DNA technology in the legal system. Forensic science is the application of principles of science and technology in investigation of crime(s) to enable the courts to determine the guilt of the accused. It is applied in both criminal as well as civil cases. The evolution of science and technology has enabled law enforcement agencies to solve many apparently 'unsolvable crimes', which have made people to associate forensic science with detection of crimes. Applications of DNA evidence assist the courts in determining, whether a crime in fact has been committed, and if it has been committed how and when. This article considers the likely impact of DNA technology on administration of criminal justice. It focuses on two major things of DNA technology: the utility of DNA test as powerful tool for identification purposes in criminal cases and admissibility of DNA samples recovered from the crime scenes in the courtroom.

This purely doctrinal research paper is conducted with reference to the existing legislations, judicial precedent and law commission reports, national as well as international. Legal and scientific literature has been collected from text

books, journals, internet sites etc. This research paper is an analytical study which lays out the general principles of DNA technology, its utility wherein the relationship of science and law is examined with special emphasis on the concept of forensic science. The issue of admissibility of DNA evidence in court rooms has been analyzed in minute detail in this research paper. For the purpose of this paper the authors have collected and reviewed various text books, survey reports, law journals, case laws and landmark judgments and citations by the eminent judges, as well as web materials by exhausting various legal websites.

Due to the nature of this research paper, the authors have adopted a doctrinal method to carry out this paper. The authors have used analytical and critical methodologies on this paper. This article is to establish the utility of DNA technology in justice delivery system.

In the Beginning: The forensic use of DNA started with the work of Alec Jeffreys, in 1984, Jeffreys invented the techniques which uses human biological sample in courtroom. He demonstrated that DNA samples, dried stains several years old, contained sufficient DNA to produce conclusive results. Jeffreys proved that even small fragments of DNA molecules were virtually unique to individuals¹.

What is DNA: DNA is the abbreviation for deoxyribonucleic acid, which is the genetic material present

in the cells of all living organisms. DNA is the fundamental building block for an individual's entire genetic makeup. DNA is found in almost every cells of human body such as blood, semen, urine, saliva, hair, etc. Every individual has unique DNA which does not match with others except monozygotic twins. Our body's cells each contain a complete sample of our DNA. The DNA in a person's saliva is the same in every skin cells, semen, etc.².

Utility of DNA evidence as a powerful tool in criminal investigation: The uniqueness of DNA evidence makes it a powerful tool in criminal investigation, because, each person's DNA is unique except identical twins. Therefore, DNA evidence collected from a scene of crime can involve or exempt a suspect. Not only that, it can also examine unidentified remains of dead body with comparison of DNA from family members. Moreover, once DNA evidence from one scene of crime is compared with evidence from another using DNA database such as CODIS in us, those crime scenes can be connected to the same perpetrator locally, statewide and nationally³. DNA test is also a powerful tool because when biological sample from scene of crime is collected and stored properly, forensically valuable DNA can be found on thing that may be decades old. Therefore, old cases that were previously thought unsolvable may be solved by DNA evidences because they are capable of identifying the perpetrator⁴. The possible influence of DNA technology in investigation of crime is not seen in number of cases in court, because, a lot of its impact is behind the screens, such as exempting person from the gallows of suspects which lessens the court work-load when identity is found. The use of DNA evidence in crime cases is of paramount consideration, because it is a reliable investigative tool for exempting persons wrongly suspected of taking part in a crime⁵. Not only that, DNA can also furnish convincing evidence of participation and the result of the analysis may induce the accused to plead guilty. In criminal investigation, the presence of DNA evidence is deemed to have an effect on the confession made by suspects⁶.

Admissibility of DNA evidence in litigation: The service of criminal justice system often uses scientific expert and forensic DNA evidence in investigation. DNA testing is used to find out the connection between biological sample found at crime scene and suspect. It can also be used to establish whether the fingerprints found on a gun is for the accused party. The qualification of DNA evidence to be reliable for use must be proper preservation of sample by competent forensic expert(s) or trained police in that area. A DNA sample that is badly smudged when found cannot be usefully saved or analyzed it may even mislead investigation in case of contamination⁷.

The issue of admissibility of DNA evidence is crucial. While presenting the DNA evidence there should be balance between legal rights of the suspect as against the interest of

the state. This is the main reason to support the conformity required by law leading to accurate collection of DNA samples. The power is in the hands of judiciary to consider or not to consider DNA evidence after weighing the prejudices against probative values.

Every court of law has discretionary power to refute DNA evidence obtained in situations which may cause to be used against the accused in unjustly manner⁸. The exercises of the discretionary power of the court for the sake of justice, the courts balance public interest in prosecution of wrongdoers or perpetrators, as against the public interest in the protection of the individual from illegal and unjust treatment. While DNA evidence is acquired in breach of stipulated scientific process, the court can admit the questionable evidence simply when the necessity of admitting the evidence prevails over the undesirability of admitting it. The problem of admissibility of DNA evidence is nevertheless, an issue which has to be regulated under domestic law.

During the period of 20th century, as science developed, the legal system was not developing keeping pace with evolution of science to admit scientific evidence in the system of justice⁹. The first remarkable case in United States was *frye v. United States*¹⁰. In this murder case, the suspect wanted to prove his innocence through lie detection test, unfortunately court rejected his wish on ground that, the evidence must be well recognized by scientific principle or discovery and the thing from which the deduction is made must be sufficiently ascertained and secure the general acceptance in particular field in which it belong¹¹.

However, the first daring case that had an impact on DNA evidence was *people v. Castro*¹², wherein admission of DNA evidence was examined vigorously in this case. A blood stain was found on jose castro's watch accused of murdering his neighbor and her daughter. After analyzing the blood stain found on castro's watch, the court concluded that the theory underlying DNA test is generally accepted by scientists in genetics and the techniques applied in the particular case were so faulty, hence, evidence of a match is inadmissible¹³. After establishing that forensic DNA evidence met the principles led down under *frye*, the court set up a new standard for the admissibility of DNA evidence, not only that DNA test is generally accepted in scientific community but, also to establish that the technique and procedure were properly followed by laboratories in specific case before the court¹⁴.

In India, quite a few convictions have occurred wherein DNA evidence has been indirectly acknowledged under section 45 of the Indian evidence act, 1872¹⁵. Section 45 of the said act deals directly with the opinion of the expert stating that "when the court has to form an opinion upon a point of foreign law, or science or art, or as to identity of handwriting (or finger impressions), the opinions upon that

point of persons specially skilled in such foreign law, science or art, (or in questions as to the identity of handwriting or finger impressions) are relevant facts.”

The courts held that medical evidence is only an evidence of opinion and is hardly decisive. It is not substantive evidence. But, the opinion of the doctor who has held the postmortem examination and of the forensic science laboratory is reliable. The supreme court of India has further stated that unless there is something inherently defective in the medical report, the court cannot substitute its own opinion for that of the doctor¹⁶.

The reports of certain government scientific experts are dealt under section 293 of the code of criminal procedure. Section 293(2) stipulates that when the court thinks necessary can scrutinize the report given by the expert. The court should not take that report as it is without making an analysis¹⁷. People have different views regarding fundamental principle of scientific evidence like DNA evidence for instance; it cannot be subjected or questioned, only legal analysis should be done on collection and authentication of scientific samples¹⁸.

Nevertheless, a number of writers believe that, there are no national or international standards; each laboratory has its own guiding principles. However, the court is not likely to comprehend in minute details the standards of the process; the court considers the opinion of the expert based on trust¹⁹. In addition, various courts are still hesitating to admit DNA evidence as they are of opinion that laboratories are not following the general scientific principles or this violates fundamental principles and public policy.

Therefore, in India, there is still uncertainty on what criteria and laws the courts should be based on for the admission of DNA evidence. The capability of DNA evidence to establish innocence or guilt of crime beyond reasonable doubt is being acknowledged by judiciary in various countries. India is not lagging behind, although DNA technology has not yet being fully welcomed in investigation process and justice delivery system. Gradually, India is acknowledging the outcome of DNA testing, it is moving toward passing of legislation which will deal with DNA technology and set up of DNA database. Additionally, Indian judiciary has passed various decisions based on DNA evidences²⁰.

Toward a vision of technology of justice: The vision of justice to which the criminal justice system is based on; should be a proper balance between the protection of civil liberties, presumed innocence, and procedural rights of persons and the needs of the state to apprehend, punish and rehabilitate perpetrators of crime. People have an expectation of privacy in respect to the content of their DNA sample, regardless of where it has been obtained or acquired²¹. The

issue arises when DNA of an individual is analyzed beyond the identification purpose.

In *hiibel v. Nevada*²², us supreme court held that, a person does not have a constitutional right to withhold his or her identity. But the police cannot stop a person without reasonable suspicion simply to acquire the individual's identity. Hence, to reiterate from the said case, even if DNA evidences were used exclusively for identification purpose, there are still limits on what police can do to obtain DNA identity. Law enforcement agencies have to meet legally justified cause or reasonable suspicion requirement to acquire DNA evidence. It is very significant to note that DNA is not simply being collected for identification purpose only but also for investigation, inculpatory and exculpatory purposes²³.

Evolving impact of DNA technology on the criminal justice system: Evolution of DNA technology is having a major impact on laws as they have or are being amended in many legislations worldwide. This affects the way investigations are done and how to handle unsolved cases. Its innovation is of supreme consideration because laws are being enacted, amended, and repelled even altered to maximize the benefits of the ability of DNA technology to identify, convict and exempt innocent falsely convicted²⁴. Enactment of law regarding the collection, use, storage, admissibility and creation of DNA database for DNA evidence reflects the impact of DNA technology on criminal justice system. The legal provisions of limitation limit the time within which criminal charges can be filed for a particular offence.

Those provisions are deep-rooted in laws prohibiting the person from utilizing the evidence that has turned out to be outdated over a period of time. For instance, an eye-witness may forget the detail(s) of what he has seen due the laps of long time; his memories vanish as time passes. However, DNA evidence is a powerful and reliable tool which can establish the truth with accuracy regardless decades after the crime was committed.

The irrefutable achievement of DNA technology is that it has resulted in general tendency towards the creation of DNA database in other countries which have established national DNA database system. Even though DNA evidence is not the only tool that helps to solve unsolved cases, evolution of DNA technology and the achievement of DNA database have instigated the law enforcement agencies to reassess the so called “cold cases”. Nowadays, investigating officers have realized the ability of DNA evidence to easily identify a suspect in ways previously seen as impracticable or unrealistic. The visible evidence to the naked eye can be used in settlement of some crimes, but because the perpetrators are using the umbrella of technology to commit crime, DNA technology is playing remarkable role to solve that crime²⁵.

Laws are being enacted in various countries to call for all convicted felons to surrender their DNA sample for the creation of DNA profile to be stored into state DNA database. The more DNA samples are submitted the larger the DNA database, rendering database system a more powerful tool for law enforcement²⁶.

Conclusion

DNA evolution has drawn attention of judiciary, to focus on evaluation and admission of DNA technology into legal systems. Various decisions such as *daubert* in usa, gave confidence to the judges to exercise greater freedom to appraise scientific evidence which would help to resolve remaining issues of admissibility. In due course, absolute acceptance of existing and praiseworthy of new DNA principles is certain. For that reason these investigative tools will merely turn out to be greater than they are nowadays. Meanwhile, judges should not be reluctant to accept DNA technology to be incorporated in justice system while waiting for suitable answers to the issues raised by it. Judges should not miss out the best way of interpreting the results of DNA testing because there will be most likely discussion over the perfect way of interpretation and analysis of DNA results among judges and scientists. Justice delayed is justice denied, and DNA technology has proved to be constructing and helpful in justice delivery system. The investigation process needs to be hastened by acknowledging DNA evidence as powerful tool of current and future need; otherwise the criminal justice system will suffer.

Acknowledgement

Thanking people is a nicety we tend to overlook too often. Writing takes time, attentiveness, concentration, and perseverance; this requires the involvement of people who invest in and count on your presence. Thanks are due to those individuals whose time was stolen or who have spared there time for us. We are thankful to paul n. Musila, phd research scholar, teachers of law department, Pune university for their valuable time and suggestions. Our thanks are due to all friends of DNA technology. Finally, thanks to you for reading this article.

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